Ain Shams University
Egypt

University of Stuttgart
Germany

"I can't! My parents are scared over me."

The Environment and Children Independent Spatial Mobility

The Case of El-Zabbaleen, an Informal Settlement in Cairo

by

Sara Zakareya

Supervised by

Prof. Dr. Mohamed Salheen
Professor of Integrated Planning and Design
University of Ain Shams

Prof. Dr. Astrid Ley
Professor of Urban Planning and Design
University of Stuttgart

Prof. Dr. Heba Safey El-Din
Professor of Architecture and Design
Misr International University

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Design
Misr International University

Examiners Committee
Title, Name & Affiliation

Signature

Prof. (external examiner)
Professor of (...)
University of (...)

Prof. (Title/Name)
Professor of (...)
University of (...)

Prof. (Title/Name)
Professor of (...)
University of (...)

Prof. (Title/Name)
Professor of (...)
University of (...)

Ain Shams University
Egypt

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University of Stuttgart
Germany

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12/08/2020

Sara Zakareya

Signature

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Abstract

How safe is it for our children to travel unsupervised? Where would they go? And what spatial activity would they do? Questions that every parent has to answer and every urban planner and policy maker needs to consider. This study aims to reduce the gap between children's needs in the rapidly urbanizing world and urban planning practices advocating for more accessible, safer and interactive environments for children. It is carried out in Cairo's informal settlement., El-Zabbaleen. The study investigates the experienced children independent mobility (CIM) then the environmental and demographic variables that impact it. Hence, a mixed-methods study was carried out where 94 children, aged 7 to 13 years, and 61 parents participated in questionnaires to measure CIM licenses. Then 12 children with their parents and 7 teachers participated in interviews to analyze children's and parents' environmental perceptions impacting their CIM licenses and spatial ranges. As a result, an array of socioecological and demographic CIM correlates were outlined then studied. Children's gender and age correlates are the most dominating where boys enjoyed higher CIM than girls whose CIM decrease with age. Moreover, traffic danger is the most impactful physical environment correlate followed by a more context specific social correlate which is fear of other children's misbehavior. Stranger danger is considered non-existent due to El-Zabbaleen nature of families' community where evrybody knows each other. Moreover, gender roles as an outcome of the society's cultural norms impact girl's volitional trips travel and dictate boy's growing responsibilities and duties restricting their spatial freedom with age. As a conclusion, any intention of urban intervention must be accompanied by a profound understanding and study of the context specific environmental correlations of CIM not only the physical but also the socio-cultural to fulfill an integrated, holisitc socio-ecological system.

Keywords: Children Independent mobility, environment correlates, age, gender, environmental perceptions, informal settlement.

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List of Acronyms

CAPMAS	Central Agency for Public Mobilization and Statistics
CIM	Children Independent Mobility
CFC	Child Friendly Cities
CPR	Civil and Political Rights
CRC	Convention on the Rights of the Child
CUULS	Childhood Use of the Urban(izing) Landscape
EPA	Environmental Protection Agency
ESCR	Economic, Social and Cultural Rights
GD	Geographic Diaries
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPS	Global Positioning System
GUIC	Growing Up in Cities
ICESCR	International Covenant on Economic, Social and Cultural Rights
MN	Manshiyet Nasser
PSI	Policy Studies Institute London
UNDP	United Nation Development Programme
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
UNICEF	The United Nations Children's Fund

List of Abbreviations

MG2-1 FB4-3	Parent (Father or Mother)/Child (Girl or Boy)/ Grade (2 or 4 or 6) - Number

Children and the City

1.1 Background:

A flat paved street affords a child to go to school walking or cycling with its speed bumps acting as ledges to jump over. The cul-de-sacs accommodate semi-private areas to play around with a friend and the niches provide havens for a midday laze. The built environment is the child's stage where s/he travels, plays and meets friends. It either affords or restricts children activities and movement (Kyttä, 1997). Children's development is fulfilled partially by acquiring knowledge through the independent exploration of their local neighborhood and by play (Björklid, 2004).

Due to rapid urbanization the shape of the built-environment has changed drastically impacting children's spatial experience. Children relationship with the urban context has proven increasingly problematic in western countries in a way that impedes their spatial activity and development (Prezza, et al., 2001). This thesis investigates the environmental correlates that affords or restricts children's independent mobility and activity in Cairo's most urban agglomerations, El-Zabbaleen. It advocates for a more accessible, safer and interactive environments enhancing children environmental cognition and competences as well as socio-emotional development.

1.1.1 Children between Urbanization and Informality

55% of the world's population lived in cities in 2018 as stated by the UNDP Oslo

Governance Center. The rapid growth of cities has led to the rise of mega cities especially in the developing countries. In the coming decades, 90% of this growing urbanization is expected to be hosted in the developing world where 20% of which are estimated to live in slums (UNDP, 2018). Slums are now a significant feature of the urban life. The UN Habitat defined slums as settlements that combine, to different extents, the following physical and legal characteristics: inadequate access to safe water, sanitation and other infrastructure, poor structural quality of housing, overcrowding, and insecure residential status (Baseera; UNFPA; NPC, 2016).

In the face of this urban challenge, making cities sustainable and resilient means investment in infrastructure and facilities and encouraging participatory and inclusive methods of urban planning and policies (UNDP, 2018). As a result, the UN developed their 2030 agenda for sustainable development with Goal 11 dedicated to 'Make cities and human settlements inclusive, safe, resilient and sustainable' with a special focus on women, children, elderly and persons with disability.

Why the focus on children? In 2018, 26% of the world population were children under the age of 15 with 95% of this population, 1.9 billion, living in developing countries (UNDP, 2018). 52% of which, 1 billion, are experiencing poverty and none inclusive, safe, resilient and sustainable cities. Hence, there is a need to focus on children, their environments and how urbanization affects their lives, survival and development.

1.1.2 Problem Statement:
This leads to the research study problem that the gap between children's needs in the rapidly urbanizing world and urban planning practices is escalating leading to a proven decline in children-environment relationship worldwide impacting children's development.

This waning relationship placed children's experiences in the public realm under scrutiny in social, political and urban discourse. However, theory and practice remained confined to European, North American and Australian societies falling short of the developing world (Malone, et al., 2017). Cairo is an exemplar to one of the world's biggest developing countries megacities suffering unstoppable urbanization and informal growth, yet remains under-studied when it comes to

children experience of their urban environments.

This research accordingly conducts an ecological approach studying children-environment relationship and examining the existing knowledge on a new challenging and peculiar urban environment in developing countries which is informal settlements. The geographical and cultural disparities of the studied setting suggests an expected potentiality of discovering different and locally specific outcomes complementing the western data.

1.1.3 Study Area Background

Egypt being described as a young nation, 37.1% of its population are children under the age of 17 according to CAPMAS 2016. Cairo, its capital is the seventh biggest Megacity with 70% of its population living in informal settlements covering 44% of its built up area (O'Donnell, 2010, p. 13). No figures estimate the number of children living in informal settlements. Only numbers of children experiencing monetary or multi-dimensional poverty or living in urban areas. Children of the informal areas are still off the radar.

The concepts and characteristics defining informality is context variable. According to the recent Building Unified Law No. 119/2008 which includes Egypt's all planning and urban development definitions labeled slums or informal settlements as unplanned areas. These areas are defined as 'areas developed in contradiction to planning and building laws and regulations' focusing mainly on the legal aspect and excluding the physical and social dimension (Baseera; UNFPA; NPC, 2016). They are usually characterized by similar state negligence, heterogeneous societies as well as lack of public facilities and infrastructure contrasting their overflowing populations.

Sims divided Cairo's informal settlements into four typologies; A) on former agricultural land, B) on former desert state land, C) in deteriorated historic cores and D) deteriorated urban pockets (Fig. 1.1). This research studies type B due to two main reasons. First, the socio-cultural and built environment of type A reflects a rural context which does not correspond to this research criteria of urbanity. Second, the geographical location at the city's periphery excluded it where type B is connected to the city's infrastructure and facilities. It is an exemplar of the developing world megacities urban cores.

Manshiyet Nasser (Fig. 1.1) is the selected area for study as it is one of Cairo's largest and most densely populated informal settlements with a great deal of developmental projects and interventions as well as researchers interest (Salheen, et al., 2015). El-Zabbaleen with its distinctive features and peculiar challenges will be the study area. Chapter 4 will describe it more in details.
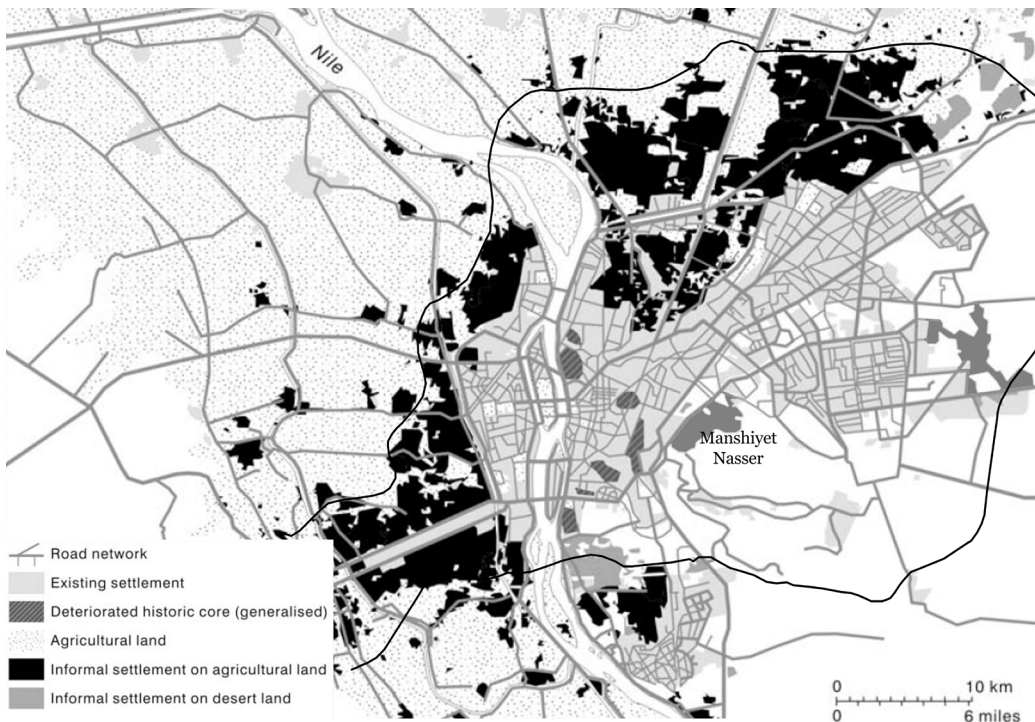
Figure 1.1—Informal areas of Greater Cairo by typologies.
Source: Sims, 2010

1.1.4 The Scope of Study:

The three themes probed in this research is children, the environment and development as an outcome. The research focuses on the children-environment transactional relationship as in figure 1.2 using the lens of environment behavior studies. It applies the concept of CIM complemented within by the framework of territorial range concept. It further recognizes the associated environmental and demographic variables that influence children environmental

What does Children Independent Mobility (CIM) mean? The term was coined by Hillman, an architect and a town planner, in his study One False Move: a Study of Children's Independent Mobility in 1990 as "the freedom of children totravel around in their neighborhood or city without adult supervision" (Hillman, et al.; Marzi & Reimers, 2018; Malone & Rudner, 2011). While Territorial range

represents children's 'collective spatial realm of experiential breadth and depth' (Moore & Young, 1978, p. 90).

active interaction.
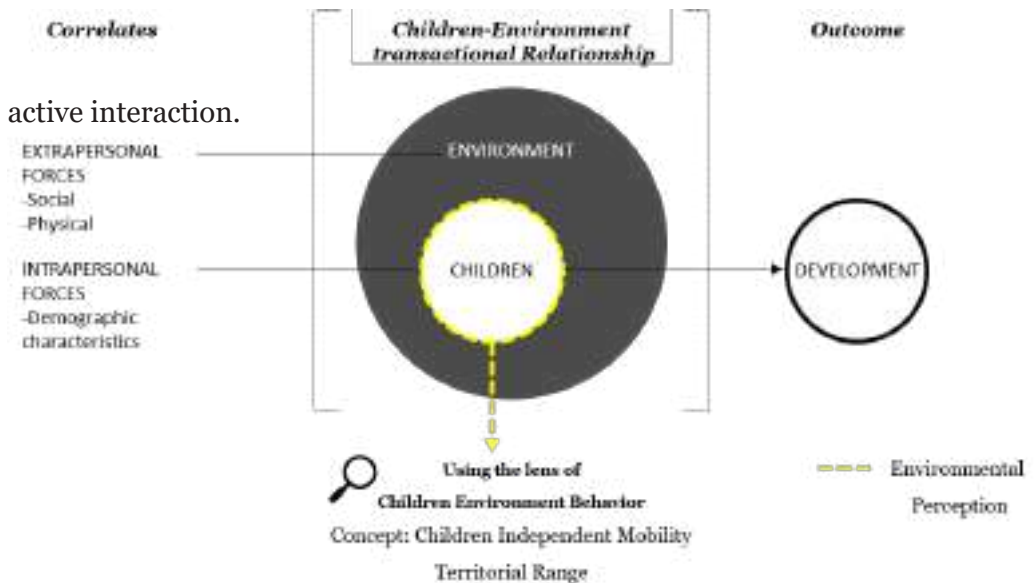
Figure. 1.2— The research topic studied themes.
Source: Author

1.1.5 Research Question:

Understanding children's environmental behavior through studying their CIM, the research question will be:

What is the correlation between the environment and Children Independent Mobility in El-Zabbaleen informal settlement with respect to children demographics?

Sub Questions:

1.1. How much independent mobility does children of El-Zabbaleen enjoy with respect to their demographics?
1.2. How do children use their independent mobility spatially in the urban environment?

2.1. What are the physical and social variables that influence children's and parents' environmental perception impacting children independent mobility?

1.1.5 Objective

The first research questions focus on CIM extent indicated by 'licenses holding' and spatial manifestation by CIM range while the second focuses on children and parents' relevant environmental perceptions impacting CIM. As a result, the objective of this research is to investigate the environmental correlates of CIM, their extent of impact, their direction of impact whether positive or negative and how they are interrelated.

1.2 Research Methodology

1.2.1 Research Approach and Design

In order to answer these questions, the research adopted a mixed-methods approach with an explanatory sequential design. The first phase of the data collection uses quantitative methods in order to answer research question 1.1. It measures the amount of freedom, allowed by parents and realized by children, experienced in their outdoor mobility and activity.

Phase two uses qualitative methods to describe and clarify phase 1 findings and answer research questions 1.2 and 2.1. It studies the spatial range of children's practiced freedom and its conditions. Where do they go, with whom, how and why? Also, it describes children's and parents' environmental perceptions that either hinder or motivate parent's granted permissions and children actualized CIM. The findings of both phases colligated delineate the environmental and demographic correlates of CIM.

1.2.2 Literature Review

Being an urban planner, with no background in child psychology or social sciences, and interested in studying children environment behavior to promote child inclusive, pro-development urban policies and practices, a substantial research in developmental and environmental psychology and environment-behavior studies was mandatory. The study was conducted in a multidisciplinary manner. It researched the innate processes of children behavior and development paired with many empirical studies of children place experience to create a comprehensive framework for the research.

The narrative review represents a subjective chronological development of the research process based on curiosity and logic. It started from broad concepts describing children development, the role of the environment and their

transactional relationship. Then narrowed down to the research main focus which is children environment behavior embodied in CIM and activity determined by environmental perception.

CIM focuses on children's unsupervised travel using parents' granted licenses, visited destinations, spatial ranges and temporal factors as study indicators. In order to understand the influencing correlates of CIM, one cannot solely examine mobility licenses. The spatial range of CIM must be investigated adopting from the framework of territorial range concept. It highlights how children use their granted freedom. Destinations they go to and relevant conditions to be able to understand their environmental fears and motivators. Only then the environment that impacts children's and parents decisions towards CIM can be holistically understood.

1.2.3 Data Collection and Analysis

The first phase of the data collection carried out children's and parent's questionnaires and drawing activities. 94 student between the ages of seven and twelve participated in phase 1 with 65% of their parents (n=61). Phase two conducted mapping activities and teachers', parents' and children's interviews with twelve children, a single caretaker and seven teachers.

The data analysis of the first quantitative phase employ statistical procedures measuring children's CIM licenses and index. The second phase concerned more with the qualitative aspects of CIM ranges and influential variables follows a thematic analysis approach. The obtained raw data from the different transcribed interviews are to be coded then classified into broader categories looking for re-occurring themes that are grounded in the proposed conceptual framework.

1.3 Outline of the Thesis

After the introduction, chapter 2 will be reviewing the relevant literature tackling children development, ascribed children-environment transactions and environmental behavior in the outdoors. Chapter 3 will introduce the reader with the conceptual framework concluded from the literature structuring the forthcoming findings and discussion. Then the outlined international theories and methodologies will be emperically applied on Cairo's informal settlement, El-Zabbaleen village. Chapter 4 will include the field research methodology

after describing objectively the area of investigation and the associated sample. It will portray also the findings which answers the first two research questions. Chapter 5 will introduce the discussion which links all the previously acquired findings and simultaneously answers the research question. The last chapter will summarize the findings linking them to the initial conceptual framework. It will propose helpful implications for CIM future research and recommendations for urban planners and practitioners.

Children-Environment Transactions

2.0 Introduction:

Children's presence in the urban public realm started to come under critical observation in the mid 1950's. Studies for children's rights as human beings, their political status, economic roles within their communities and contribution to the consumer culture was widely scrutinized in social and legal discourse (Aries, 1960; Elder et al., 1993; Hart, 1997; Qvortrup and Mouristen, 1998, cited in O'Brien et al., 2000). In the late 1970's, children's perception and experience of their urban settings and potential for change as active agents has been described by urban planners like Kevin Lynch in *Growing up in Cities,* 1977, Colin Ward in *Child in the City,* 1978 and Robin Moore in *Childhood's Domain,* 1986.

Their research among others provided the foundations for studies on children's use of urban space (Malone & Rudner, 2011). However, most of the children-environment research has been dominated by Western Euro-American theory and practice where relevant knowledge in the developing world remains underdeveloped and overlooked (Malone, et al., 2017). This review explores the cross-examined theory and applied methodology in children-environment research in a developing country setting customizing a context specific conceptual and methodological framework.

2.1 Children's Rights to Development:	2.2 Children Ecological Development:
2.1.1. International Children Rights Law	2.2.1. Developmental Psychology
2.1.2. Children Rights-Based initiatives	2.2.2. Environmental Psychology

Children Development as an outcome of Children-Environment Active Interaction

2.3 Environment Behavior Studies:	2.4 Children Independent Mobility:
2.3.1. The Confluence of Psychology with Urban Studies	2.4.1. Research Objectives and Approaches
2.3.2. Children in the Outdoors Environment	2.4.2. Research Methods

Figure 2.1— Literature Review Sub-topics.
Source: Author

Hence, a wide body of literature will be reviewed within this chapter attempting to understand 'Children Development as an Outcome of Children-Environment Active Interaction.' Figure 2.1 represents how the chapter topic is divided into subtopics that structure and guide the study of the pertinent literature. The narrative review represents a subjective chronological development of the research process conducted by the author based on personal logic and curiosity. It originates from the urge of understanding the definition and process of children development, how it occurs within context and its correlation with the environment motivated by the author's urban background. First section starts with studying children's presence in the urban domain as human beings with responsibilities and equal rights. It focuses on children's right to development and implications for policy, planning and practice.

In order to understand the concept of ecological child development, section two will deploy developmental and environmental psychology. It underscores the evolution of the topic of children-environment relationship in social sciences. Then, section three discusses environment behavior studies to conclude the confluence between developmental and environmental psychology and space design practice. It reflects the impact of children interaction with their outdoor environments on their cognitive, physical and socioemotional development.

Environment-behavior studies categorized children's environments in order to study their behaviors accordingly. Studies related to children's neighborhood environments compromise Territorial Range and Children Independent Mobility concepts which will be studied thereafter in section four. Section four will be mainly focusing on Children Independent Mobility research comparing the initial

purposes, approaches, used methods and influencing variables to understand the field controversies and gaps. This section contributes to understanding the conceptual framework supporting existing child friendly cities practices and initiatives portrayed in section one.

2.1 Children Rights: Right to Life, Survival and Development

The First theme to be addressed and analyzed is concerned with children development in the urban context. It describes children endorsed right to life, survival and development and global as well as local efforts to realize this right. The topic of children's right to development in the legal discourse will be tackled in two ways. First, through international children's rights law advocated by the United Nations Convention on the Rights of the Child (CRC) and the subsequent efforts to legally promote and enact the law. Second, through urban planning and relevant policies and programs to carry out the rights-based agenda of the Convention developed framework. The two most far reaching initiatives in this regard are the UNESCO research project Growing Up in Cities (CUIC) initiated by Kevin lynch, and Child Friendly Cities (CFC) program initiated by the UNICEF to ensure the implementation of the CRC on a city scale level (Riggio, 2002).

2.1.1 International Children Rights Law

The child shall be given the means necessary to enable him to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner and in conditions of freedom and dignity. (Peleg, 2019, p. 41)

The first principle in the first draft of the UN initial Declaration on the rights of the child in 1959 that was succeeded later by the unanimously ratified Convention on the Rights of the Child (CRC) in 1989 (Peleg, 2019). Noam Peleg in his book *The Child's Right to development* displays a systematic review of the history of protecting children's development in international children's rights law and a chronology of the drafting background of the UNCRC. His main aim was to develop a framework[1] for the interpretation of the child's right to development.

1   The proposed framework holds three key principles; first a hybrid conception of childhood which integrates the human being concept demanded by the child liberation movement in the 60's and 70's and the human becoming concept established by develop-mental psychology. Second principle is respect for child agency, participation and active role in decision making. Third, a clear distinction between the right to development as a separate human right adopted in article 6 and as a guiding principle for the convention covered in five of its articles in eight developmental domains; physical, mental, moral, social, cultural, spiritual, personality and talent and is widely acknowledged and applied in practice and policies (Peleg, 2019).

Peleg was very keen on elaborating how the children right to development in specific bypassing life and survival has developed in the course of legislation historically. However, Elaine Sutherland's article was more holistic assessing the different components of the right and their ontology. The child right to life, survival and development most latent strength according to Sutherland lies in its capacity to synthesize two long standing divisions in the human rights arena (2015). It bridges the gap between civil and political rights (CPR) embedded in life and survival and economic, social and cultural rights (ESCR) resting in the development part (Ibid).

Children's economic, social and cultural rights involve guaranteeing a standard of living taking into consideration a minimum income level, suitable housing and access to health care and education adequate to children physical, mental, spiritual, moral and social development. These rights are among others that address children's right to play and access to leisure and cultural facilities (Gordon, et al., 2007; UNICEF, 1990; Bartlett, 1999).

However, some western notions claim a hierarchy of rights where CPR rank higher in judiciary priority than ESCR (Sutherland, 2015; Gordon, et al., 2007). According to Sutherland, the Vienna declaration strictly proclaimed human rights to be 'universal, indivisible and interdependent and interrelated' (2015, p. 286). And continued to support the International Covenant on Economic, social and Cultural rights (ICESCR) approach in evading ranking of rights and focused on pace of realization inspired from the notion of progressive realization and maximum available resources (Ibid).

On the other hand, David Gordon disapproves of this progressive realization approach justifying that some rights are clearly more important than others. He claimed a long practiced distinction in favor of CPR established in most countries legal systems over ESCR which are crucial not only for development but poverty elimination and health improvements. He stated that a right's based strategy will increase child survival in part by reducing child poverty only if some rights are prioritized over others (2007). So the question remains, in the context of developing countries and disadvantaged areas, whether children's ESCR crucial to improvement of survival rates and development should become a priority to some CPR? Or it should maintain same priority and be considered as a goal progressively realized with the maximum available resources and its full

implementation to be kept as an aspiration?

2.1.2 Children's Rights-based Initiatives

Addressing children's rights not only in the constitution justiciable section, but in a country wide urban policy, planning and practice constitutes the main challenge. This thesis supports that children's economic, social and cultural rights should be prioritized for children development and survival not only through social provisions but also the upgrading of their urban space.

> *Attention to the challenging environments of urban children has not been a priority on the agendas of either local governments, international agencies or organizations focused on children's welfare. This critical concern tends to fall between the cracks – organizations and agencies that focus on children respond more often with social services and interventions; those that deal with the material aspects of urban life generally have little awareness of the needs and priorities of children and young people (Bartlett, 2002, p. 7)*

Sheridan Bartlett, commenting on the CRC ratification and domestic level implementation, highlighted how children's needs are usually ignored in urban policy and practice impairing children development (1999). Even though, children's 'everyday living environments' play a significant role in their immediate health and well-being and long term development and it is their legal right to an adequate standard of living, this concern usually seems to fall into the oblivion. However, the GUIC project carried out by Lynch in 1976 and the CFC Initiative by the UNICEF in 1996 are rare exceptions among other researches putting children in the forefront and involving them (Bartlett, 2002).

GUIC project main aim was to explore the effects of economic-led urban development on children environmental experience in underprivileged neighborhoods. It developed a set of methods to understand children's perception and use of their surroundings. The research was also keen on documenting children's ideas for change (Lynch, 1977; Chawla, et al., 2012). Louise Chawla, environmental and developmental psychologist, adopted the project in 1997, updated its methodology and expanded the scope to include more countries.

Chawla's research was committed to taking the project to the next level of engaging children to actually realizing some of their ideas making this action-research process an ongoing opportunity (Chawla, 1997). Both projects were trailblazing

in combining experience in social research with city planning and design where it involved architects, planners, geographers, psychologists, anthropologists, educators, community organizers and social workers (Ibid; Lynch, 1977).

CFC Initiative promotes children's participation and engagement to improve the conditions of their living environments and create friendly and sustainable cities (UNICEF, 2018). Eliana Reggio, the coordinator of the CFC secretariat, explains the concept of CFCI to create a system of governance that ensures the complete implementation of the UNCRC. The purpose of the initiative is to translate the commitments made at national level by countries that ratified the convention into action at the city scale level (Riggio, 2002). Both studies with a twenty year gap highlight the importance of children's participation and active role in proposing changes relating to their urban environments.

2.2 Children Ecological Development:
Through the Lens of Psychology

Social attitudes towards children and childhood influence the ways in which law treats children. But law, as a powerful social instrument, also has a pivotal role in the institutionalization and conceptualizing of childhood. (Peleg, 2019, p. 15)

Peleg in his study rigorously established the connection between the ways the childhood is conceived, referring to key theorists' concepts of childhood and development, and the type of legal protection given to children development accordingly. He further emphasized the role of developmental psychology in dominating and directing the social and legal perceptions of childhood since the late 19th century (Ibid). It included a wide range of theorists that guided the understanding of children developmental stages in different domains.

Erikson was leading the front in psychosocial development, Piaget's revolutionary ideas about cognitive development was the basis for most legal, social and spatial discourse, Vygotsky provided a complementary framework to proximal development and many more to mention. This section will focus on defining the meaning of child development and ascribed children-environment transactions through the lens of developmental and environmental psychology.

2.2.1 Developmental Psychology

Developmental psychology describes the growth of humans and relevant behaviors across all ages consisted of physical, emotional, social, cognitive, perceptual and personality development (Blake & Pope, 2008). One of the most influential theories conceptualizing children's socio-emotional development as well as immediate milieu and its role in shaping the identity and growth of maturity in an individual's life was established by Erik H. Erikson.

Erikson divided human psychosocial development into eight sequential, overlapping stages that occurs organically since birth to death (Batra, 2013). His theory entitled "The Life Cycle" is outlined in his book *Identity and the Life Cycle*, 1959. Erikson believes that the human life cycle does not evolve independently but through a complex interplay of internal and external forces that influence an individual's performance in each stage of his life cycle. Internal forces refer to intrapersonal processes like temperament, interest and emerging maturity while external forces refer to interpersonal encounters taking place in school, with family, or the community (Ibid).

Each life stage frames a 'crisis' where the child experiences a new hurdle that if s/he being privileged with the proper internal and external forces succeeds to pass, acquires the 'virtue' of the intended stage (Erikson, 1959). A crisis here is not aiming at its catastrophic meaning but as a turning point for the better or worse (Batra, 2013). The 'virtue' or the 'adaptive strength' that is achieved from graduating the imminent crisis determines the degree of maturity of the evolving personality qualifying access to the successive stage with its pertinent crisis (Ibid). The stages of psychosocial development are outlined below in table 2.1.

Since this research aims to analyze children's environment interaction, school age stage with its crisis of 'industry versus inferiority' will be the studied phase. This phase represents children's first encounter with the outer world flying off their sheltering home and integrating within the society. Erikson described personality to be formed at the first stage around the belief of 'I am what I am given' to 'I am what I will' in the second stage and 'I am what I can imagine I will be' in the third. The fourth stage, the target of study, shapes towards 'I am what I learn' (1959). The child at this stage wants to watch and learn how things are done and if s/he are lucky enough, they would live on a busy street with lots of people and children enabling lots of interaction and learning opportunities (Ibid).

Stages (in years)	Psychosocial crises	Radius of Significant relations	Virtues
Infancy 0-1.5	Trust vs. Mistrust	Maternal person	Hope
Early Childhood 1.5-3	Autonoy vs. Shame	Parental person	Will
Play age 3-6	Initiative vs. Guilt	Basic family	Purpose
School age 6-12	Industry vs. Inferiority	Neighborhood, School	Competence
Adolescence 10-24/26	Identity vs. Identity confusion	Peer groups and out groups, Role models	Fidelity
Young adulthood 18/22-40	Intimacy vs. Isolation	Partners in friendship, sex, competition	Love
Adulthood 30-65	Generativity vs. Stagnation	Divided labour and shared household	Care
Old age 55-60+	Integrity vs. Despair	Mankind, my kind'	Wisdom

Table 2.1— Erik Erikson Stages of Psychosocial development.
Source: Batra, 2013

The radius of significant relation at this stage would be school and local neighborhood. Within this radius children wants to prove themselves through being able to make things and to feel useful winning recognition of their parents, teachers, peers... etc. This is what is called 'the sense of industry', feeling productive and competent. If the child fails for any reason at this stage to accomplish themselves, a sense of inferiority and guilt arises (Erikson, 1968). Besides occupation, play at this stage is considered vital to the child advancing a sense of mastery and control (Erikson, 1959).

Through play and exploration a child discovers and engages with his/her own surroundings developing competence, environmental knowledge and sense of mastery (Moore, 1986). Erikson aligns with Piaget in many of their developmental views. Piaget is another key theorist whose ideas were avant-garde in the field of cognitive development drawing the road map for many generations of psychologists, sociologists, anthropologists, medical professionals, counsellors and educators to come (Blake & Pope, 2008). Piaget stressed on the importance of children's autonomy and ability to do and experiment things independently in order to learn and grow up into creative individuals (Ibid).

Piaget's cognitive development is based on how knowledge is acquired,

constructed and used through children's ability to mentally represent the world around them. Children structure their newly gained knowledge into what he called 'schema', then either 'assimilate' with prior knowledge or transform their existing knowledge to 'accommodate' to the new data (Blake & Pope, 2008). He outlined four stages in cognitive development: sensori-motor, pre-operational, concrete operational, formal operational.

The first two stages children learn by using their five sense and moving their bodies. They start understanding the permanence of objects, learn languages and think symbolically. The concrete operational stage children starts to think logically and organized but in a concrete way (Blake & Pope, 2008). This research cohort corresponds to the concrete operational stage, from seven to eleven, where children are capable of logical thinking, expressing themselves, thinking symbolically and can read signs and maps.

Piaget and Erikson both agreed that 'human development occurs according to a genetically predetermined sequence of stages' (Moore, 1986, p. 12) determined by the child's interaction with his immediate environment. The word environment in developmental psychology commonly referred to the social environment not to the physical environment. Piaget treated it as a contributing factor to development while Erikson dealt with it as the main driving force alongside the intrapersonal genetic dispositions (Kyttä, 2003).

A shift in focus from the usual progressive stages of perception, thinking and learning to their essence-what is perceived, thought about, or acquired as knowledge, and how the nature of this content changes as a result of a person's interaction with his social, physical and symbolic environment was forged by Urie Bronfenbrenner (1979). Bronfenbrenner contextualized development differently where his theory was dedicated to exploring the underlying ecological forces- contextual systems of interaction, their interconnections and their role in psychological growth. In Bronfenbrenner's volume *Ecology of Human Development*, an unorthodox theoretical perspective in human development research is introduced re-defining the developing person, the environment and the interaction between both.

According to Bronfenbrenner, human development occurs as a result of dynamic escalating interactions between the growing person and the people, objects and

symbols in his/her ecological environment (1994). The interaction must be of a frequent, temporally extended nature and is termed "proximal processes". Proximal processes is considered an outcome of the growing person's innateness, the ecological environment both direct and indirect where the interaction takes place and the nature of the considered developmental outcomes (Ibid). The ecological environment is a set of concentric systems each inside the next starting with the inner most level to the outer most. These structures are named as follows; micor-, meso-, exo-, macrosystem (see figure 2.2).

Figure 2.2— Bronfenbrenner Ecological Model of Human Development.
Source: Bronfenbrenner, 1994

'A microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics' (Bronfenbrenner, 1979, p. 22). A mesosystem compromises two or more reciprocate microsystems in which the developing person actively exists. The exosystem compromises two or more settings in which the developing person does not actively participate but what happens in one of these settings has an effect on the person's direct environment (Kyttä, 200).

The macrosystem encompasses the other three systems binding them by the collective culture, sub-culture along with any belief system or ideology (Kyttä, 2003; Bronfenbrenner, 1994). Although Bronfenbrenner described thoroughly the ecological environment in which interaction takes place, he portrayed it as a vessel that contained the proximal processes but did not delve into its functional properties or attributes that impetus these processes.

According to Kytta, an urban planner dedicated to understanding children-environment transactions, Bronfenbrenner ecological schema leaves the physical environment at a broad generic level focused mainly on the sociocultural context (2003). Developmental psychology approach towards the role of the environment in children development and behavior has been scrutinized by many theorists.

First, the weight of environmental factors in comparison to genetic disposition turned into an ongoing conundrum between nature- personal innateness versus nurture- external factors (Ibid). Second, the focus on social environment and pronounced negligence of the physical environment in which a child grows provoked another debate. Third, the environment in the field of traditional psychology has been repeatedly examined through the lens of perception treating it as a mere artefact neglecting its objective presence and role in stimulating children's interaction and behavior (Bronfenbrenner, 1979).

This has been emphasized by Bronfenbrenner when he mentioned "This is the thesis, expounded by psychologists and sociologists alike, that what matters for behavior and development is the environment as it is perceived rather than as it may exist in "objective" reality" (1979). The latter critique can be applied not only to developmental psychology but most fields of psychology including environmental psychology. This was highlighted when Wohlwill stated that the environment does not exist only in people's minds disapproving studying intrapsychic social constructs without environmental representation (Heft, 1988). Hence, the next section explores environmental conception in children-environment interaction in the field of environmental and perceptual psychology.

2.2.2 Environmental Psychology and Ecological Perceptual Psychology

Environmental psychology is the field of psychology that emerged during the late 1960s studying the transactional relationship between individuals and their environments and how they mutually and reversibly impact each other (Spencer &

Wooley, 2000; Altman & Stokols, 1987). Altman, an environmental psychologist, classified psychological theories and approaches into four categories according to the world views: trait, interactional, organismic and transactional (Kyttä, 2003).

Transactional research is the category that emphasizes the individual, the environment and their reciprocate relationship as an integrated entity that cannot be disjoined or decontextualized (Ibid). Environmental psychology transactional approach stresses on the active balanced roles of both entities where individuals are seen as active agents that appropriate and change in their environments and in the same time as receptive ends that are impacted by changes in their environments. The physical and social environments either stimulates or hinders people's interactions among each other and the material world (Ibid).

More substantial contributions to the research of transactional psychology is introduced by Gibson's ecological perceptual psychology theory of affordances which has been repeatedly borrowed by environmental psychologists (Altman & Stokols, 1987). The concept of affordances is the mostly referenced in perceptual psychology and acted as the backbone for many children-environment research. The term was coined by James J Gibson in his book *The Senses Considered as Perceptual Systems* in 1966 and later developed and redefined in his other book *The Ecological Approach to Visual Perception* in 1979/1986 (Kyttä, 2003)

> *The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment. (Gibson, 1986, p. 127)*

Gibson's theory developed from the early 1950's to the late 70's. He was against 'dualism' where a person and his environmental cognition cannot be studied decontextualized as in Piaget's work (Kyttä, 2003). He presented the individual and the environment as one inseperable entity enjoying a complementary relationship as demonstrated in figure 2.3.

Gibson stresses that affordances reshape according to users. What a stair affords an adult is not what it affords a baby. Affordances are personally specific and are not abstract physical properties (1986). He illustrates a whole spectrum of

affordances available in the various constituents of the environment; substances affords manufacture, surfaces affords posture and locomotion, a group of surfaces layout can provide shelter and other humans provides reciprocate interactions in complex forms (Ibid). Some of these affordances can be positive providing benefit and use and others negative affording injury and harm depending on the user.
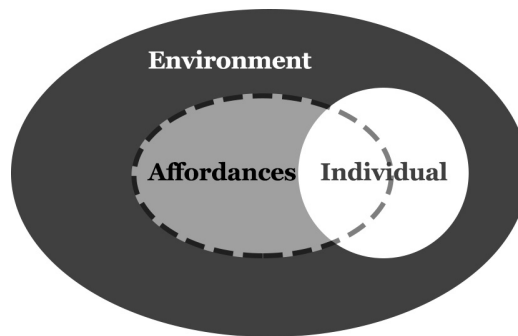
Figure 2.3— Affordances based on the person-environment relationship nondualistic view of Gibsonian theories.
Source: Kyttä 2003.

Gibson viewed the person-environment relationship as an immediate reaction stemming from spontaneous actions where a person directly perceives the object and its relative function (1986). In affordances, perception is the key constituent- to perceive a medium, substance, surface or other beings is to perceive what they afford. Hence, the meaning and value of things lie in their functions that are directly perceived (Gibson, 1986). Perception in ecological perceptual psychology is considered goal oriented which means that it is viewed as an active experience, in which mobility is the mediator to exploring new information. 'We must perceive to be able to move around, and we must move around to be able to perceive' (Gibson, 1979 as cited in Kytta, 2003, p. 30). Action and mobility reveals new information resulting in perception, perception leads to discovering affordances, affordances stimulate new action which initiates more perception and new affordances and the cycle goes on creating a progressive process of interaction and environmental cognition (Ibid).

On the other hand, traditional perceptual psychology, the mainstream framework describes perception as an indirect construction of meanings (Kyttä, 2003). Consequently, perception is a multi-leveled successive process based on interpretation and comparison of newly perceived information with prior knowledge (Ibid). Opposite to direct perception and monism of the ecological approach, the traditional approach claims man-environment dualism and

indirect perception as a form of cognition.

Ulric Neisser, a prominent cognitive psychologist critically building on Gibson's theories, proposed a merged framework of both approaches conceptualizing perceptual processes[2] (Ibid). This integration directed Neisser's early works since his 'Perceptual Cycle Model' in 1980 to his 'Multichannel Model' in 1994. Neisser visualized the 'Perceptual Cycle' as in figure 2.4. It complements the indirect traditional perceptual psychology with action and mobility of the ecological perceptual psychology (Kyttä, 2003).
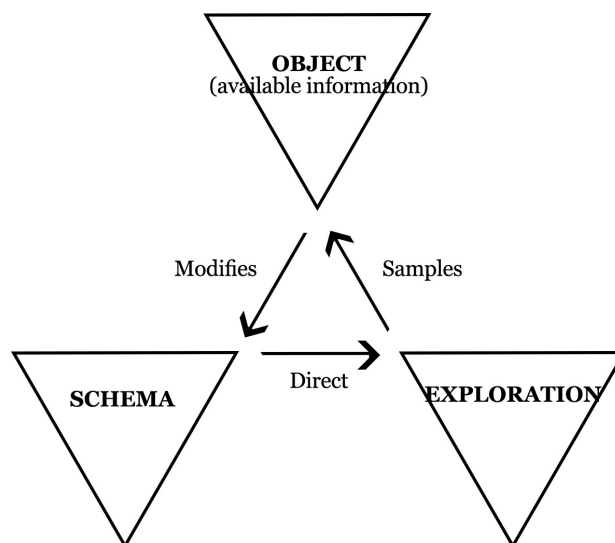
Figure 2.4— Perceptual Cycle Model.
Source: Neisser, 1976.

The perceptual cycle reveals environmental cognitive processes in which the perceiver learns to anticipate information s/he actively explores in her/his available surroundings by moving to be visible within the eye sight. The anticipated information is based on already existing structured representations 'schema' that directs the active exploration. Exploration samples new information of the observed object or situation which consequently validates or modifies the existing schema accommodating reality and directing further exploration revealing new information (Neisser, 1976). This cognitive process can easily be traced back to Piaget's ideas of how children structure their newly gained knowledge with existing representation through either 'assimilation' or 'accommodation'.

_____

2   Neisser's (1989) merged ideology refers to direct perception as the "where" system and to the object recognition as the "what" system. The "where" system requires an active environmental engagement for spatial orientation and movement and the "what" system needs information for structuring and identifying the reality of objects and events (Ibid).

Although Gibson attributes affordances to perception, he opposes the idea of representation or schema. He prefers not to separate the environment from the internal cognitive processes where the environment becomes an abstract image constructed in the human mind. The idea of acquired information modifying prior knowledge contradicts his direct perception which refuses the time factor; building cognition on past experiences. Gibson described 'there is no dividing line between the present and the past, between perceiving and remembering' (Kytta, 2003, p. 41).

What Neisser contradicts Gibson on is the nature of perception. Gibson sees perception as a direct process that's core value is defining objects functional properties while Neisser's vision postulates more than this (Ibid). He believes in a combined framework where in some situations resorting only to senses whether visual or motoric is not sufficient but one needs prior experience (Ibid). Neisser gives an example, that looking at a phone or a mail box, one would not directly know its function without object recognition rooted in earlier knowledge.

Kytta followed in the footsteps of Gibson and Neissr in her study *Children in Outdoor Contexts* to develop an assessment model for child friendly environments analyzing the transactional children-environment relationship. Kytta's research has remarkably influenced this thesis conceptual framework and methodology. She described the development of children-environment relationship as illustrated in figure 2.5 (Kyttä, 2003).

PHYSICAL & SOCIAL ENVIRONMENT

-Positive Affordances
-Negative Affordances

Modifie   Samples

ECOLOGICAL REPRESENTATION   Direct   **ACTION AND MOBILITY**

-Cognitive
-Emotional
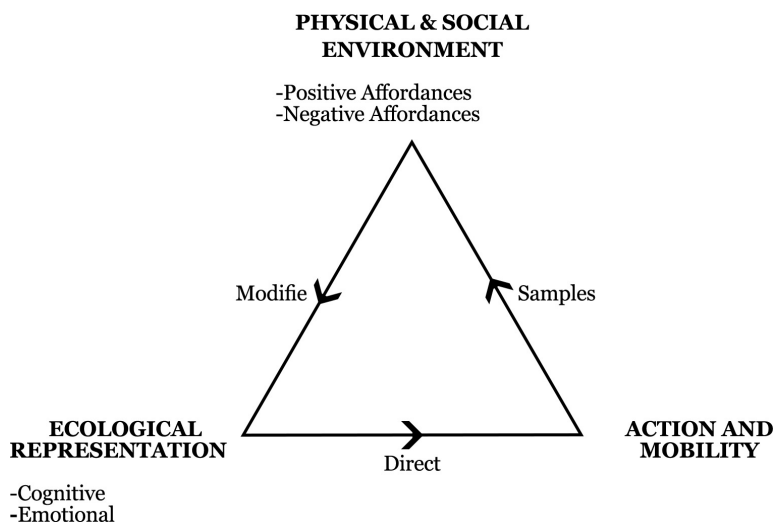
Figure 2.5— The Development of Children-Environment Relationship.
Source: Kytta, 1997.

Another revolutionary environmental psychologist that has taken after Gibson's work and developed it is Harry Heft. He inspired many children-environment researchers and enthusiasts including Kytta who used his affordances taxonomy and examined it in various environments (Elhusseiny, 2016). Heft proposed an alternative language to describing children's environments according to their function rather than their form using the theory of affordances. He described the affordances of an environment as its 'functionally significant properties' perceived by the individual.

Heft reviewed a variety of children-environment studies applying the concept of affordances concluding a set of functional characteristics of these environments (1988). From these studies were *One Boy's day* by Barker and Wright, *Childhoods Domains* by Moore, *Children's Experience of Place* by Hart and others (1988). Hart and Moore studies will be reviewed in the coming section. As a conclusion, Heft created a functional taxonomy of environmental affordances composed of ten categories (Elhusseiny, 2016) (see Table 2.2).

Variances	Affordances	Variances	Affordances
1. Flat, relatively smooth surfaces	☐ Affords walking, running ☐ Affords cycling, skating, skateboarding	6. Climbable feature	☐ Affords exercise/mastery ☐ Affords looking out from ☐ Affords passage from one place to another
2. Relatively smooth slopes	☐ Affords coasting down ☐ Affords rolling, sliding, running down ☐ Affords rolling objects down	7. Aperture	☐ Affords locomoting from a place to another ☐ Affords looking and listening into adjacent place
3. Graspable/ detached objects	☐ Affords drawing, scratching ☐ Affords throwing ☐ Affords hammering, batting ☐ Affords spearing, skewering, digging, cutting ☐ Affords tearing, crumpling, squashing ☐ Affords building of structures	8. Shelter	☐ Affords microclimate ☐ Affords prospective/refuge ☐ Affords privacy
		9. Moldable material (dirt, sand, snow)	☐ Affords construction of objects ☐ Affords pouring ☐ Affords modification of its surface features

| 4. Attached objects | ☐ Affords sitting on
☐ Affords Jumping on/ over/ down- from | 10. Water | ☐ Affords splashing
☐ Affords pouring
☐ Affords floating
☐ Affords swimming, diving, boating, fishing
☐ Affords mixing with other materials to modify consistency |
| 5. Non-rigid, attached object | ☐ Affords swinging on (e.g. tree branch) | | |

Table 2.2— Heft Functional Taxonomy of Environmental Affordances.
Source: Elhusseiny, 2006.

Heft stressed substantially on the role of the physical environment in children-environment interaction. He promoted children ecological development, where according to Kytta the physical environment was restored into the field of environmental psychology, supported by ecological perceptual psychology as a theoretical basis (2003). Heft acknowledged Joachim Wohlwill as one of the environmental and developmental psychologists who insisted on the physical environment leverage in children environmental behavior and development.

Heft described Wohlwill's theoretical and professional contributions to the field of environmental psychology as well as Environment-behavior studies in his article *Joachin F. Wohlwill (1928-1978) His contributions to the Emerging Discipline of Environmental Psychology*. It highlighted Wohlwill's effort to outline empirically the environmental description that influence children environmental curiosity, exploration and aesthetic preference (1988). This literature helped this study to sharply consolidate the correlation of the physical environment with children perception, interaction and development.

Wohlwill's rigorous stance towards the objective approach in understanding the environment independently from intrinsic cognitive processes was a byproduct of the mainstream environmental psychology attitude in the 1970's and early 80's (Heft, 1988). It was dominated by examining it from the user's perception and how it exists in the head instead of its bare reality. He explained that understanding people's perceptions and behaviors towards their environments only without a clear objective description of it, the environmental features and their interrelations that produce these behavioral patterns remain unknown and might result in very predictive outcomes (Ibid).

Wohlwill's perspective influenced the research approach in which an independent description of the physical environment will be the starting point fundamental

to outline the spatial dimension of the studied area. Afterwards, the subjective functional description of children's places will represent their perception of their neighborhood. This will help integrate the children's experience of their environment with the spatial environment functionally visible to the reader. Then the described places will be analyzed in how they are perceived to afford or restrict children's autonomous mobility to conclude implications for future urban planning reasearch and practice.

2.3 Children Environment-Behavior Studies

Wohlwill conception of the relation between the physical environment and children development differentiated between showing the environment as a 'source of stimulation for the developing child' and the environment as a setting for studying children's behaviors. He also proposed a united framework that combines both approaches of developmental processes (Heft, 1988).

Heft described that based on this integrated approach, Wohlwill eagerly started studying the link between environmental conditions in children's settings and the relevant behavior and developmental processes (1988). Wohlwill expressed that this concern paved the way for a possible integration between environmental and developmental psychology (Ibid). Moreover, his developmental psychology background that proliferated his studies relevant to ecological perceptual experiences focusing on the physical environment merged with his keenness on environmental problems and how can psychology take part in tackling them.

As a result, Wohlwill towards the late 80's started growing an interest in the interdisciplinary field of Environment- behavior studies (Ibid). This interest is reflected in his works on the environment and children development in two coedited volumes: *Children and the Environment*, volume three of the *Human Behavior and the Environment* series (Altman and Wohlwill, 1978) and *Habitats for Children* (Wohlwill and Van Vilet, 1985) (Ibid).

Children and the Environment is used as a fundamental source to illustrate the field of children environment-behavior in this section. According to Chawla in her systematic literature review similarly titled *Children and the Environment,* Altman and Wohlwill work is considered as one of the very first attempts consolidating this interdisciplinary field of study. It has evolved since the 1970's with particular attention to children's impact on the environment as well as the

physical environment impact on children's interactions and development (2012). It analyzes children's behaviors and related processes in a selection of different settings; natural, home, outdoors and school environments.

2.3.1 The Confluence of Developmental and Environmental Psychology

Joining the field of environmental psychology that studies the reciprocate relation between humans and environment with developmental psychology which is concerned with children's development, how it happens and factors of growth? Seemed like a sensible and inevitable premise but a faraway dream until reading the introductory chapter *The Confluence between Environmental Psychology and Developmental Psychology* in *Children and the Environment*. This chapter specifically brings together this thesis theoretical endeavors to a relief concluding and empirically introducing a hands-on framework.

The chapter outlines the multidisciplinary content of the book where the chapters of Gump- an ecological psychologist, Moore and Young- Landscape architects and Parke- a developmental psychologist complement each other (Ibid). Each researcher analyzes children's behavior and development in a certain setting; school environment, outdoor environment and home respectively. Moore and Young aim to provide useful information and recommendations within an ecological environment-behavior framework that supports child advocacy in decision making and urban planning. Since this study addresses children presence in the outdoor settings, Moore's and Young's chapter *Childhood Outdoors: Towards a Social Ecology of the Landscape* will be reviewed.

2.3.2 Children in the Outdoors Environment

Moore and Young used Hart's research as a primary source and was borrowed later in Moore's *Childhood Domains: Play and Place in Child Development*, 1986. In order to fully grasp the chapter, one had to read Hart's *Children's Experience of Place,* 1979 which constitutes most of the concepts of outdoor environment-behavior field. Hart's research represents one of the earliest contributions, based on the writer's knowledge, in the field of environment behavior studies. His main aim was narrowing the gap between modern urban children's environmental needs and decision maker's agendas without compromising children's freedom with designed public control (Hart, 1979). Hence, he examined children's behavior in the everyday setting in a one-on-one observation and developed a highly detailed field research methodology.

The chapter starts by investigating children's used and experienced environments described by Hart (1977) as the 'phenomenal landscape' (Moore & Young, 1978). Moore and young developed a basic model of the three realms of environmental experience a child undergoes simultaneously which control the development of his/her phenomenal landscape (see figure 2.6). These fields compromise the child's inner space, social space and physiographic space. The reciprocity between them results in children's representation of place (Ibid).

PHYSIOGRAPHIC SPACE

The landscape of objects, buildings,
people and natural elements

Use
Image
Memory
Schemata
Topophilia

SOCIAL SPACE

Human relationships
and cultural values

INNER SPACE

Physiological and
psychological life of the
individual
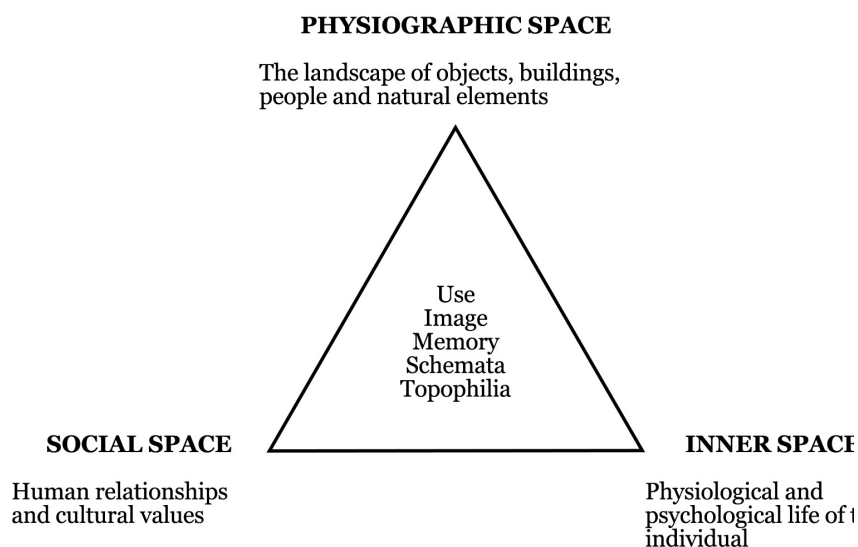
Figure 2.6— Model of Children's Realms of Environmental Experience.
Source: Moore & Young, 1978.

The chapter focuses on early-middle childhood from the ages of 5-12 in outdoor urban, suburban and rural contexts. It reviewed many sources that variably consider the three fields of children environmental experience in different spatial scales; play areas, residential district and neighborhood. Neighborhood scale making up the biggest share of children-environment research encompasses the complete territorial range of children all year long (Moore & Young, 1978). It is the spatial focus of this study outlining children's frequent actions and mobility within their local environments. Among the most prominent examples of this study scale is Barker and Wright's, 1955 study, Moore's *Childhood Use of the Urban(izing) Landscape* (CUULS) project and Hart's 1977 study.

In Moore's analysis of the outdoor environment behavior concepts, three extensive concepts were outlined, covering children's phenomenal landscape description; *territorial range, place and pathway* (See figure 2.7). This thesis

pays a significant attention to the pathway as a channel of movement and a destination without ignoring the importance of place which acts as a driver and attribute to the use of pathways. Moore explains that pathway and place are the 'generic concrete units' of range. Hence, this study focusing on both concepts as completing one another consequently addresses the territorial range.

Figure 2.7— Outdoor Environments Behavior concepts.
Source: Moore & Young, 1978.

Territorial range is an ongoing metamorphosing phenomenon that evolves relevant to the dynamic, complex human environment interaction. According to Moore, range evolution is divided into two overlapping processes; range extension and range development. He explained range extension as a discontinuous process that gushes with children's discovery of new places for the first time in their quest for exploration reshaping their range boundaries (1978; 1986). Range extension is associated with primary social events like starting school or kindergarten, owning a bicycle, using public transport or given permission to cross streets allowing the exploration of some used to be off limit destinations (Ibid).

On the other hand, range development does not refer to territorial breadth but more depth of the experience. It does not involve new discovery of new destinations but deeper involvement with the same place. 'With every repeated play episode, new possibilities are discovered, tested and verified and provide an accumulation of experience, knowledge and understanding of the environment that builds with time' (Moore, 1986, p. 18). The developmental potential of places

varies according to their "pull" factor, where some places are visited once and never again and others are visited repeatedly, every time having something to offer (Ibid). Range development may occur due to adult company during the journey, collective social constructs, changes that occur in the place itself (Ibid).

Stemming from the CUULS project and other sources, territorial range defines three levels of spatial involvement; *habitual range, frequented range and occasional range* (see figure 2.8).

Child's home

Habitual Range
More or less contiguous space right around the child's home, highly accessible for daily use; bounded by temporal, rather than distance and age constraints.

Frequented Range
Less accessible extensions of habitual range; bounded by physical constraints (partiularly busy roads) and parental prohibitions; expands with age, use of bicycles, availability of traffic-free routes and the presence of older children to travel with.

Occasional Range
Highly variable extensions of frequented range by foot, bicycle and public transport, dependent on child's personality, the degree of freedom and training offered by parents; the availability of traveling companions and the presence of arresting destinations.

Figure 2.8— Territorial Range Development.
Source: Moore & Young, 1978

The habitual range represents close to home territories of interaction. Frequented range takes place intermittently according to temporal aspects reflecting the flexibility granted by weekends and vacations to more distant places. Places like preplanned family or group trips and excursions to recreational complexes, swimming pools or parks. The occasional range include more distant places than the frequented range that are visited every once or twice a month. A group of studies were then analyzed to outline the overarching controlling factors of range development. These factors are: 1) *age and gender; 2) rural, urban and suburban contexts; 3) parental controls; 4) environmental fear; 5) covert equality; 6) temporal factors ; 7) the pull of the landscape.*

The factors which relate to this study are outlined hereafter. Among these, some of the most apt to the study is *age and gender*. Hart's study related *age and gender* to the *environmental contexts* and *parental controls*. He recorded children's maximum daily distances traveled from his geographic diaries measuring from it the average mean distance. The mean distance was then compared according to gender per age group where "Range Distance Sex Ratio", boys' score divided by girls' score, concluded that younger children enjoy more gender-based range equality where gender freedom injustice increases as age increases.

Complimenting Hart's *rural* ratios with Andersen and Tindall's *urban and suburban* study, Moore highlighted the environmental context factor identifying the degree of urbanity to be considered. The younger group's ratio in the rural and suburban contexts were almost the same while in the urban context was slightly higher (Moore & Young, 1978, p. 97). On the other hand, the older groups of the urban and suburban contexts represents closely variable ratios and the rural score reflected the most discrepancy possessing the highest sex inequality (Ibid). This implies that sex differences in range distances experienced in younger groups is irrelevant to the nature of the environmental setting while at older age groups the rural context signifies patent gender inequality.

This was asserted to a number of reasons, of which one is parental control. In rural contexts, it was associated with parent's fears over their girls, need to perform more near the house chores or cultural background as in the case of this thesis. Suburban girls were noticed to enjoy more freedom since house chores can relatively be shared with boys and suburban settings are believed to be safe.

Parental control is another factor incorporated by Hart in his studies and the CUULS project. Through his long term ethnographic studies, Hart was capable of decoding the social environment influences on children's developing ranges. Old girl siblings "mothering" role was seen beneficial to younger children as well as close relatives or neighbors acting as trusted companions for children. Also, status of the parents if they are working grants their children looser and more flexible restrictions. The order of the siblings mattered as well where the younger the child is, the more autonomy they enjoy relating to their parents grown confidence in their parenting skills and having older siblings as alternative supervision.

Hart defined three categories for restrictive range conditions inspired from

his stimulating ethnographic interviews where he asked children to mark their frequented destinations according to the following range restriction conditions. First, free range as places they are allowed to go to alone without asking for permission. Second is range with permission which are places they can go to alone but with permission needed and thirdly, range with permission with other children which is places they need company and permission to visit. The CUULS added a fourth condition which is range with related adults which is ranges they are not allowed to visit without adult supervision.

The fourth factor is *environmental fear*. In Hart's and CUULS study, parental control associated with environmental fear was discussed where the CUULS project highlighted a number of reasons to certain prohibited places. The mostly named was traffic danger then social apprehension including bullies, harassers and drunkards. The following fear was distrust in children's capabilities where they were considered too young or can get lost or the destination is too far then fear from physical environment challenges like stray dogs, garbage, heights and water bodies. Parents fears usually were seen over exaggerated compared to factual statistics and existing circumstances resulting in gender bias freedom.

Temporal factors is another important factor. CUULS compared the mention rates of 'favorite places to play' for children between after-school and weekends. Approaching the weekends implied an expected shift from habitual to frequented range where home range is commonly substituted with weekly family trips. T*he "pull" of the landscape* is the last factor discussed where each study e.g. Coates and Bussard, Hart and CUULS referred to different set of places that maintained children's interest ranging from off-site range extension, wild areas, lakes and rivers, woods, "hiding places", "Look out places" and all sorts of places that afforded quality and variety of activities and experiences. These distant and intriguing places share certain qualities.

Moore and Young lastly addressed outdoors environmental behavior from the physical environment aspect where *children's significant place elements* are identified, classified and ranked according to their mention rates and actual occurrences in the environment. The CUULS study graphic simulation data was the main reference where children where asked to draw all their favorite places for afterschool or weekend or summer activities. Seventy two place elements were recorded from the drawings that were later categorized into sixteen broader

categories. Among these categories, the highest mention rates were associated with children's home sites, people, natural vegetation, pathways, community facilities, open space and through streets respectively (Ibid).

Concluding the chapter, Moore and Young highlighted the overly indicated role of culture in children environment transactions that was not directly mentioned in literature. This implies the need for comparative, cross cultural and multi-scale children environment behavior studies. In addition, more theories relating to cultural dependencies are attributed to children's developmental processes afforded or hindered by their outdoor experience. They further anticipate cross cultural identifiable factors and correlations that can be collated, once enough empirical studies are incorporated in the research scene.

Children were tagged a vital function as experts of their environments in empirical research and decision making. Also, age and gender sensitive studies were seen as an important focus where boy's territorial range at all age levels are significantly higher than girls with variations according to the context. They, lastly highlight the most crucial and liable to application output which concern research conducted by single investigators like this ongoing study. The professional background and personal values developed from one's own personal biases and field experience shall be explicitly admitted and promoted for future research. Hence, distinguishing 'others' contributions and opinions for a different outcome from commonly prevailing hypotheses. These implications were keenly acknowledged in this study as an endeavour for a holistic integrated research.

2.4 Children Independent Mobility

Chawla *Children and the Environment* review provides a cross disciplinary overview for the study of children environment behavior and acts as a guiding toolkit for this study bibliography. It adopted Altman and Wohlwill's structure following the same spatial themes. In the neighborhood section, she highlighted the significance of the public space realm on children's development affording opportunities for play, exploration, independent mobility, accessing community services and granting interpersonal interactions in societies.

Chawla explained that children's freedom and ability to move around in their neighborhoods through walking, cycling or any other modes independently is recently a probed area of research that overlaps with studying children in

the outdoors (2012). It is characterized by its focus on children's levels of independent mobility, factors determining mobility modes and patterns and impacts on children's health, activity levels, environmental representations, social competence as well as intellectual and emotional development (Ibid). Quantitative and qualitative methods were used to measure the influential factors that determines children's levels of independent mobility.

She added that children's access to the outdoors topic tackles the concept of territorial range that describes children's spatial experiences exploring and moving around their neighborhoods independently or accompanied. It represents an inclusive approach considering the breadth and depth of children's experiences, not only travel patterns, modes and factors affecting their independent travel.

Chawla's review led to culminating this study focus and aim by introducing the concept of Children Independent Mobility (CIM) as one way of approaching children-environment behavior. Although, terriorial range is a broader concept, this thesis studies CIM and complement it with territorial range as an inseparable substance of study.CIM being concerned with children's freedom to travel around without adult superivsion as defined by Hillman will be coupled with the spatial range of practiced freedom to understand the relevant role of the environment.

In order to profoundly understand the definition of CIM, its measures and influential factors, two key authors where studied; Isabel Marzi and Karen Malone. Following different study objectives; both built up on Hillman's study, reviewed different research methods and highlighted the varying influences. Marzi and Reimers focusing on the impact of CIM on active living and children's health conducted a systematic review for relevant bodies of literature. They outlined the impact of the social and physical environment on CIM taking into account gender differences. On the other hand, Malone applied a sociocultural comparison reviewing global studies on CIM with the aim of examining different study focuses, methods, samples and relevant influences.

Marzi and Reimers acknowledged a change in children's travel behavior and decrease in CIM as a result of the physical environment and societal changes accompanying the urban sprawl and consequential increased motorization (2018). It resulted in more programmed outdoor play and longer travel distances. Hence, practitioners and researches of different backgrounds e.g. urban planners,

social scientists and health professionals worked towards promoting more child friendly cities and CIM due to its physical activity and health benefits (Ibid).

Marzi described the four indicators used to study CIM; license, destination, range and time. The license indicator reflects parents granted mobility permissions while the destination indicates realized permissions or actual destinations traveled by children. The range indicator determines children's territorial range of destinations and travel independently while the last indicator, time, reflects the time spent by children outdoors which is usually ignored and hard to identify (Ibid). CIM licenses usually overlaps with other indicators as it is predominant in identifying CIM. Measurement of CIM different indicators and their application in empirical studies is another key aspect (see figure 2.9).

Frequency of use in empirical studies: This is the origin of CIM in research and still most frequently used to determine CIM; e.g. used in an international study comparing CIM in 16 countries.	**Frequency of use in empirical studies:** Barely used in literature: to date, only for independent cycling and methodological studies
Measurements: -Questionnaire: *Mobility licenses*	**Measurements:** -Questionnaire: *Distance a child is allowed to cycle without adult supervision* -GPS -Mapping exercise

CIM license
"mobility licenses parents granted their child"

CIM range
"mobility licenses parents granted their children"

CIM destination
"mobility licenses parents granted their children"

CIM time
"mobility licenses parents granted their children"

Measurements: -Questionnaire: *Soft GIS, IM Index, Scale for Actual Mobility* -Geographic Diaries -Mapping exercise	**Measurements:** -Questionnaire: *Child is allowed to roam more than 15 minutes from home or not* -GPS
Frequency of use in empirical studies: Often used in empirical studies applying a wide variety of different measures and often combined with measures of CIM license	**Frequency of use in empirical studies:** Time as an indicator of CIM is barely applied and used in different ways, i.e. as territorial range and as a duration of time spent outside from home

Figure 2.9— CIM Indicators, Measurements and Frequency of Use
Source: Marzi & Reimers, 2018

In order to measure CIM licenses, a typical children and parent's questionnaire that has been verified by many researchers is used (Marzi & Reimers). The questionnaire developed by Hillman, used also for this study, is composed of six core questions; 'Is your child allowed to go to school alone?'; 'Is your child allowed to take public transport?'; 'Is your child allowed to cycle in the roads

alone?'; 'Is your child allowed to go out for leisure alone?'; 'Is your child allowed to cross main roads alone?'; and 'Is your child allowed to go out alone after the dark?' (Marzi & Reimers, 2018; Malone & Rudner, 2011).

To measure children CIM destinations and range other methods were proposed like mapping activities, travel diaries, go-along interviews and other modified questionnaires. And to measure the time spent outside objective methods like GPS, accelerometers, transports datasets, CIM range and single questions were used (Marzi & Reimers, 2018).

All the aforementioned methods were introduced earlier by environment behavior researchers like Hart, Moore, Lynch and many more and were redevised in the 90's specifically to identify children's mobility and territorial range in the lived space. The authors recommended a mixed-methods approach combining the subjective methods of traditional surveys and interviews with the objective methods of interactive mapping in research for integrated evaluation (2018).

On the other hand, Malone in her review noted that 55% of the articles reviewed used quantitative research methods, 21% qualitative while 23% mixed methods (2017). She similarly promoted the mixed-methods approach as it 'allows comparative measurements across studies with a deeper understanding of participant views as well as the symbols, representations, and interpretations that children's/young people's environmental relationships can present' (Ibid).

General trends in CIM were observed from the primary longitudinal cooperative research project by the Policy Studies Institute London (PSI) led by Hillman. It was conducted in 1971 in London, later in 1990 creating a cross cultural comparison between UK and Germany then in 2015 to include sixteen different countries (Malone & Rudner, 2011). Gender related differences were inconsistent depending on the context where age range was positively related to CIM.

Also, a continuous decline in CIM over the preceding two to three decades was evident reflecting a problematic relationship as described by Hillman (1997) between children and their urban contexts in western countries (Marzi & Reimers, 2018; Prezza, et al., 2001; Malone & Rudner, 2011; O'Brien, et al., 2000; Kyttä, 1997; Alparone, 2012). Different reasons were associated to the increasing decline in children's autonomy and development like increasing percentages

of car ownership, less walkable neighborhoods, parental safety concerns, busy parents and longer distances to destinations (Malone & Rudner, 2011).

In order to improve this withering children environment relationship and develop effective interventions for CIM, the authors needed to address the environmental determinants that influence positively or negatively CIM. However, not a single agreed on study design for evaluation of these determinants was introduced. Hence, these factors were considered as correlates according to Bauman et al. due to the limited number of probable studies (Marzi & Reimers, 2018). They were categorized based on Salli's socio-ecological model[3] of active living and are attributed to socio-demographic, social environment and physical environment correlates (see figure 2.10) (Ibid).

Physical Environment

Home environment:
Car ownership, bike ownership, dog ownership, dwelling type

School environment:
Distance from home, school-specific walkability

Recreational environment:
Parks

Neighborhood design:
Degree of urbanization, landuse mix, urban structure

Transport environment:
Traffic

Social Environment

Socio-cultural environment:
Confidenc ein child, parents encouragement, parentala rules, mobility licenses

Percieved neighborhood environment:
(parents and children))
Neighborhood safety, friendliness, fear of crime/ strangers, perception of traffic

Socio-demographic Characteristics

Age, gender, ethnicity, birth order, confidence, skills

CHILDREN INDEPENDENT MOBILITY

Health Outcomes

Physical

Psycho -logical

Social

Figure 2.10— CIM Correlates based on Sallis Socio-ecological Model of Active Living
Source: Marzi & Reimers, 2018

These interrelated correlates structure the research findings, categorizing the studied influential variables of CIM. The socio-demographic characteristics are like age, gender or background etc. and the social environmental correlates include parent's and children's perception of the neighborhood safety and traffic and stranger danger etc.The physical environment includes traffic, distances traveled, car ownership, population density, degree of urbanization, urban structure and neighborhood design etc. (Marzi, et al., 2018). According to the review, social and demographics correlates are usually considered more significant than the

3   In order to read more about the model please refer to https://www.researchgate.net/ publication/273353644_An_Ecological_Approach_to_Creating_Active_Living_Com-munities

physical environment in determining CIM licenses and destinations (2018).

On the other hand, in Malone's socio-cultural comparison in four Asian and African countries, CIM was proven correlated with the socio-cultural and physical characteristics of the local community (2011). This research investigates the role of the physical environment in CIM taking into account the social environment and children's demographics.It studies children's and parent's perception of the environment that reflects the correlates affording or hindering CIM.

Future directions and practical implications recommended by the authors resonates Moore and Young's proposing 'improved methodological approaches of CIM, as well as comparable measurements and prospective designs, to ensure standardization to enable a comparison of international studies, and to assess causal determinants rather than just associations between variables' (2018, p.10). They further stress on the importance of child friendly environments to promote CIM in the local neighborhoods where children are actively or passively able to travel alone. Child friendly environments mitigate parent's and children's perception of danger and support children's autonomous interaction with their physical and social environments.

The last part of the chapter analyzes the different aims and data collection methods carried out in CIM research reviewed for this study complemented with children environment behavior research (table 2.3). Studies included had to validate the following criteria: (1) Subjects are children of similar age range between 6-12 years old, (2)The data collection methodology and purpose is clearly explained, (3) The study was published after Hillman's research in 1990-the year he introduced the term CIM. Based on this analysis, the appropriate data collection methodology for answering this research main questions is formulated. It will be outlined in the coming section.

From the table, environment behavior studies in the top part seem to involve more qualitative methods focusing on children experience of place while CIM studies mixed both methods. It capitalized mainly on quatitaive data as a starter for measuring CIM. Then the studies that included a socio-cultural approach or focus on the environment as a variable included qualitative methods for more in depth information. Most of the methods used targeted children and parents as active participants capable of describing their environmental experiences and

Author	Date	Aim of Study… to explore/ describe/ investigate	Children Questnr.	Parent's Questnr.	Tests	Geographic Diaries	Drawing	Children Interviews	Parent's Interviews	Officials/ teachers Int.	Children Focus grps	Parent's Focus grps	Child-Led Walks	Behavioral Observa-tion	Photography
Lynch, K 1977	1977	Children's use and perception of their neighborhoods for policy recommendations					*	*	*	*			*	*	
Hart, R 1979	1979	Children environmental behavior understanding children experience of place			*	*		*	*					*	*
Moore, R 1986	1986	The role of play and place in child development for policy implications					*	*					*	*	
O'Brien, M 2000	2000	CIM in urban settings	*	*			*	*	*				*	*	*
Prezza, M 2001	2001	Correlation between psychosocial & environ–mental factors and CIM							*						
Bjorklid, P 2004	2004	Correlation between social and physical factors and CIM and use of space		*							*		*		*
Kytta, M 2004	2004	Correlation between urbanization, gender and cultural differences and CIM levels	*	*	*	*									
Fyhri, A 2009	2009	Relation between CIM index and different backgrounf variables	*	*											
PEACH Proj. 2010	2010	If CIM and children's environmental perceptions are linked to physical activity	*												
Malone, K 2011	2011	A socio-cultural comparison of CIM in different countries on the community level	*	*					*	*					
Duncan, M 2015	2015	Correlation between socio-demographics and urbanization and adult attitudes towards CIM		*	*										
Hillman, M 2015	2015	International comparison of CIM for future policy recommendations	*	*											
ElHuseiny, S 2016	2016	Children's experience of the physical environment through free play					*	*			*		*		
Crawfard, S 2017	2017	Children's and parents' environmental perceptions and impact on CIM									*	*			

Table 2:3– Data collection methods comparative analysis of Environment behavior research (top) and CIM research (bottom).Source: Author and inspired by El-Husseiny, 2016

needs. Little gave much significance to community officials or members involved with children. Mixed-methods as aforementioned is a highly recommended approach for integrated CIM research. Also targeting a homgenous sample represents the conception of the community as a whole of CIM and use of space.

2.5 Conclusion

Inspired from Moore to assert researcher's personal discipline, this is a clarification of the author's background as an architect and urban planner. Hence, the focus on the physiographic attribute of children's environments not only social or inner space in an attempt to examine the extent of its significance on children development. Consequently, a substantial research in developmental and environmental psychology as well as environment-behavior studies was mandatory to conduct the research in an integrated, multidisciplinary manner. It deciphers the progressive innate processes of children ecological cognition to try to avoid an imposed, predictive interpretation of environmental behavior.

It was complimented with viable empirical studies as guiding frameworks to build the investigation on. The following chapter portrays the conclusive framework of the studied theories that will be implemented in the empirical field research methodology. It aims to understand children-environment transactions translated in their environmental perception as well as independent mobility and activity. The findings of the research in contrast to the existing studies shall reflect the context specific nature of the topic and the vailitiy of international concepts in a developing coutnry urban informal setting.

The Socioecological Model of CIM

In the former chapter, after reviewing the legal discourse addressing children's rights to development and application in urban planning and practice, the definition of development was examined in social sciences. Developmental psychology translated children's developmental settings and relevant ccognitive processes introduced by Piaget and socio-emotional development by Erikson.

Erikson's eight psychosocial stages helped identify this research cohort based on the experienced psychosocial crisis. Age's seven to twelve is the stage when children start leaving their houses, reaching out to the community and exploring their neighborhoods in the quest for learning and producing. Their mental capacity according to Piaget enables them to express themselves and read symbols to engage effectively in the planned field research. According to both theorists children's interaction with their environment is conditioned by their intrapersonal capacities and interpersonal relations in the social context within the existing physical environment.

Then, children-environment relationship was scrutinized through transactional environmental psychology and ecological perceptual psychology. The child and the environment are believed to form a monistic entity stimulated by movement (see figure 2.3). A child directly perceives the environment and its relative function while moving independently creating meaning (Gibson, 1986). This implies that perception is viewed as an active experience where one must move

in order to perceive and vice versa.

Children environmental experience was delineated through Kytta's proposed model which combines Neisser's perceptual cycle with Piaget's cognitive development and Gibson's affordances. The model reflects children's representation of their environment directing their movements and actions sampling the positive and negative affordances to either modify or assimilate their knowledge. This dynamic perceptual cycle exemplifies the development of children-environment relationship guiding this study's field research methodology (See figure 2.5).

Prompted by this model, the study pledged to focus on children mobility and activity to decipher this complex dynamic relationship using the lens of children environment behavior studies. It capitalized on the concept of CIM offered by Hillman as a guide to children's environment behavior. Its framework was further integrated with children's territorial range concept in order to design a coherent study that does not solely address children's travel patterns and modes but the associated experiences, their depth and breadth and resulted spatial ranges.

Marzi adopted Salli's socioecological model for active living to demonstrate CIM and its environmental correlates (fig. 2.10). The environmental correlates resonates with Moore's previous three simultaneous realms of environmental experience (fig. 2.6) and the aforementioned factors of children environmental interactions in developmental psychology; The inner space- intrapersonal space, the social space- interpersonal relationships and cultural values and the physical space composed of objects, buildings, people and nature (Moore & Young, 1978).

Marzi's model was updated based on Crawford's developed socioecological model of CIM[4] to facilitate answering this study's research question. The resulted framework accordingly conceptualizes CIM as being influenced by different interrelated variables known as correlates. These environmental correlates influence children's and parents' environmental perceptions promoting or hindering CIM, takig into acount children and parent's demographic characteristics (fig. 3.1).

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4   For Crawford model refer to https://www.sciencedirect.com/science/article/pii/S1353829216303914
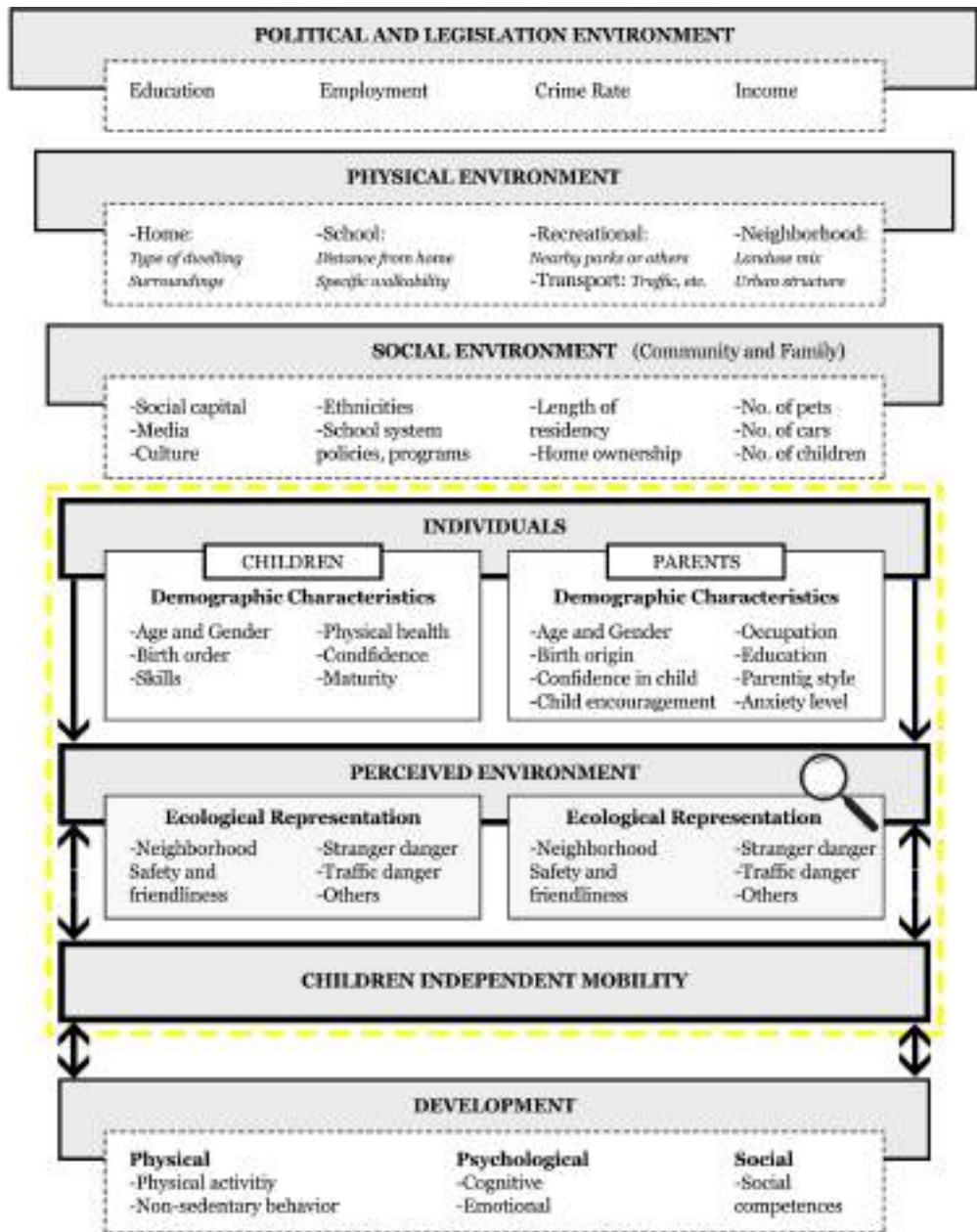
Figure 3.1 Conceptual Framework- The Socioecological Model of CIM Correlates, adopted from Marzi and developed by the author

The perceived environment in the proposed framework acts as the pivotal link that connects the physical and social environment objective reality with the subsequent CIM licenses and destinations. Hence, this conceptual framework represents the social, physical and demographic correlates that govern children and parents environmental perception influencing CIM.

The field research data collection will address children's and parent's perceptions of the social and physical environment as a guide to the existing environment's information. Moreover, displaying the environment through the community's perspective will reflect not only its properties but also its affordances. This can partially be attributed to the lack of available geospatial information for the area to follow mainstream existing objective study methods of physical environment correlates measures.

The studied environment will however be objectively represented to the author's maximum capacity through maps, description and pictures in order to complement the community's narratives linking what is seen with what exists as promoted by Heft and Wohlwill. The following chapter will portray the implemented empirical research and its findings which aims to fulfill the research objective utilizing the proposed conceptual socioecological model of CIM correlates.

Eclectic Ecological Field Research

Based on the foregoing conceptual framework inspired from western theories, this chapter will empirically contextualize the developed socioecological model of CIM in a developing country local setting. The environmental correlates of CIM will be more context specific in contrast to previous studies. Due to the pandemic situation, some modification has occurred to the intended field research and will be outlined first hand.

Then, the first step towards heuristically investigating CIM in an informal setting is to objectively describe the studied area within its city, district and neighborhood context. After reflecting the criteria of study area selection, the sampling selection criteria and demographic characteristics will be outlined. Lastly, the field work data collection and analysis methods then its findings will be presented.

4.1 Evolution of Field Research Methodology

The field research was initially divided into two phases as aforementioned. However, the data collection methods were different. The first phase was designed to include children's and parents' questionnaires measuring CIM licenses followed by children geographic diaries (GD) to analyze mobility patterns and spatial activity. The second phase included CIM range conditions interviews where children mark their free, accompanied and prohibited ranges on their neighborhood map and relevant environmental fears, challenges and motivators.

This was to understand children's environmental perception and variables ascribed to CIM. However, due to the pandemic situation and schools lockdown

the GD were not retrieved after performing its first workshop, the face-to-face children's interviews were no longer possible and even children's and parents' second batch of questionnaires was not realized for grade 2. However, a mapping activity to familiarize children with their neighborhood map and facilitate answering the GD efficiently was carried out. But, the GDs and interviews data were substituted with teacher's interviews as well as children's and parents' phone interviews.

Teacher's interviews were an unforeseen procedure. Since most studies include either children or parents data as concluded from literature review while teachers and institutions are usually overlooked, including this aspect added an edge to the research. It provided a deeper understanding of the community's institutions and relevant systems and their aspiration for change proposing ideas for development and naming unavailable services needed in the neighborhood.

Then, phone interviews compensated the canceled procedures input by examining the CIM spatial ranges and conditions studying the traveled destinations, company, mode of transport, spatial experience and performed activity. Even though it was very challenging to acquire the same information and engagement over the phone, it still gained invaluable knowledge into family life and related perspectives.

4.2 Research Setting: El Zabaleen Village
4.2.1 Area of Study
Manshiyet Nasser (MN) is one of the largest, oldest and most densely populated informal settlements in Egypt with a central location in the heart of Cairo (Tadamun, 2016). Yet it reflects a highly secluded urban reality due to its location at the foot of Al Moqattam Hill bordered by a highway, El-Autostrad, from the west and the mountain cliff from the east (see figure 4.1).

It extends for a 3 km stretch across the Autostrad with multiple entrances from the highway leading directly to the district and dividing it into eleven regions known to its inhabitants as shown in fig. 4.1 (Ibid). Its population has been estimated changeably across sources. The official number as Cairo Governorate is 302,321 people (2014) and according to the Deutsche Gesellschaft für Internationale Zusammenarbeit report ranges between 800,000 and 1 million (2007) (Ibid).

Figure 4.1—Manshiyet Nasser map of neighborhoods as known to its people
Soure: Author

MN was established as a settlement for relocated inhabitants from Old Cairo in the 1960's followed by influxes from Upper Egypt (Ibid). Thus, creating a combined urban context with a rural social background. However, this geographically and socially enclosed hilly area remained connected to the city by the highway and its proximity to historic Cairo. In the 1970's, another shift in the population took place. A group of Coptic immigrant peasants were evacuated from Shubra el Kheima to resettle in MN (Fahmi & Sutton, 2010).

These farmers came from Assiut to Cairo in the 1940's. Their main activity was pig raising selling the pig-meat to tourist facilities (Ibid). They collaborated with the *Wahiya*, the Oasis people, who were responsible for collecting Cairo's municipal solid waste to purchase the organic waste and feed it to their pigs. With time they became responsible for collecting the garbage under the Wahiya supervision in exchange for a fee and the Wahiya became the middlemen between them and the households. Hence, their common name *El-Zabbaleen* which means garbage collectors (Ibid).

With the expansion of their business, the government perceived them hazardous to their surrounding neighborhoods and relocated them to MN. There they inhabited the area named El-Zabbaleen and lived in temporary houses made of

tin until building St. Simon monastery and church in 1975. Only then people felt safe to start building in bricks and concrete (Tadamun, 2016). The monastery was a reassuring sign of home and permanency and kept on taking care of the area's matters till the day.

The garbage collectors roam the streets from dawn with their donkey pulled carts and pickups accompanied by their children. The collected garbage then is sorted by females and children in homes into sixteen groups of trash. The organic waste is separated and the secondary materials sorted out to be recycled on-site or sold to middlemen and factories (Fahmi & Sutton, 2010). The area has a high percentage of private businesses in the sorting, shredding, recycling of garbage and manufacturing industry. People and garbage coexists in the neighborhood and children's most common play spaces is the streets.

The Zabbaleen as most informal settlements suffers from the lack of efficient infrastructure, social services mainly schools and health centers, civil protection services, narrow streets and lack of open, green spaces (Tadamun, 2016; Salheen, et al., 2015). However, it still enjoys a number of privileges usually shared by informal settlements as described by Shehayeb in her article *Advantages of living in informal settlements* (2009). The following are a few agreed upon:

1. *Self-sufficiency* where all needs can be satisfied in the area. This is justified by the abundancy of local shops providing community needs at affordable prices.
2. *Work-home proximity* where 55% of MN inhabitants work within the area (Salheen, et al., 2015, p. 335) and it is expected to be even more in El-Zabaleen due to the high percentages working within their homes in the garbage industry.
3. *'Walkability' saving money, energy and community building*. Active transport is the most used mode of travel due to the compact, mixed-use urban fabric and presence of all facilities within a walking radius.
4. *Participation* where locals share their neighborhood's cleaning and maintenance and even co-operate to provide needed services sharing a sense of ownership. This point is not studied in the research.
5. *"My street- my home"* is a very prominent, dominating feature in El-Zabaleen where streets free of strangers according to families are an extension to the homes gathering neighbors and friends together.
6. *Sense of safety* is a result of the previous aspect and is highly perceived in El-Zabbaleen strengthened by the area's community surveillance and solidarity.

7. *Social solidarity and community building* is also a pertinent social aspect resulting from the strong social ties of the local's families and kin structure.

As a result, El-Zabaleen community is selected due to the following reasons. First, its confined and secluded community that can efficiently be studied. Second, its challenging environmental conditions, subsequent health implications and need for urgent intervention. Third, its mixed use of housing, industrial and commercial activities creating a peculiar productive identity. Fourth, it managed to provoke researchers and international donors attention for integrated urban development projects, most notably the World Bank in the 1970's and the GIZ in 1990's till 2010 (Tadamun, 2016; Salheen, et al., 2015). El-Zabbaleen main urban features and landmarks are highlighted in figure 4.2 for a clearer representation.
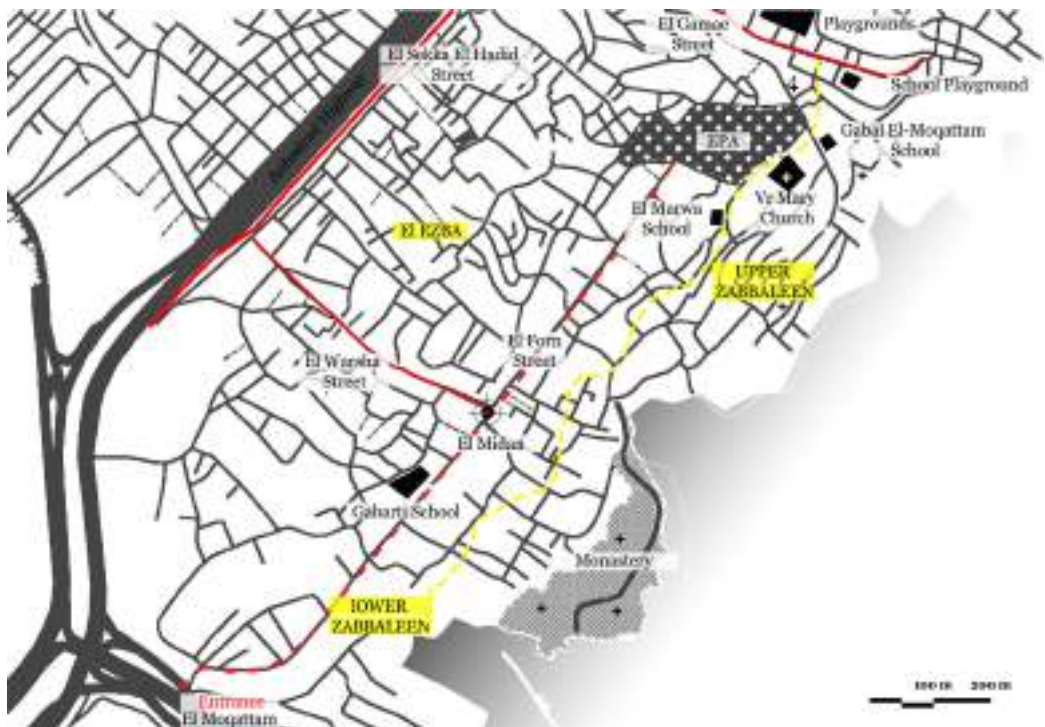

Figure 4.2— El -Zabbaleen neighborhood map. Source: Author

4.2.2 Study Participants

In order to study the intended cohort of children, schools were the point of access as done in most previous studies. El-Zabbaleen has three public schools operating for elementary and preparatory stages and one private school called Gabal El Mokattam Private School included all stages. Due to the long permissions' procedures and the time limit, the private school was the easiest to approach.

Also, being private with a minimal fee for enrollment guaranteed a bigger income groups mix and consequently a broader range of travel mode options and activity alternatives for children. The schools are located on figure 4.2.

The school received the university's permission letter and was aligned with the research topic, objective and data collection methods. It provided willingly the schedules of the available, convenient classes for the designed workshops. The field research first phase used a probability sampling method based on a random selection of children in grades 2, 4 and 6. The number of children and parents who took part in the survey is outlined in table 4.1.

CHILDREN	GRADE 2		GRADE 4		GRADE 6		TOTAL	
GIRL	13	46%	12	36%	18	55%	43	46%
BOYS	15	54%	21	64%	15	45%	51	54%
TOTAL	28		33		33		94	
PARENTS	21	75%	23	70%	17	52%	61	65%

Table 4.1— Number of parents and children taking part in phase one workshops.
Source: Author

In phase two, it was a non-probability sampling using purposive selection methods based on the output of phase one CIM licenses index. Two children with high CIM index and two with low CIM index were selected per grade and a parent per each resulting in twelve families' phone interviews. Hence, twenty four participants divided equally between children and parents were interviewed maintaining gender equilibrium.

Parent's backgrounds were investigated in the last part of the survey and is outlined below in table 4.2. The employment status, work place, degree of education, car ownership and years of residency in the neighborhood will be compared to their CIM indexes to understand if there is a correlation between any of parent's demographic variables and children's spatial freedom. The data clearly reflects the high numbers working from home (60%) and low numbers of employment status explained by the high percentages of self-employment and private businesses present in El-Zabbaleen.

Age Range (N=52)			
<30	38%		
30-45	54%		
>45	8%		

Maternal Employment Status (N=16)		Paternal Employment Status (N=43)	
Full time	50%	Full time	53%
Part time	0%	Part time	9%
Not employed	38%	Not employed	26%
Studying	13%	Studying	12%

Educational Level (N=53)			
Illiterate	9%		
Read and Write	8%		
Primary	25%		
Preperatory	8%		
General degree	32%		
University	19%		

Work Place (N=40)			
Inside the house	60%		
Outside the house	40%		

Years of Residency (N=43)			
<10	9%		
10-25	30%		
25-40	14%		
Lifelong	47%		

Number of Cars/Household (N=53)			
Zero	58%		
1	30%		
2 or more	11%		

Table 4.2— Parent's Demographics. Source: Author

4.3 PHASE 1: CIM Licenses Holding

This section will introduce phase one data collection procedures as well as their analysis methods, limitations and findings. First procedure is children's drawing workshops followed by children's and parents' questionnaire in parallel to site documentation using photography.

4.3.1 Drawing Activity

4.3.1.1 Data Collection and Analysis Methods

Drawing is the first activity which acts as an ice-breaker introducing children with the researcher and the topic of research. It aims to understand children's cognition of their immediate environment mapping their most acknowledged and significant places. It introduces the researcher with the neighborhood from children's perspective.

The workshop took place in the drawing session of the sampled grades, 2nd, 4th and 6th, which lasts for forty five minutes. Each grade was conducted on a

separate day, making the activity last for three days. Each child at the beginning of the session was handed over a sealed envelope they were asked not to open. It contained a numbered children questionnaire, parent questionnaire and a letter directed to the parents outlining the research aim and asking permission for their participation at the survey.

The workshop started with a little casual chat as an introduction to the research and field of urban planning. They were asked to draw a map of their neighborhood, El Zabaleen, locating on it all the significant places where they spend most of their time or pass by a lot. The children were informed that it was a voluntary, ungraded activity.

During the drawing session, every child engaged in a one-on-one conversation for approximately three to five minutes. This conversation was mainly for motivation and understanding children's drawing language and clarifying unclear elements. For example, a rectangle with trees inside meant a park or any house with a chimney was a recycling or shredding workshop. They called the Environment Protection Agency (EPA) right in front of their school the 'trees' factory' and the shredding workshops '*kharaza*t'. Talking with the children during the session introduced not only their significant places but their daily, functional language. This activity was a real eye opener to the children's lived world.

After collecting the drawings, each place element in the drawings was coded and recorded. Applying Moore's significant place elements (1978) analysis methodology, fifty categories of places were classified then aggregated into nine broader groups to simplify and compact the data. The data was then ranked according to its mention rates.

The assigned categories were coded according to the studied setting which differs from Moore and Young's (1978). As a result, some categories were removed which were unavailable in the environment and consequently in children's drawings like lawns, creek, swimming pool, regional park, rail road...etc. and were replaced by more relevant categories like pigeon houses, garbage, house roofs...etc. This contextually specified the produced data to fit children's phenomenal landscape.

Figure 4.3— Children during the drawing workshop. Source: Author

4.3.2 Children and Parent's Questionnaires
4.3.2.1 Data Collection and Analysis Methods

Children's questionnaires measure children's level of independent mobility in their local neighborhood in relation to age and gender using the indicator of CIM license. Parents' questionnaires measure the granted CIM licenses, reasons behind licenses' restrictions and their demographic characteristics.

Supervised children's questionnaires took place in another drawing session that lasted for forty five minutes also and usually took place right after the first drawing workshop. It was also conducted for each year grade on three separate days. The children in the second session after finishing their drawings were asked to open the envelope and start answering each question after being read out loud and explained.

This phase needted extensive organization and setting of rules which developed one class after the other accumulating experience in handling children. The class teacher assistance was highly beneficial since one person was not enough to follow up on children's queries. The school also provided a team from the photography club to document some of the workshops.

Children's questionnaires adopted Hillman's children's "licenses holding" template which consisted of the six licenses questions, average walking time from home to school, a section for children's weekend activities and a section of children's socio-demographic information like age, gender, address, dwelling type, car ownership and number of floors per dwelling. This is in addition to the child's occupational status if he works or helps his parent at work after school. See appendix x for copies of the questionnaire.

After answering the questionnaires collectively, children were asked to take them home to their parents to be answered and returned on the following day. They were informed that it was not obligatory but were encouraged to return them back in return of a one point bonus. This bonus system was a very interesting technique used at school to motivate children to study well and behave properly. Children would collect bonuses throughout the educational year for good behavior and academic performance and at the end would exchange the sum of points with rewards e.g. bicycles, back packs.... etc.

As a result, parents' participation in the survey was surprisingly high compared to expectations due to the high illiteracy rates and the value of average response rates of reviewed studies e.g. 65% of primary and secondary schools in O'Brien's study and 75% of junior students in Bjorklid and Kytta's study. The response rate in this study is 75% (n=21) for the 6th grade and decreases gradually with age where the 4th grade is 64% (n=21) and the 2nd grade is 45% (n=15). This can be justified by the brief time allowance given to the 2nd and 4th grades who were handed the questionnaires at a later stage right before the school lock down.

Parent's questionnaires also adopted Hillman's template which also targeted the six licenses questions, the reason behind each license deprivation, frequent mode of travel as well as rearranging their environmental fears concerning their CIM. The last section was dedicated for background information about their past experiences of spatial freedom as children and employment status, level of

education, job title, gender and age. See appendix x for copies of the questionnaire.

Comparing children's and parents' surveys' output, helped outline the discrepancies between parents' and children's stated licenses representing a hint for licenses' negotiations and agreed upon travel conditions. These highlighted discrepancies will be further investigated in phase two interviews part alongside the unconventional scoring CIM licenses.

Children's questionnaire data was aggregated where each mobility license for boys and girls per year grade was separately calculated to identify the CIM index in relation to age and gender. Each license was given a score of one while the school license was divided into two; going to and coming from school. The CIM index ranged from one to six and was then classified into three categories; High CIM index group (scores 5-6), medium CIM index group (scores 2.5-4.5) and low CIM index group (scores 0-2).

The study is keen on observing gender differences and their influence on CIM. As a result, mobility license's sex ratios were identified per grade to understand the pattern of evolving gender equality. The parent's questionnaires data will be aggregated similarly to measure the CIM licenses and parental control, define the environmental fears according to rank per age and gender then will link the data to parents' demographics.

4.3.3 Photo Documentation
Along the whole field research, inconsistent photo documentation of the neighborhood was taking place. This was to heuristically document the repeatedly mentioned children places during the school workshops. Every site visit and children workshop was followed by a walk out of school, roaming around in the neighborhood to visit the described places and photograph them. This helped document and consolidate children's interactive lived spaces as well as understand their described affordances and restrictions.
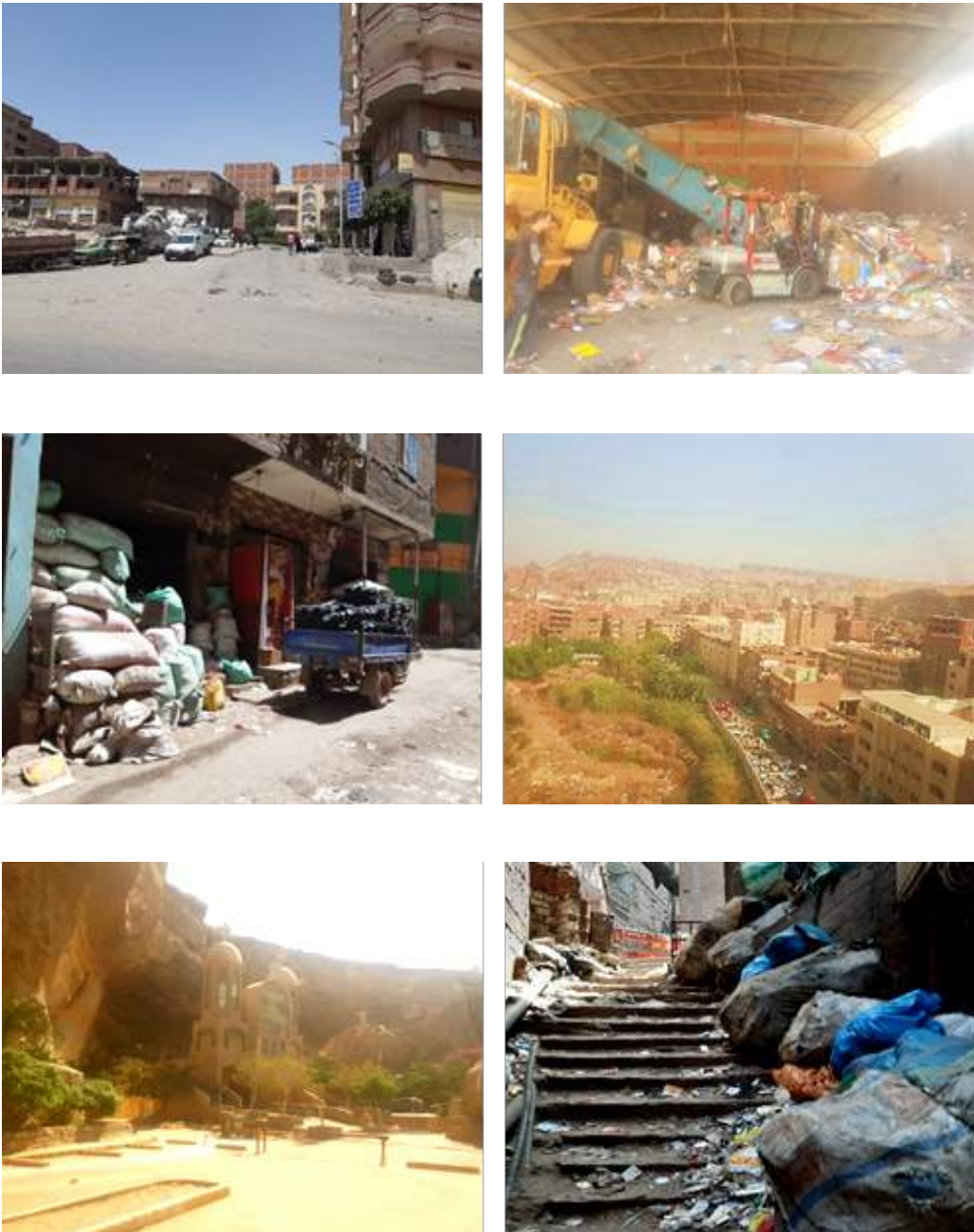
Figure 4.4— Row 1 left: Entrance of Zabaleen from Moqattam street, Row 1 right: Sorting and storage warehouse, Row 2 left: El Forn street, Row 2 right: View over the EPA from a pigron house. Row 3 left:The monestary complex. Row 3 right: The staircase leading to the school playground. Row4 left: A street in el Zabbaleen. Row 4 right: The school playground. Source: Author

4.3.4 Limitations

The first limitation encountered was in the drawing workshop where children's variable drawing skills made it challenging to understand the content sometimes. Hence, labeling and adding symbols was essential as well as the short conversations. The second was in the questionnaires where the incomplete and inaccurate filled ones resulted in excluding some of the data and multiple site visits to complete the missing information. Most of the parents' questionnaires was incomplete and hence data was not considered e.g. environmental fears arrangement according to degree of significance. Thirdly, the situation of the lockdown made most of children's places inaccessible leaving no traces of children livelihood. This will be seen in the empty pictures of the area.

4.4 PHASE 1: Findings
4.4.1 Drawing Activity

The drawings included a rich vocabulary of children's places which were mainly their house, school, monastery, church and external attractions like the Azhar Park and local recreational facilities which are very limited. The daily street scape was also very visible like the shops with their different names and uses, vegetables street venders, pigeon houses and existing slopes "matla'a". Children keenness on the green aspect where many children drew flowers, trees and grass as well as street infrastructure like street lights and pavements which the neighborhood lacks reflects the significance of these environmental elements for children.

Figure 4.5— It illustrates an eight year old girl's drawing in grade 2 with a CIM index 0.5. The drawing reflects her spatial representation of her immdediate environment which includes her home, school, church, streets and shops. The garden included refers to the EPA which is right in front of the school and the sea added in the bottom right corner represents her favorite summer trip with her family. The few number of place elements reflects her limited spatial range and bounded spatial knowledge..
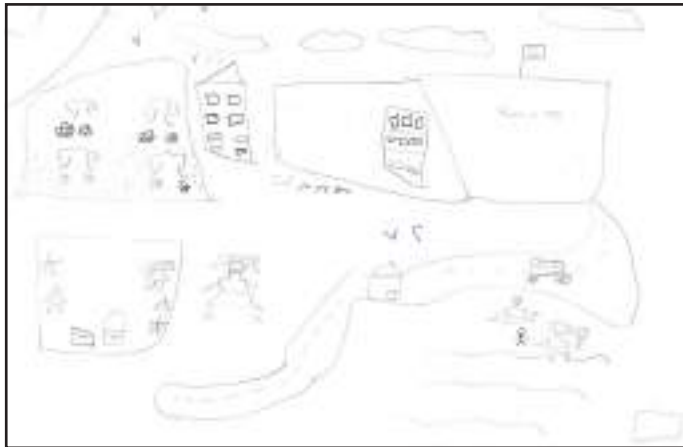

Figure 4.6—It illustrates a broader spatial range of a nine year old girl in grade 4 with a CIM index 3. The drawing shows more details and more developed spatial knowledge. Shops are labeled as well as the hospital, a library, a nursery, a hair dresser and street vendors are added. This reflects a higher CIM range.
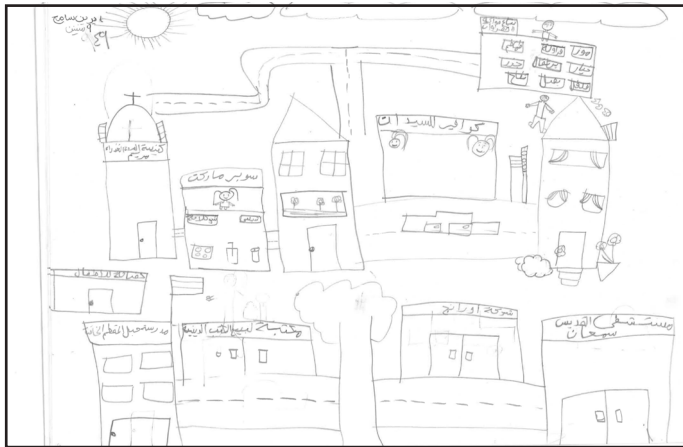

Figure 4.7— It illustrates a thirteen year old girl's drawing in grade 6 with a CIM index 0.5.The drawing includes every significant place/person to her; school, church, home, supermarket, pigeon house, car, her father, Sandra her friend and her house and a text written, *I love my neighborhood.*

"Sandra is my friend"
"Do you visit her at her house?"
"No. I am not allowed to."
"Do you know where is it?"
"No, I don't."

Figure 4.8— It illustrates a ten year old boy's drawing in grade 4 with a CIM index 5. The drawing reflecting more activities not just labeled destinations. There is a child walking a dog, another playing football, riding a bicycle, walking in a street and playing billiards which is a common activity shared by many other boys his age. The diversity of activities reflects a high CIM index allowing for more spatial knowledge and environmental interaction and competence.

Figure 4.9— It illustrates a twelve year old boy's spatial experience in grade 6 with a CIM index 1. He sketched the wooden pigeon house he built with his brother on the roof of the house and they had to build it short so that it is safe for them. He is not allowed to go out and play in the neighbor-hood much but spends most of his time in the pigeon house. The drawing had only the school, his house and the pigeon house.

Figure 4.10—It represent a twelve years old boy's drawig in grade 6 with a CIM index 5. He drew a detailed sketch of his house and a plastic recycling workshop labeled in colloquial language. He explained in the conversation every single detail and technique of operating these recycling machines which shows that he spends a big portion of his time there either for work or fun.
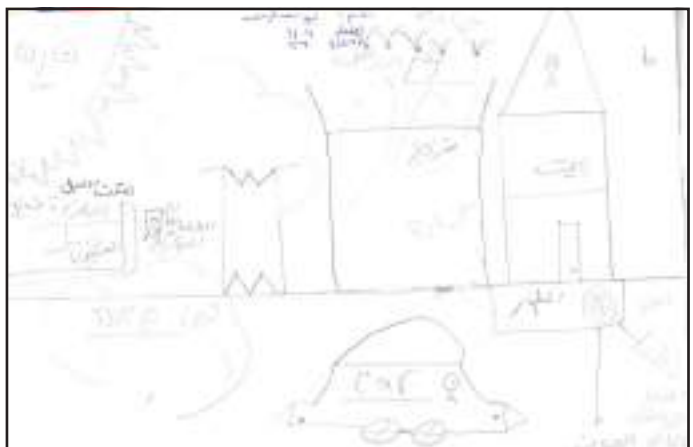
Table 4.3 portrays the outcome of the drawing workshop where the mostly mentioned place elements were people followed by childrens' homesites and natural elements and then by the community facilities which includes their church, school and hospital… etc. Afterwards, the pathways including all paved and unpaved surfaces then the traffic with the different modes included. The mentions rates are consistent with the CUULS study findings. They are irrespective of actual occurance rates in reality since mostly referenced elements like the natural system elements are not very present in the neighborhood and the actually existant elements like the garbage industry is mentioned the least. Mentions rates reflect mainly children's environemental attachments.

	PLACE-ELEMENT CLASS	NO OF MENTIONS	MENTION RATE	%
1	PEOPLE	134	1.47	19%
	Own Self	53	0.58	
	Others	34	0.37	
	Parents	21	0.23	
	Friends	19	0.21	
	Siblings & Cousins	7	0.08	
2	HOMESITE	115	1.26	16%
	Own	79	0.87	
	Others	34	0.37	
	Friends	2	0.02	
	Family	0	0.00	
3	NATURAL SYSTEM ELEMENTS	112	1.23	16%
	Trees	49	0.54	
	Flowers	20	0.22	
	Pigeons Houses	13	0.14	
	Garden/Farm	9	0.10	
	Animals	8	0.09	
	Water Feature	5	0.05	
	Dogs	5	0.05	
	Climate	3	0.03	
4	COMMUNITY FACILITIES	109	1.20	15%
	Church	55	0.60	
	School	42	0.46	
	Hospital	5	0.05	
	Mosque	2	0.02	
	Nursery	2	0.02	
	Pole station	1	0.01	
	EPA	2	0.02	
5	PATHWAYS	89	0.98	12%
	Streets & Traffic Lights	49	0.54	
	Pavement	20	0.22	
	Matla'a" Slope	18	0.20	
	Alley	2	0.02	
6	TRAFFIC	65	0.71	9%
	Cars	38	0.42	
	Buses	15	0.16	
	Pickups	7	0.08	
	Bicycles	5	0.05	

7	COMMERCIAL FACILITIES	58	0.64	8%
	Supermarkets	23	0.25	
	Shops	12	0.13	
	street Vendors	8	0.09	
	Restaurant	5	0.05	
	Foul	4	0.04	
	Bookstore	3	0.03	
	Pharmacy	2	0.02	
	Qahwa	1	0.01	
8	RECREATIONAL FACILITIES	28	0.31	4%
	Sports Club	7	0.08	
	Billiards	5	0.05	
	Sites	5	0.05	
	Club	4	0.04	
	Playground	3	0.03	
	Flying Kite	3	0.03	
	Gym	1	0.01	
9	GARBBAGE INDUSTRY	10	0.11	1%
	Garbbage	4	0.04	
	Litter/Dirt	3	0.03	
	Workshops	3	0.03	
	SUM	720	7.91	100.0%

Table 4.3— Mention Rates of Place elements in Rank Order.Source: Author

The elements that had mention rates value more than 0.5 are ordered as follows: own house (79), church (55), own self (53), trees (49), streets and traffic lights (49) then school (42). The minimal mention rate of the recreational facilities in children's drawings can be attributed either to their inadequacy and lack of services where the communal, commercial and children's built structures compensate their absence or the children's cultural background as well as social responsibilities inflicting on them a certain lifestyle limiting their opportunities for recreation.

4.4.2 Children and Parent's Questionnaire
## 4.4.2.1 School Trip and its license

The first CIM license to be discussed is the *school trip license*; its level of chaperone and mode of mobility. It was measured through the parent's granted license, children's actual mobility and the trip on the day of the investigation. The findings shown in figure 4.11 reflects a general pattern were the 2nd grade has the lowest rate while the 4th and the 6th has the highest and the intermediate . The licenses from children's surveys are higher for all grades to parents' surveys while what actually happened on the day of investigation has an intermediate score between both outputs.

Fig. 4.11 Children School Trip and Indepedent Mobility

Grade 2 (Boys/Girls)　Grade 4 (Boys/Girls)　Grade 6 (Boys/Girls)
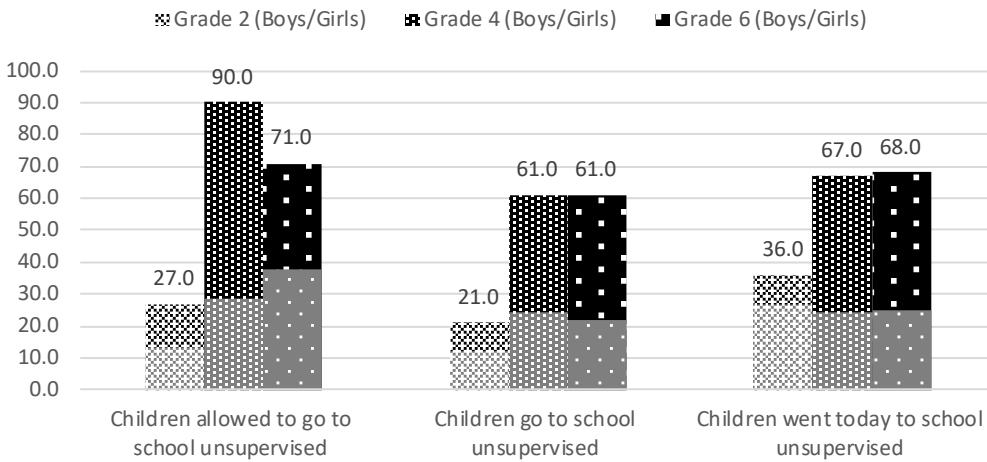
Children's level of CIM in school trips grows progressively with age surging at the 4th grade which can be clearly seen in the drop taking place in parents' chaperonage in figure 4.12. Children at this age starts enjoying a notable amount of spatial freedom justified by their developing own self-confidence and environmental competence, expanding social radius and parent's growing trust. The survey represents 77.5% of adults supervision in the trip from home to school at the 2nd grade which falls to the half at the 4th grade to reach 39% then 36% at the 6th grade.

Fig. 4.12 CIM in Trip from Home to School

Grade 2 (Boys/Girls)　Grade 4 (Boys/Girls)　Grade 6 (Boys/Girls)
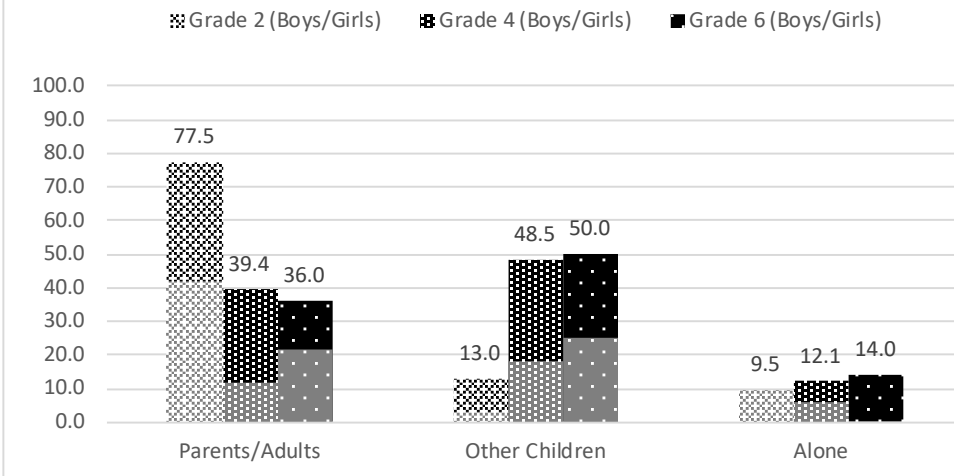
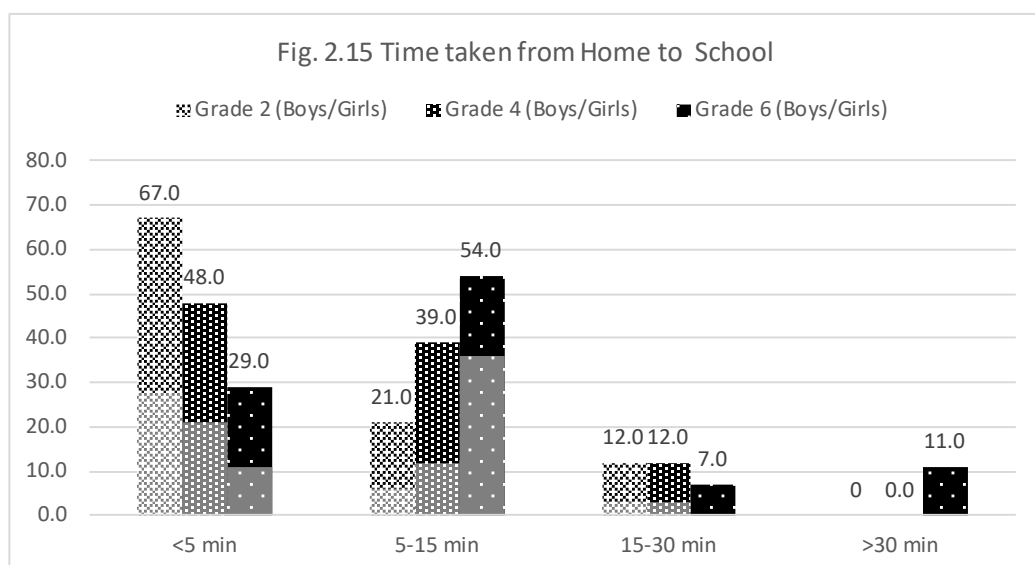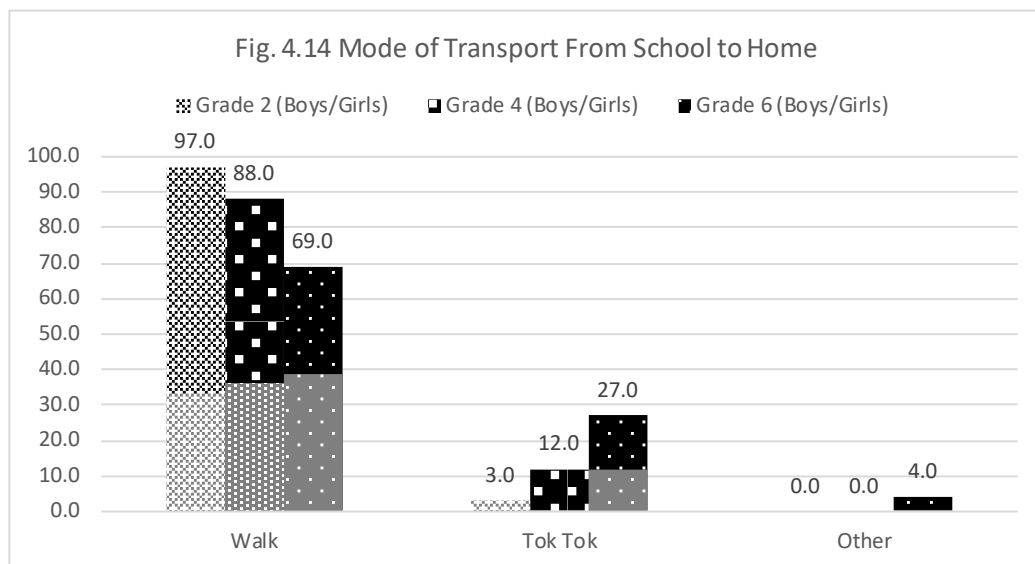Children's company including siblings, relatives and friends, holds the biggest

share and increases gradually with age. The same pattern applies to traveling alone. Level of chaperone sex ratio for all grades is almost balanced except for travelling alone that does not exist for 2nd and 6th grade girls. This can be explained by girl's and parents' environmental fears as well as socio-cultural concerns. This topic will be further studied in the interview's section.

On the trip from school to home as shown in figure 4.13, the level of parents and adult's supervision notably declines especially for 2nd grade children. More than half of the children of grade 4 and 6 go back home with other children with almost equal gender ratios. Grade 2 oppositely reported low rates of children's company and high rates in going back home alone. It can be concluded that children enjoy more freedom on the trip back home. This can be justified by parent's un-matching working hours or children having more chances to company each other after school.
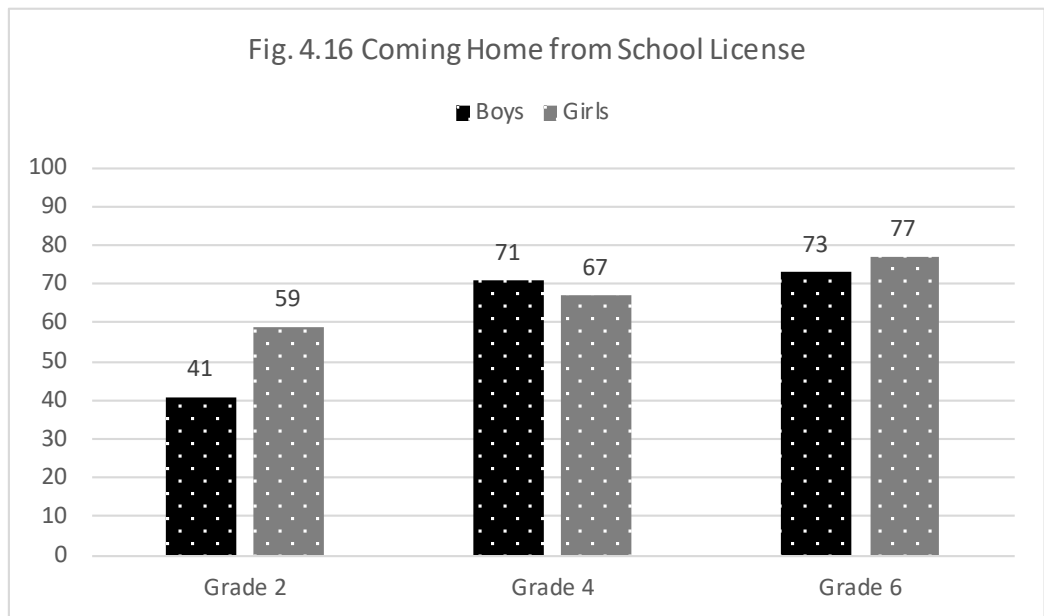

Fig. 4.13 CIM in Trip from School to Home
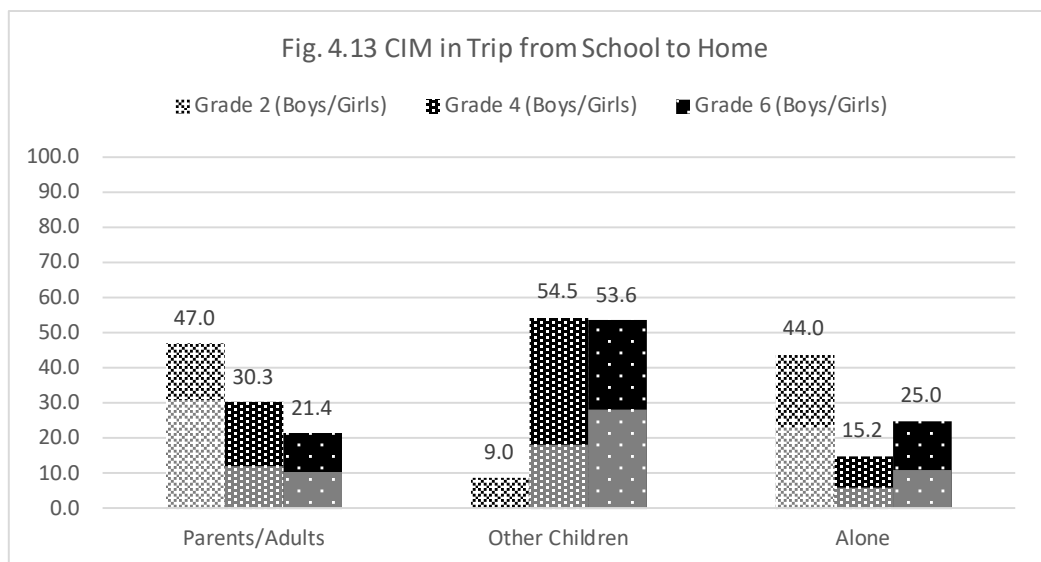
El-Zabbaleen has recognizable high ratios of active school travel as clear in figure 4.14. This can be easily attributed to the compact neighborhood scale and the dense urban fabric where most children live at a walkable distance from school as shown in figure 4.15. This is in addition to the probability of financial restrictions (El-Dorghamy, 2018) and safety concerns as highlighted later in the interviews. 97% of 2nd grade students walk daily from school to home and the number decreases slightly with age as other mobility modes alternatives are gradually introduced with age. Using toktoks increases with age and other modes usually motorcycles or microbuses appeared only in grade 6. The mode from home to

school was eliminated since it was solely walking.

Fig. 4.14 Mode of Transport From School to Home

Grade 2 (Boys/Girls) Grade 4 (Boys/Girls) Grade 6 (Boys/Girls)

	Walk	Tok Tok	Other
	97.0	3.0	
	88.0	12.0	0.0
	69.0	27.0	0.0
			4.0

Fig. 2.15 Time taken from Home to School

Grade 2 (Boys/Girls) Grade 4 (Boys/Girls) Grade 6 (Boys/Girls)

	<5 min	5-15 min	15-30 min	>30 min
	67.0	21.0	12.0	0
	48.0	39.0	12.0	0.0
	29.0	54.0	7.0	11.0

Coming home from school licenses are granted with age gradually where 41% of the surveyed boys in contrast to 59% of the girls of grade 2 are positively scored. The number leaps considerably with grade 4 where 71% and 73% of the boys of grade 4 and 6 in contrast to 67% and 77% of the girls of the similar grade levels are recorded (See figure 4.16). This license sex ratio represents a high worth noting gender equality where girls enjoy either almost similar or even higher CIM in their school travel.

Fig. 4.16 Coming Home from School License

■ Boys   ■ Girls

Grade 2: Boys 41, Girls 59
Grade 4: Boys 71, Girls 67
Grade 6: Boys 73, Girls 77

When investigated in the parent's survey the reasons behind restricting school CIM licenses, the following reasons were mentioned in order as shown in figure 4.17: traffic was the main reason followed by bullies and the third highest which will be further examined for more illustration is the streets infrastructure. Strangers was then another concern mainly for 2nd grade children and then the far distance to school which was a concern only for 2nd grade children. The least concern was the child's young age or fear of getting lost since the school is at a walking distance for most children.

Fig. 4.17 Reason not allowing Children to go to school unsupervised

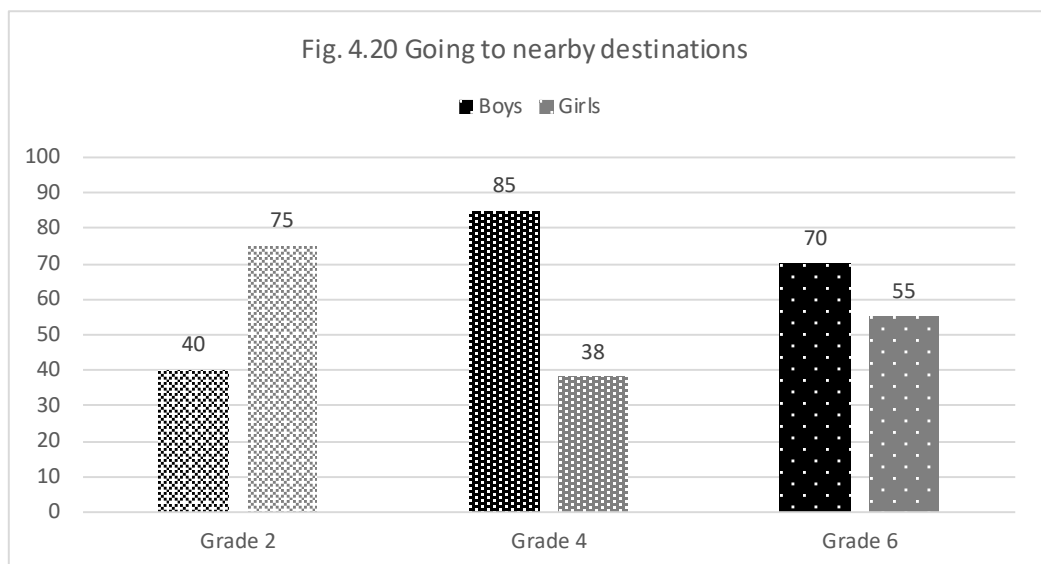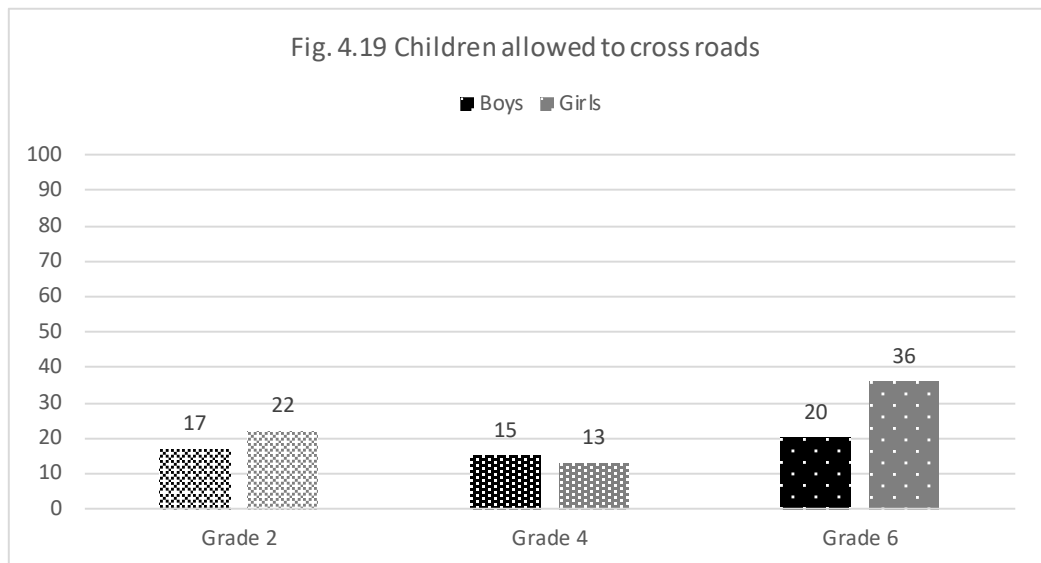Grade 2   Grade 4   Grade 6
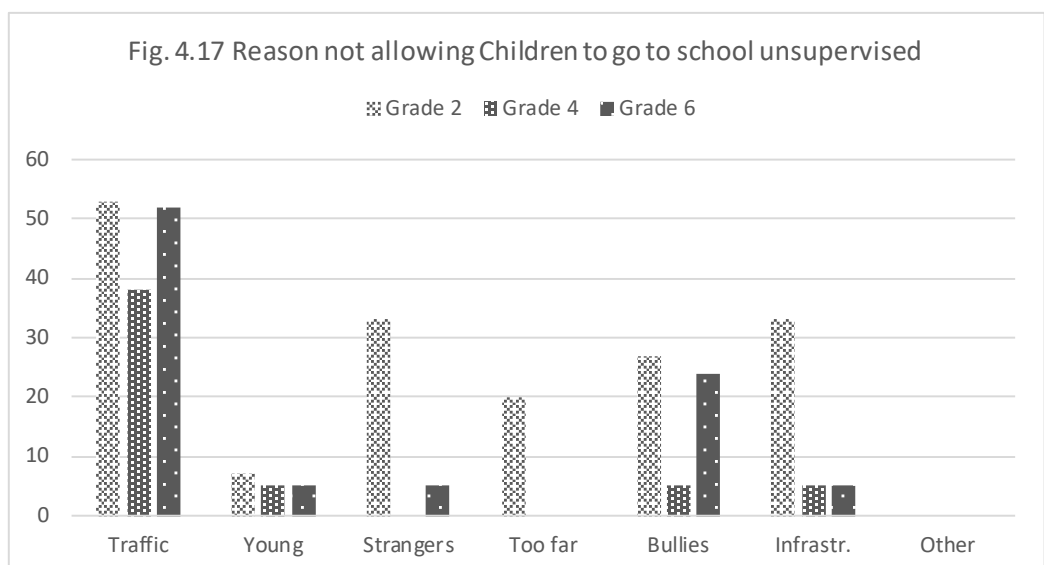
4.4.2.3 "Crossing roads" License

As for *crossing the roads license*, gender differences similarly show less relevance where girls were sometimes higher in value and sometimes lower. Parent's data showed a way less granted freedom than reported by children. Acccording to literature,this phenomenon can be accounted for children's tendency towards boasting in class with their granted licenses or parents with their strict parenting rules which is socially encouraged by the community or their ignorance sometimes about their children's mobility (Hillman, et al., 1990). This license limitation can be justified by the confirmed parental fear of the neighborhood traffic.

Figure 4.18 presents the consistently rising license holding across grade 2 and 4 for both boys and girls which falls again at grade 6 mainly for girls. This is related to girls' generally shrinking freedom and spatial range as they grow up which leads to the conufsion with their allowance to cross roads. This decline in license was not recorded in the parent's surveys where grade 6 children had the highest rate of licenses (See figure 4.19). Furthermore, girls scored a higher percentage than boys as they tend to go out more for house chores and nearby stores often.

Fig. 4.18 Crossing roads License
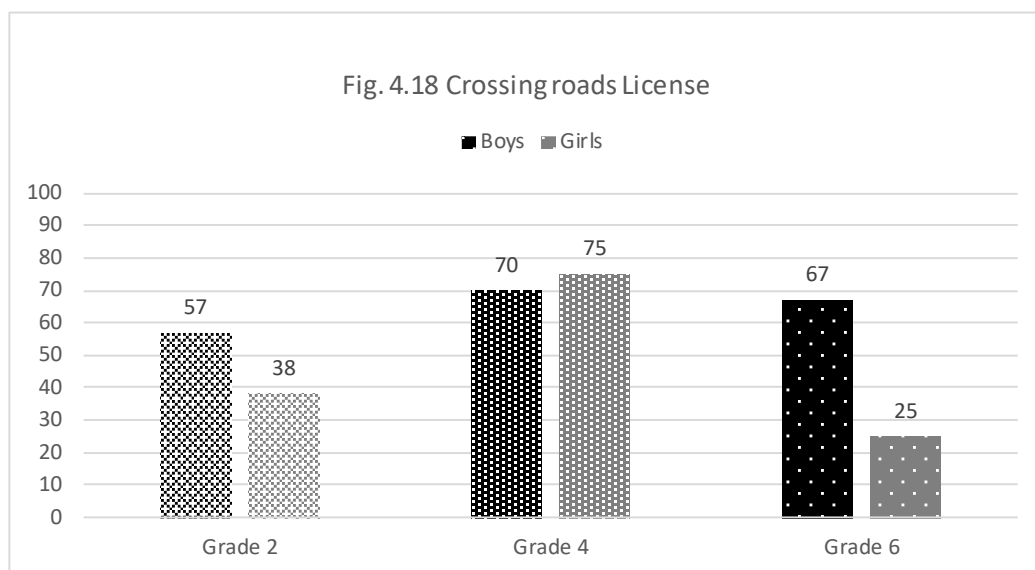
On the other hand, when the parents were asked if they allowed their children to go to nearby destinations other than school for short trips like buying stuff from the supermarket or the pharmacy, considerably higher numbers were positively inscribed. The output did not again reflect any gender relevance as shown in figure 4.20 where grade 2 children had lower boys quota compared to the girls and oppositely grade 4 contained a higher boys quota to the girls to reach a more

gender equilibrium state for grade 6. It shows that girls generally perform more house chores than boys as part of their gender role.
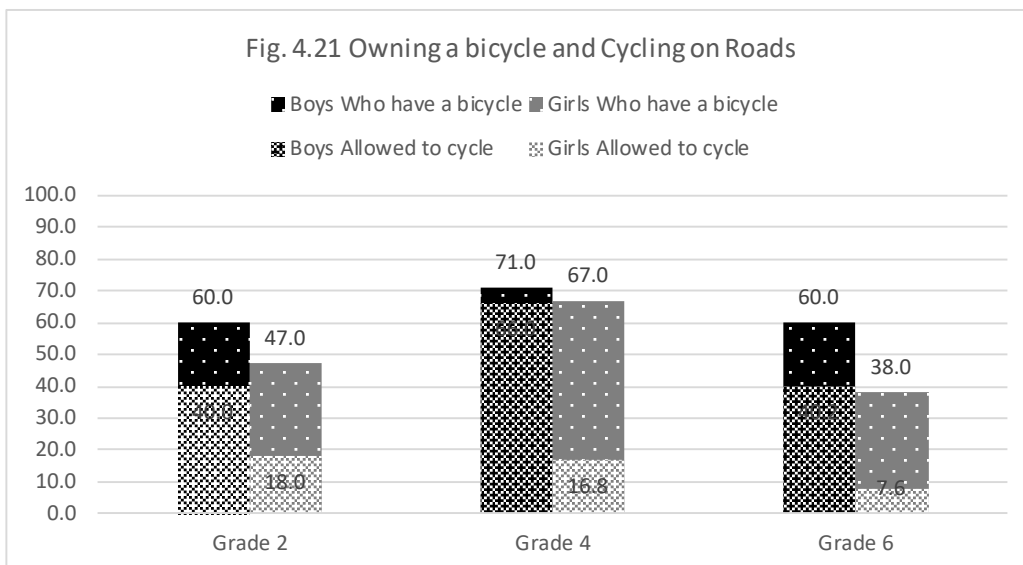
Fig. 4.19 Children allowed to cross roads

Boys ■ Girls

Grade	Boys	Girls
Grade 2	17	22
Grade 4	15	13
Grade 6	20	36

Fig. 4.20 Going to nearby destinations

Boys ■ Girls

Grade	Boys	Girls
Grade 2	40	75
Grade 4	85	38
Grade 6	70	55

The documented first main reason for the few remaining parents who negatively responded was traffic followed by bullies and children's inappropriate behavior then the inefficient infrastructure of the streets, then fear from strangers, then the child is still too young and lastly other unspecified reasons. Grade 4 had the lowest rates across all fears which reflects again the highest spatial autonomy enjoyed by this age group for both boys and girls.

4.4.2.3 "Cycle on roads", "Go out for leisure", "Take public transport", "After the dark" licenses

This bracket of licenses concerned with volitional activities indicates a different mobility pattern and gender ratio differences. The *cycling on roads license* against expected is relatively high where almost half of 2nd grade children mentioned owning a bicycle divided almost equally between boys and girls, 70% of the 4th grade, 65% of which is boys and 50% of grade 6 also mostly boys (67%) have recorded owning bicycles. This distinct ratio was clarified by the school administration. Their followed bonus system included bicycles among the distributed rewards and it was strongly desired by children since they also provided assistance in teaching how to cycle.

Figure 4.21 shows that girl's percentage in owning a bicycle is relatively less than boys where their license to cycle reflects a way higher gender ratio difference. This means that girls own bicycles like boys but are not allowed to use them. The associated reasons will be investigated in the interviews. However, in the parent's questionnaires 0% for both genders across all grades were allowed to cycle on roads. Not a single parent mentioned allowing their children to cycle. This contradicting data will also be further studied in the interviews in order to understand if there is any possible range of negotiation or special conditions for allowing children to cycle on roads.


Fig. 4.21 Owning a bicycle and Cycling on Roads

Boys Who have a bicycle ■ Girls Who have a bicycle
Boys Allowed to cycle Girls Allowed to cycle

Go out for leisure license for grade 2 children from the parents' survey was 33% for boys and 22% for girls. This percentage was remarkably exaggerated in children's questionnaires as shown in figure 4.22. As for grade 4, parent's licenses doubled for the boys and increased slightly for the girls. However, the license for grade 6 decreased by the parents and the boys alike and increased faintly for girls from the parents side and decreased from the girl's data. This decline in children's license holding with age can be explained by the expected responsibilities and gender roles they acquire as they grow up. This will be examined more in the interviews section.

Fig. 4.22 Go out for Leisure License

■ Boys   ■ Girls
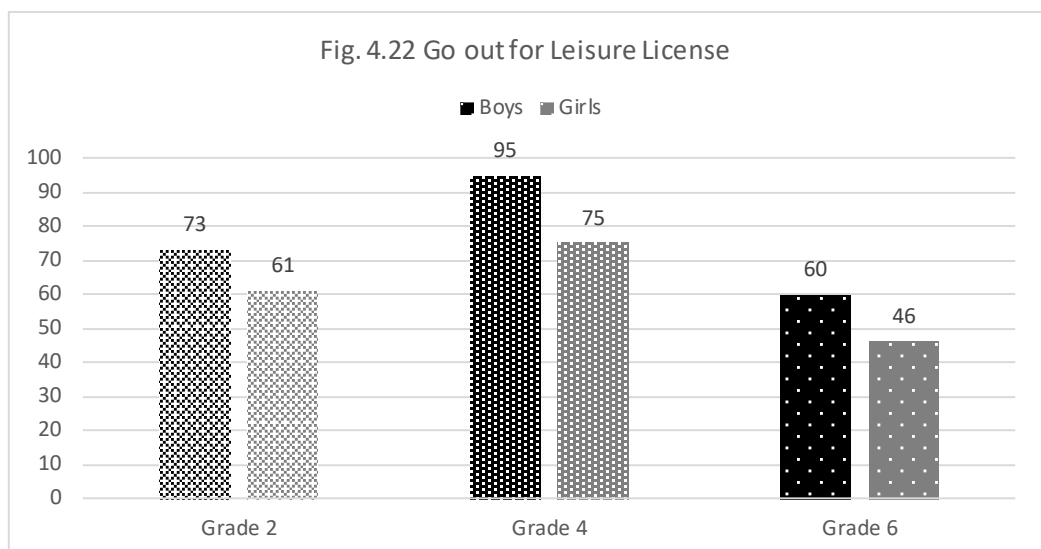
Taking public transport likewise maintains the same amplified children-parent's contradicting information and license holding gender ratios where boys experience a higher amount of freedom for all grade levels (fig. 4.23). Grade 4 as formerly noted has the highest percentage of freedom for boys. Moreover, parent's licenses for boys doubled from 25% at grade 4 to 50% at grade 6 and for girls from 0% to 10%. It is worth mentioning that the only public transport used by the families inside the neighborhood is the informal Toktok due to the overcrowded, narrow streets which renders it the most convenient mode of transport.

Last but not least is the *going out after the dark license* which is the least granted license to children. It meant after the sunset which is around 7 pm. The high discrepencies between the data provided by the parents and children in this license reflects either an error in parent's or children's understanding of the license or a wide spectrum of negotiation allowance or special rules and conditions for this

license. Hence, it will further be discussed in the interviews for more clarity. None of the parents reported allowing their children to go out after the dark for 2nd grade boys as well as 2nd, 4th and 6th grade girls and only 31% and 30% of the boys of grade 4 and 6 were given the license. Nevertheless, children reported higher percentages as shown in fig. 4.24.


Fig. 4.23 Take Public Transport License

Fig. 4.24 After the Dark License
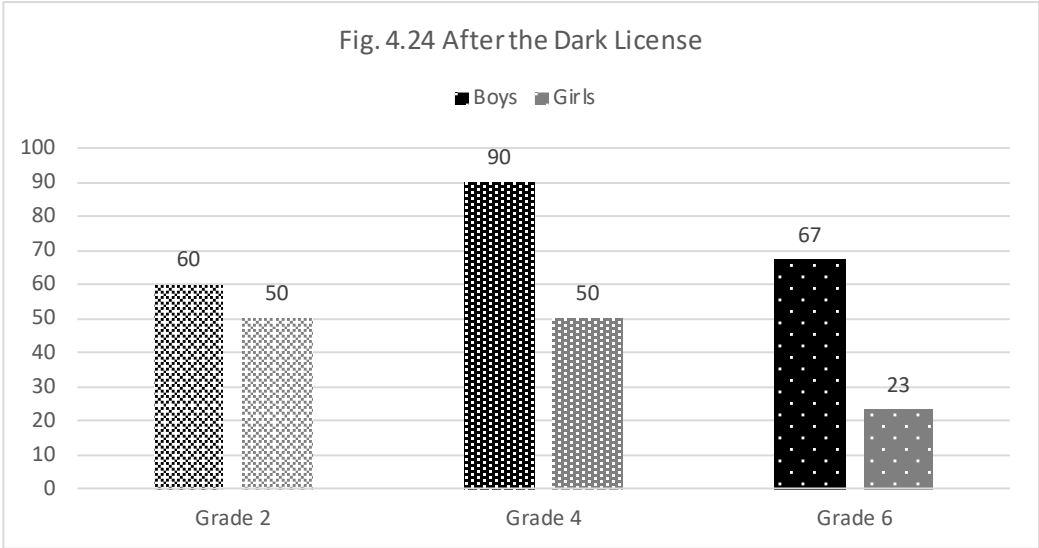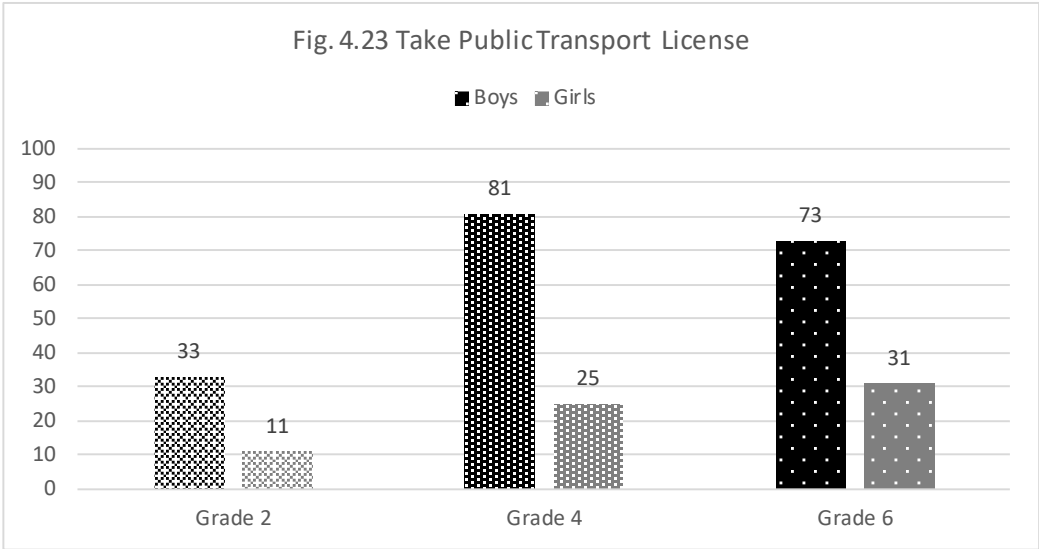
4.4.2.5 CIM Licenses

As a conclusion, the six licenses holding of all grade levels for both genders are compiled in figure 4.25 for an inclusive overview. And a set of conclusions were drawn consequently. Firstly, the *going home from school license* is the only

license which consistently increases with age against other licenses which tends to leap at the 4th grade achieving the highest spatial freedom and drops again sometimes to reach even a lesser autonomy than grade 2 like: the cycling on roads license, going out for leisure and after the dark licenses. Secondly, it reaffirms the ascending gender inequality prevalent mainly in the volitional activity licenses. Thirdly, the mostly achieved license according to children's survey is *the going out for leisure* followed by *going home from school* then g*oing out after the dark* then *crossing roads* then *taking public transportation* and lastly *cycle on roads* with the following mean values respectively: 70%, 62%, 59%, 54%, 45% and 38%.

Fig. 4.25 Licenses Holding for Grades 2, 4, 6
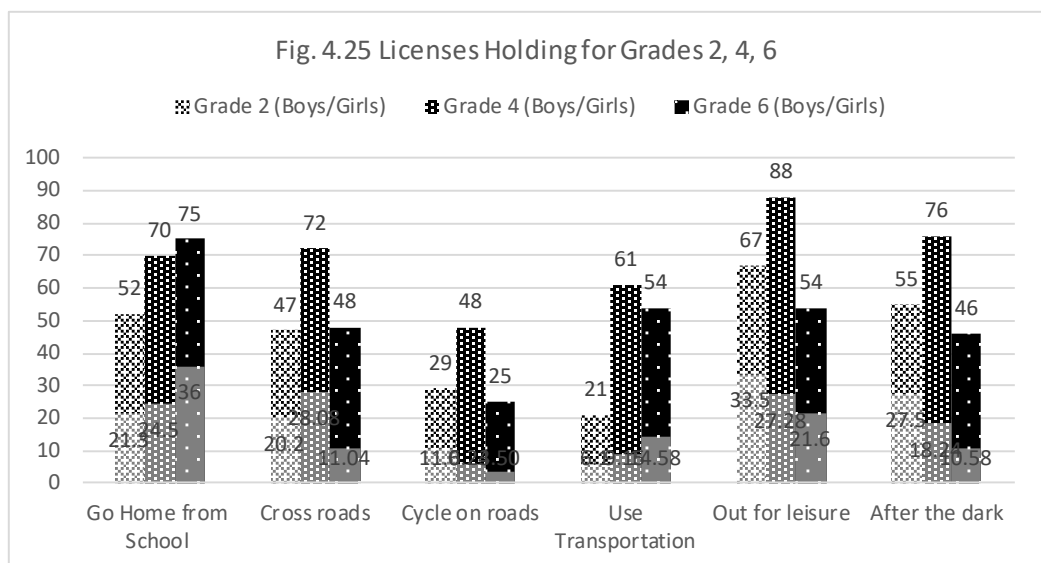
After measuring the CIM licenses index, they were grouped into 3 categories; high, medium and low as shown in Fig. 4.26. This division was mandatory for the next phase investigation in order to facilitate the purposive sampling of the interviewed subjects to represent both samples with high and low CIM.

Grade 2 children falls mostly in the low and medium category while grade 4 are more in the medium and high category and the 6th grade is divided almost equally between the three categories. The maximum score for high CIM indexes (32%) is reached in the 6th grade, for medium CIM (52%) is in the 4th grade and for low CIM (45.5%) is in the 2nd grade which obviously reflects the increase of CIM by age. Also, the highest percentage of CIM index achieved in grade 6 is still surpassed by the low CIM index (39%) which means that a big number of children at this age loses their freedom. This can be attributed to socio-demographic correlates and will further be discussed in phase two.

Fig. 4.26 Children Independent Mobility Ranges
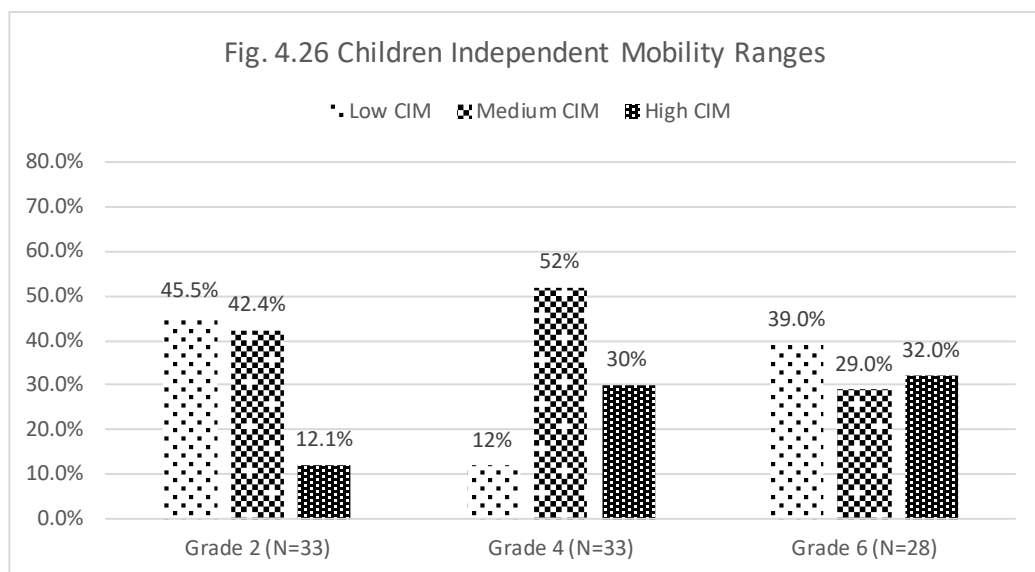
Phase one findings are accomplished reflecting high CIM ranges in informal settlements as well as gender and age relevance to CIM. For a clearer conclusion, this study recommends more context specific studies for contrasting comparisons e.g. formal settlements. The coming section will portray phase two continuing and complementing phase one indefinite or controversial results for crisper outcomes and conclusions.

4.5 PHASE 2: CIM Range and Influencing Variables

This section will introduce phase two data collection procedures as well as their analysis methods, limitations and findings. First procedure is teacher's interviews followed by children's and parent's interviews.

4.5.1 Teacher's Interviews
4.5.1.1 Data Collection and Analysis methods
Teacher's interviews approached teachers who are also parents to investigate their perception of their neighborhood, subsequent CIM licenses, environmental fears as well as understanding their social and cultural background and life styles and routines.

The school administration provided the names of the teachers who fitted the selection criteria; live in the district and have children in primary stages. The interviews were carried out in two days. Each lasted for approximately twenty

minutes and was recorded. The semi-structured interviews were mainly concerned with the same questions in the parent's questionnaires with more focus on cultural backgrounds and the social, physical and institutional aspects of the neighborhood.

Teachers' interviews are grounded in the socioecological model of CIM that included individual demographics as well as social, physical and political environment variables (Crawford, et al., 2017). The questions targeted themes falling under these correlates' categories. After the interviews were transcribed, the data was coded and common themes were grouped based on their correlation to CIM. Associations between parents' demographics, cultural backgrounds and social as well as physical environmental concerns and CIM were thoroughly studied and outlined.

4.5.2 Children's and Parents' Interviews
4.5.2.1 Data Collection and Analysis Methods
After analyzing the CIM indexes of children for each grade, a representative sample was identified for a deeper, one-on-one investigation. All the children chosen names were passed over to the school administration and their numbers were taken with a permission. Twelve families, a child and one care taker per each child, were interviewed over the phone.

The children were contacted over their parents' numbers where they were introduced first with the research topic and purpose as well as asking permission for participation. Before every interview, a map of the neighborhood was prepared to mark on it all the mentioned destinations by the participants. The phone interview lasted for twenty to thirty minutes; divided equally between the children and their parents. Equal gender proportionality was considered where the lowest CIM scores were noticed to be usually shared by girls and the highest by boys.

Parent's interviews first section was divided into two parts. It starts by recapitulating and verifying the submitted surveys data and unforeseen licenses results. Then, parents of children enjoying high CIM are asked about their environmental concerns and mitigation techniques. And parents of children with low CIM, are asked about their licenses restriction reasons and environmental fears. The second section studies parent's spatial range boundaries and pertinent

conditions. The last investigates parents' demographics and backgrounds. See annex x for a sample copy.

Children's interviews are inspired from Lynch's (1977), Hart's (1979) and O'Brien's methods. See annex x for a sample copy. First section explores CIM range conditions where free, accompanied and prohibited ranges are studied according to their typology, associated activities, modes of transport and company. Section two investigates environmental fears whether social or physical in addition to children's demographic characteristics to decipher the underlying concerns or motivators of CIM. The different spatial ranges are outlined correlated to age and gender examining the influential conditions and environmental variables.

The findings similarly to teachers' interviews are considered within the context of the socioecological model of CIM correlates. A thematic analysis of data includes 'immersion in the data; coding; creating categories; and identifying key themes' (Crawford, et al., p. 132). An exemplar is children's described environmental perceptions where the different environmental variables will be coded, classified and grouped based on the socioecological model then ranked according to their typology and relevance to CIM. In order to visualize and conclude this complex interdependent output between parents and children environmental perceptions, a matrix per family is created documenting all procedures' output e.g. CIM licenses index and the interview's output. See annex x for a sample copy.

4.5.3 Limitations

Even though the children were familiarized previously with the research and the map of the neighborhood, it was still challenging to maintain children's interest and engagement over the phone without any graphical simulative methods as well as motivate the parents to participate. Hence, the phone interviews were kept as brief as possible. Also, it was challenging to acquire parent's trust over the phone asking questions about their children's travel and activity patterns as well as their personal information. However, approaching parents from the school's administration side helped ease the situation.

4.6 PHASE 2: Findings
4.6.1 Teacher's Interviews

Interviews from El-Zabbaleen or neighboring Ezba helped contextualize and back drop for children's and parents' interviews. Having interviewees from both

neighborhoods, genders, different age groups and religions helped understand how the El-Zabbaleen community as majority Christians enclosed in their socio-spatial territory deal internally and interact externally with their Muslim neighbors in El-Ezba. How their psychosocial and geographic borders impact their mobility and autonomy as a society. How their industrial nature and rural background determine gender roles of young girls and boys. Also, it reflected their fears, aspirations and eagerness for change.

4.6.2.1 Children Spatial Activities

Teachers were asked first about children's geographies. Where do they play in the neighborhood and what are the social and physical threats that hinders their environmental interaction. Some parents preferred indoor play e.g. empty pig farms or indoor work areas while others observed children playing outdoors on the streets wherever possible or in designated areas for play like the school's playground, gyms or cyber cafes where they play billiards or play station. However, girls growing up did not enjoy as much freedom as boys. They were confined more to house chores and going to church.

"I have seen maybe a few times right in front of Virgin Mary church. This area is a bit wide so sometimes children play there football or with their bicycles when there is no car parking… Maybe due to the presence of the church, they feel safe and there is no workshop or anything occupying the space and the street is a bit wide so they have a space that can gather them…." (T1-FG, El-Ezba)

"They would maximum go to the church. It is known that girls don't play or go out in the streets. After the 5th or 6th grade we can't go outside. They can be in front of their houses or go to their relative's houses but not their friends, only family." (T2-MB, El-Zabbaleen)

"For girls, it is harder as every act she does is being observed and judged. Parents are scared of the community's judgement." (T3-FG, El-Zabbaleen)

"No, my daughters don't ride bicycles. A bicycle means going to the street and they are not allowed on the streets. Children here speak really bad language." (T4-MG, El-Zabbaleen)

Girls being culturally not allowed to loiter or be present in the streets much does

not deprive them of playing, meeting friends or cycling only, which justifies the big gender ratio difference in cycling on roads license, but also affect their environmental competence and knowledge making them less capable of navigating their neighborhood in young ages as explained by one of the teachers.

When teachers were asked about the presence of stranger danger or any social fear or harassment or bullying towards boys or girls alike, all agreed on the same opinion.

"In Zabbaleen, I don't think it exists. You might find it more in El-Ezba because here all people are considered relatives and know each other." (T5-FB, El Ezba)

4.6.2.2 CIM and the Built-Environment

The research aims to understand to what extent the built-environment impacts parents' decisions concerning their CIM and how. So the question was asked and the following replies were given.

"It definitely impacts. Here in EL-Zabbaleen, I don't see much children playing in the streets like down in El Warsha Street or the rest of the alleys and streets of El-Ezba. I think it impacts their freedom due to the dirty streets. So I see less children playing the usual street games. Maybe, it can also be due to the high rates of child labor in El-Zabbaleen. In the rest of El Mansheya this might happen but in summer. In EL-Zabbaleen a big percentage of children work with their parents... This factor makes children less free to play. (T1-FG, El-Ezba)

"Of course, it impacts. If I find the street safe I will allow my son to go outside more....Like having a pavement to walk on, but our neighborhood here is informal." (T5-FB, El-Ezba)

On the other hand, there were opposite opinions that stated that street infrastructure comes as a least priority compared to traffic danger and social threats and behaviors since children got used to the space already and know how to maneuver around streets' physical dangers. Hence, the built-environment is a controversial aspect that impacts parents' perceptions variably and relatively to other existing fears and depedning on parent's anxiety levels.

4.6.2.3 Neighborhood Relations and life styles

El-Zabbaleen community portrays a very particular life style to surrounding neighborhoods where work life dictates a specific routine. People tend to sleep early and wake up at dawn. Most of the shops and street life stops by nine pm. Streets after this is dark and people are usually home making it nearly impossible for people, especially children to travel independently at night.

Furthermore, they live a very secluded life and avoid leaving their neighborhood as much as possible except for occasionally planned family trips and visits. This opinion was more popular among women. This can be attributed either to their defined geographic borders or to social fears avoiding trouble and religion-based discrimination.

"The lower part of El-Zabbaleen is more active as most people there don't have the same job in the garbage industry. It's around EL Forn Street. It is full of shops and Qahwas that stays late. Up here, most of the shops close early." (T3-FG, El-Zabbaleen)

"People are so scared due to the religion difference. I haven't went outside of El-Zabbaleen to El-Ezba except when I reached high school. I rarely used to go. Nowadays, it is way freer than before. Before, we were more enclosed and with time became more exposed." (T3-FG, El-Zabbaleen)

"I never go there. We don't leave El-Zabbaleen. We go to school, church and monastery. Unless I'm going to my family in Assiut, I don't go outside." (T4-MG, El-Zabbaleen)

4.6.3 Parent's Interviews
4.6.3.1 Parental Licenses and pertinent Negotiations

After parents' interviews, licenses contradicting patterns were resolved. Models revealed parents granting licenses not utilized by children e.g. going to school alone either due to children's fear or lack of desire or parent's coinciding daily routines and work schedules. Also, children claiming more licenses than provided explained by their aspiration towards more freedom or parent's unconsciousness of their mobility sometimes or lack of understanding for the license definition. Lastly, an explanation for the high unexpected index scores of some CIM licenses e.g. *go out after the dark* as it takes place under certain conditions.

The interviewed girl's (N=6) all belonged to the same low CIM range which compromised most of the girl's surveyed sample (44%). They were all allowed to go to nearby destinations e.g. the pharmacy, the supermarket or the spices store right next to the house or a couple of blocks away. Half of them were allowed to cross the streets and go to school unsupervised, often accompanied by older siblings, and only two were allowed out after the dark but also within a bounded spatial radius not more than 50 meters from home and to certain nearby destinations. Only one was allowed to take toktoks but it had to be someone known. None was allowed to go out for leisure or cycle on roads.

As for the interviewed boys, they fall in the same high CIM range except for two (N=8) representing most of the boy's surveyed sample (47%). All boys were allowed to go to nearby destinations on their own. Only half would cross the streets and commute to school alone like girls. Usually they were accompanied by other siblings or friends or cousins living in the same street. Three were allowed to take toktoks and go out for leisure and only two enjoyed the privilege of going out after the dark and cycling on roads.

Comparing parents' interviews output with children's surveys data, girls' CIM licenses are almost consistent showing equivalent ranking of licenses holding. It similarly has school and crossing roads as most used license and taking toktoks and cycling on roads as least. However, going out for leisure was secondly ranked which was completely negated by all parents stating that girls are not allowed out alone for leisure. On the other hand, boys surveys showed wider range of discrepencies where going out for leisure and after the dark were the highestly ranked licenses followed by crossing roads then going to school. According to parents, the order is oppositely stated with cycling similarly the least. The reasons for these differences to be further explained in the coming sections.

The only reason reported by all parents and children alike for not *coming from school* independently was traffic confirming the surveys. The dense flow of cars and toktoks were a major threat to all families. Thus, alternative arrangements were taken as follows:

"They come and go every day with a toktok we know and pay him by month. The way to school is really crowded so I'm afraid any of the kids would get hit by a car." (MG2-1)

"She used to get a bit scared at first when she was in primary one but now she goes alone sometimes. But now since I'm working, I take her with me when I'm going out"

"What is she scared of?"

"Once there was a car that drove over her feet so she is a bit nervous." (MG4-5)

Another license being mainly inhibited by traffic is *crossing the roads*. It was attributed to parent's lack of confidence in their children's capabilities to discern traffic danger and handle it. "He is still young. He is in grade 2. He is young and can get hit" stated a father of a 7 year old boy. Another reason is social pressure and fear of judgement where even if parents sometimes consider trusting their children, facing judgements or community interference in their children's actions hinders their licenses' development.

"I did it once and I regretted it later because my friend saw her and called me and told me that the streets were really crowded and your daughter was almost getting hit by a car." (MG2-1)

However, as children grow up especially for boys, parents grow more confident in their skills and express a different perspective for traffic.

"Yes. It is normal. She can go alone to her grandmother."(MG4-5)

"Yes, I don't accompany him everywhere. He depends on himself. He can go and bring me stuff either with his bicycle or walking." (FB4-7)

Cycling on the roads is another controversial license that conflicted expectations and required more investigation. Nevertheless, only boys were allowed to cycle on the roads and one mother stated that her daughter rides her bicycle inside the apartment since most apartments are spacious. Moreover, some of the documented licenses during the survey when discussed with the parents turned out to be untrue. The main reason was mainly due to the inadequacy of the streets for cycling and the traffic leaving no space for children to cycle.

"He doesn't have a bicycle. He wanted one but I didn't get him because I'm scared over him from the street. He has the tablet in the house and other games and plays with everything in the house". (MB2-3)

On the other hand, parents allowing their children to cycle on the roads, feasible circumstances were described. They lived in secondary streets, sometimes reported to be paved, with more privacy and less traffic. Children in the afternoon would all play together in the same time in the street within the watch of their parents. Others allowed playing within the same street and afforded more allowance for house errands.

"Yassa plays with his bicycle in our street but if we need something from the neighborhood around, I can normally send him to get it. I don't get scared over him. He's smart" (FB4-7)

Whereas for volitional activities different reasons were associated. None of the girls were allowed to *go out for leisure*, meet friends or play on the streets. The main reason at a younger age was usually traffic danger and fear of acquiring other children's improper behavior and repulsive language spoken on the streets while as they grow up the logic shifts more towards society norms and traditions. It is not socially and culturally accepted for girls to play on the streets or cycle or loiter.

Others related it to the lack of leisure destinations in the neighborhood leaving no other option but the streets, children's common play space that is not appreciated for girls. It is only possible to avoid the neighborhood's traditions and dangers by going to clubs or preplanned summer family trips. Girls were reported to go out mainly for house chores, grandmother's visits, liturgy and Sunday schools in the church or monastery as well as trips arranged by school or church.

Boys develop more freedom going out with friends and playing on the streets as they grow up opposite to girls. However, at an early age parents make an effort to control their boys equally fearing the neighborhood's heavy traffic, toktoks' irresponsible driving, other children's misbehavior and the fear of their children being involved in misconduct or neglecting their school studies. Thus most parents allow their children to go out for leisure either in the summer vacation or within a close proximity to the house under surveillance.

"Yes, he goes but not far from home unless any of his friends convinced him to and he usually doesn't tell me."
"Why don't you want him to go far?"

"Because of his friends. He has some troublesome friends who might impact him negatively. Their parents might not be very involved but for me he's my only boy." (FB4-7)

Taking public transportation is one of the most feared and least approved licenses especially for young age. This is due to a wide spectrum of reasons starting from the driver's manners, their reckless driving to the toktok's unsecured open structure with no doors. Parent's reported driver's smoking illegal substance, harassment incidents, fear of kidnapping, fear of traffic, children being too young and having everything at a walking distance as more reasons.

On the other hand, the children being allowed to take toktoks alone either have to stay within the neighborhood boundaries or go with a recognized driver. Another few expressed their trust as a result of the community strong social ties and lack of strangers. Parents shared contrasting opinions.

"Toktok drivers coming from neighboring Razaz and Duweika take drugs... They come and work at the neighborhood when they are high so I worry about the children." (FB6-11)

"Our neighborhood has one privilege which is people knowing each other. If my son goes outside people knows whose son is this... The toktoks also know him and we know whose toktok is this and who is driving it. 80% of the toktoks in the neighborhood are known."
"Others were saying toktoks come from neighboring areas and have poor manners?"
"Very little. Even our children knows. If they see different kid driving the toktok, they don't ride with them. Besides, we don't have so many Toktoks like neighboring areas." (FB4-6)

Going *out after the dark* is equally feared by boys' and girls' parents. Common reasons were children being young and not used to going out, fear of getting bitten by stray dogs, stranger danger as well as family early sleeping and waking up hours from 8 pm to 4 am.

However, most children enjoy this license permission under certain rules and conditions. These conditions explains children's high perception of this license and

parent's unslacking and strictness if these conditions are not available. Children need to be accompanied by an older sibling or stay within an agreed spatial range which starts from the supermarket downstairs to known destinations within 50 meters radius to around the block. They were usually allowed till eight or nine pm at most. Street life also impacts parent's decisions as mentioned below:

"Usually he doesn't go far away from our factory area as our street is very active and works till late. There are a couple of qahwas that stays up late in our street as well as his cousins and relatives are near us in the same street." (FB4-7)

Most parents expressed different mitigation techniques and agreed upon conditions negotiating licenses restrictions and finding an intermediate platform with their children. But when some were asked about future potentiality of more CIM the answers varied according to the involved license. For example, crossing the streets licenses answers were: when they grow up more, or certain age ranges like thirteen, or when they reach preparatory stage, or it depends on the child himself/herself when they are ready. Other licenses like allowing girls to go out for leisure alone, the answer would be "This is not possible".

As a conclusion, the reasons and environmental fears associated to each license restriction varied mainly according to the child's gender, age and birth order. It also depended on the nature of the license whether volitional or none. This highlights the presumption that children's and parents' environmental perceptions; fears and motivators are interrelated with children's demographics.

4.6.3.2 Parent's Environmental Perception

The second part of section one summarizes parent's environmental fears impacting their overall decision making process of CIM. On top of which is traffic danger and social apprehension. The survey denied the presence of bullies and harassers which reflects a misconception of the variable's definition. Social apprehension in the interviews were attributed to other children's misbehaving, inappropriate language and children bullying among themselves.

Traffic danger was attributed to the minors driving toktoks irresponsibly, the high flow of pickups due to the area's industrial nature and lack of efficient pedestrian infrastructure to keep the children away from the cars. Children's mischief and repulsive language was justified by the high un-enrollment school rates where

many children work and stay on the streets engaging in nothing beneficial for their psychoocial development.

On the other hand, stranger danger has been unanimously denied by all families stating that all residents know each other due to the close family and kinship relations and if there is an outsider everybody notices them. Hence, mutual respect is a norm and harassment is not socially accepted within the community. Parents also explained that elders do not meddle with children bickering and fights leaving them to solve their matters independently.

"I can get scared of cars to an extent but as for strangers there is no fear. We all know each other in Saint Simon neighborhood." (FB6-10)

The few parents who expressed fear of strangers referring mainly to harassment and kidnapping, stated clearly that these strangers do not belong to the area and are usually outsiders coming from the villages or neighboring areas to work as labor or toktok drivers.

"There are many workers here coming from the villages who don't know the norms of our community. People who know each other respect each other but these people no. They can catcall or say inappropriate words to my daughter." (MG2-1)

One particular observation was that fathers completely excluded the possibility of harassment or social fear and only mothers affirmed it. This can be explained by the improbability of males being subjected to such situations making the mothers only aware and sensitive towards especially over their daughters. So stranger danger existed for a few but is considered relatively low compared to other informal settlements.

"The area is not safe honestly. I'm scared anyone would kidnap her. She goes out with me. She doesn't leave me." (MG4-5)

"The idea of harassment is not possible. It doesn't even cross my mind." (FG2-2)

Among the other fears expressed by the parents is streets' physical dangers. Mostly acknowledged was darkness and stray dogs making it impossible for children to

commute at night as well as broken streets, dirt and water leakage. Though the threat was repeatedly mentioned, it was considered less impactful than others and ranked in mentions usually the least as it was adapted and mitigated by different measures from parents and children. Some parents stressed the relative insignificance and rationalized that it is a normal scene everybody got used to.

"When I know that there is a water leakage somewhere, I tell them don't walk from this street. Take another one." (MG6-8)

"No, they got used to it. It's a normal scene in our area. They see dogs and cats and trash every day when they are walking with me or their mother." (FG2-2)

Fear of getting lost is shared among a few parents where only two of the twelve interviewed named it and rendered it influential on their CIM. It is linked to the lack of confidence in children's capabilities and is mainly related to age and gender. The concern was raised by mothers over girls. As they grow up their anxiety decreases as their children develop more environmental competence. For boys, parents expressed trust in their competence and they only go to places they know. This can be ascribed to the area's compactness and presence of many reference points like the church, the monastery, El Forn Street, the entrances and the schools.

"No I'm not scared over him getting lost. Even If he got lost, people knows him and would bring him back." (FB4-6)

"No, she's old. She wouldn't get lost. She knows the neighborhood well." (MG6-8)

4.6.3.3 Community Surveillance and Social Cohesion
Most of the parents (75%) interviewed appreciated the prevalent sense of community and strong belonging within the neighborhood. It enhanced their perception of the social environment and mitigated some of their environmental concerns promoting CIM. However, some confirmed that they still feel anxious and it does not necessarily impact their decisions.

"Yes, of course. People know she is khaled's and Laura's daughter and if she faced any problem many people would help her because we are all close." (FG2-2)

"Yes, it reassures me. I know that if anyone saw him in a situation, they would know who he is and say this is Yassa, Sameh's son." (FB4-7)

"Yes, some people take care of each other's children and some people know whose son or daughter is this but still there is some anxiety." (MG4-5)

4.6.4 Children's Interviews
4.6.4.1 Children's Environmental fears and mitigation techniques

Children expressed their environmental fears which usually resonated their parent's. Young children at grade 2 were mainly scared of strangers or kidnappers as well as traffic and then getting lost. As they grow up and enjoy more freedom, they reported the same fears and added to it stray dogs and darkness. The eldest group, mentioned traffic, dogs and darkness but excluded strangers since they are now part of the community and added bullies and people who fight on the streets.

"Strangers who can grab me and kidnap me from my mother" (B2-3)

"The people I don't know who walk next to me, I get scared of them and I start running quickly to the house so that they wouldn't kidnap or harm me."
"What else scares you? "
"The cars. They run fast and I'm not able to follow up so I run as I have a super power that I use and reach the house fast. I run straight to the house." (G2-2)

Children who are more independently mobile reflected less fears and were not scared as much.

"No, I don't get lost. I know where I'm going and coming from.... There are no strangers here. We know everybody." (B6-10)

Children used different methods to overcome their social and physical fears like walking on the side of the streets to avoid cars, run fast if they are threatened by a stranger, take someone with them if they are scared of the darkness or dogs and take another street if it is broken or hard to walk on. Others prefer to stay as close as possible to their home range.

When asked about the most challenging areas children face trouble to move in

and would like to change or develop, crowded streets was a main obstacle to reach certain destinations. Children named a few like the entrance to El-Zabbaleen from the Moqattam street, the Autostrad highway and the parallel El Sekka El Hadid street where the military train tracks exist at the end of El-Ezba delineating the western boundary of El Mansheya. Parents referred to El Midan; the square in the middle of El Forn street to also represent a pedestrian difficulty as all work pickups pass from this intersection and people do not know each other there much. Children also mentioned distances as a hindering factor that limits their mobility and referred to dark streets and dog packs in different streets nearby.

4.6.4.2 CIM Range Conditions: Free, accompanied and prohibited

Based on the highlighted social and physical environmental concerns shared by children and their parents, CIM ranges are decided. The data was helpful to understand how children use their freedom according to their age and gender, the frequented destinations and its permission conditions as well as safety perception and preference for some destinations over the other.

Children at grade 2, all revealed equal free range conditions where none was allowed at this early age to leave home without a permission. However, going to nearby destinations like the supermarket for quick errands was allowed to both genders but with a permission.

The accompanied range expanded children's spatial boundaries a bit where a girl living on the same street of Virgin Mary church reported walking to the church with either of her older sisters. In addition to, going to Saint Simon Monastery with her sisters by a toktok which is almost 850 meters away at the farthest end of El Zarayeb. The distance provided is an average value measured in straight line on the map (See figure 4.27). As for the prohibited range, it was either being generally on the streets or any place far from home.

As children grow up, the spatial range and restrictions leap considerably. Fourth grade boy's free range without a permission varied between going to the monastery walking or by a bicycle, the church, playing with a bicycle within the habitual range or flying a kite on the roof. The spatial range expanded to include the whole neighborhood area but to certain destinations as shown in Figure 4.28. Moreover, the activities varied where a boy mentioned going regularly to El Midan, the most crowded intersection in the middle of El Forn Street with his

cousin living next door to buy food and roam around.

Figure 4.27— Range Conditions map for ages 7-9, Grade 2 Source: Author

With permission, boys can carry out more activities and visit more places. Among the added destinations is visiting relatives across the full range of El-Zabbaleen, going to cyber cafes to play billiards or play station with friends or playing soccer in El Warsha street which is restricted by many families (see Figure 4.28). Children not only rely on walking but a few take toktok sometimes.

However, girls within the same age range remain confined to the same habitual range which lies within a 4-5 minute walk from home to the familiar nearby destinations. Even with the company of siblings or cousins excluding friends, the accompanied range stays bounded. As for boys, friends company does not assure more freedom keeping the same free range but even raises parents' anxiety being dragged after friends and disobeying spatial boundaries. This is against Hart's study findings where accompanied range reflected more extended boundaries (1979, p.61). The prohibited range for both boys and girls at this age is places outside their neighborhood mainly in the adjacent El-Ezba area, like El Warsha Street or El Gamae Street due to traffic or social fears (see figure 4.28).
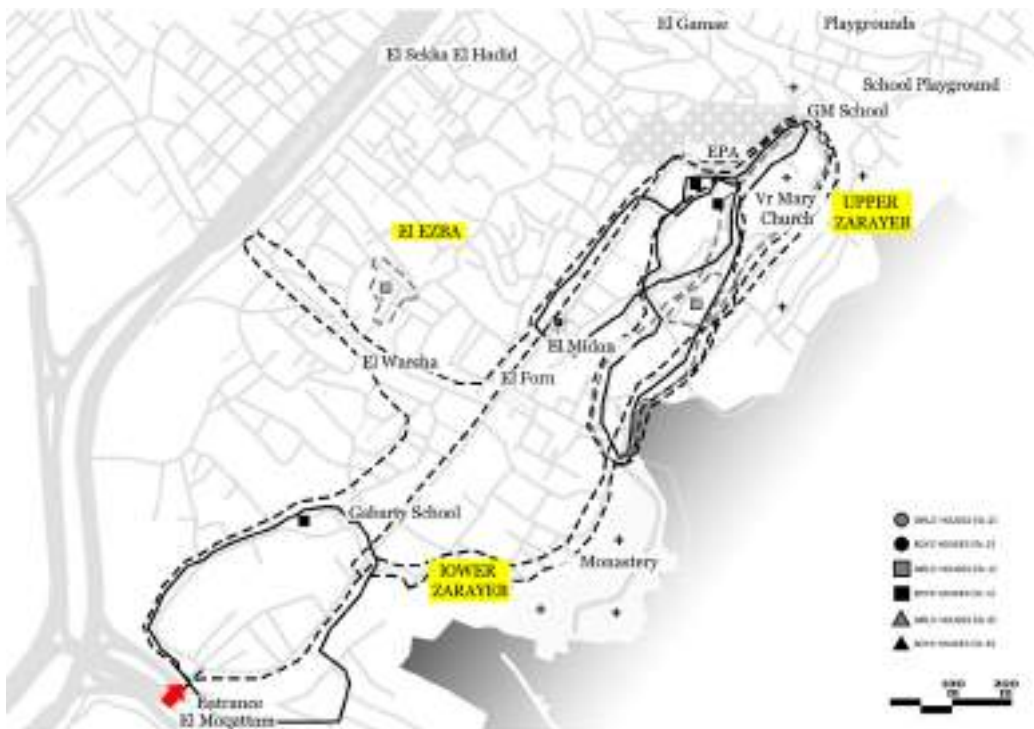
Figure 4.28— Range Conditions map for ages 9-11, Grade 4 Source: Author

The oldest group experiences the freest ranges. Girls still need to ask for permission before going anywhere but they can go to more and farther places. Apart from the supermarket and church accompanied by siblings or cousins, they can visit their grandmothers and relatives living within the same streets or at a short walking distance. The accompanied range is slightly upgraded to farther distances around 500 meters but to known destinations like the monastery and church (see Fig. 4.29). The prohibited range was associated with social concerns like going to friend's houses or being on the streets alone.

The boys of this age group documented similar destinations and activities like the church, the monastery and the supermarket. It is assumed that the time indicator, which is not included in the study, is the introduced priveleg for this age where one boy described travelling outside of El mansheya with his brother to EL Moqattam every Saturday and another reported staying on the streets playing football or cycling almost daily. Hence, boys of this age group might enjoy similar spatial range but more frequency and duration.

Figure 4.29— Range Conditions map for ages 11-13, Grade 6 Source: Author

With permission, the free range expands significantly as boys travel more independently alone or accompanied inside and outside the neighborhood. They can go to El Moqattam alone or with friends by public transport to spend time in cafes or gardens. Moreover, visit relatives' houses across the neighborhood and reach to the entrance of El-Zabbalen near the bridge or El Ezba. The accompanied range does not represent any reassurance for parents in this age group either where the range does not change or expand. The prohibited range usually includes anything outside El Mansheya especially its western border due to the highway and the traffic (see figure 4.33). El Ezba is the mostly prohibited area according to most parents.

"I'm not setting any boundaries for him except for a place next to us here called EL Ezba. We are not far from there through el Husseiny Street where they can easily reach the train tracks. So we warn all the children from going there to avoid problems because I know if someone annoyed him, he would defend himself... Sometimes when children are walking there, other children harass them... They have racism even towards the children. They can pick up on the children, not only children but adults." (F3-B6)

Children's favorite places ranged between destinations within the neighborhood and outside. Within the neighborhood, girls enjoyed visiting the church and the monastery as they pray, attend the liturgy and Sunday schools and meet friends as well as their grandmother's house where they spend time with their family. Boys favored also the church and monastery for same reasons as well as riding the bicycle, going to the gym and visiting their relative's house to play with their cousins. Outside is the preplanned family trips to destinations like the swimming pool in El Moqattam or travelling to sea destinations. The least favorite places for some girls was the streets and mostly expressed their insignificance as they do not go out much. For boys, it was mostly nothing except for one who stated the highway due to the traffic.

4.6.4.3 Children's most and least frequented destinations:

On the other hand, most and least frequented children's places according to parent's revealed more spatial concerns and information. For girls, the same destinations were mentioned in addition to more house chores like buying vegetables and home supplies for the old age group. The least frequented places question reflected parent's reluctance to let their daughters outdoors for any activities other than school, prayers, errands or visiting grandmothers where the usual answer was "Nothing specific, they do not go out anyways."

As for boys, the mostly frequented places are also the same destinations as well as the school playground, visiting parent's workshops and going for tutoring. The least spaces were nothing but crossing El-Zabbaleen at early ages and expands to contain El Mansheya as they grow up. Boys' parents tend to place more restrictions on their children as they are more exposed and endangered to more social and physical threats having more spatial freedom. (See figure 4.30).

Figure 4.30—Children's most visisted places and prohibited places. Source: Author

4.6.5 Conclusion

The findings of the empirical field research consolidates Shehayeb's aforementioned privileges of living in informal settlements. El-Zabbaleen's compact urban area and availability of all local needs encouraged families' active commuting and children's freedom to go to many nearby destinations. The work-home proximity where most families worked within their habitual range in the garbage industry granted children more freedom due to parent's constant presence on the streets and extended vision over their children.

The extension of the living and work space to the streets helped create safer environments for children mitigating stranger danger and traffic danger due to the slowing down of car's movement. It led to a heightened sense of safety, community surveillance and social cohesion. This also positively impacted CIM mitigating parent's environmental concerns. However, some concerns remain locally specific to El-Zabbaleen like other children's misbehaviors and street physical dangers e.g. stray dogs and darkness. These environmental fears will further be discussed and categorized in the coming chapter for a clearer correlation with CIM.

CIM Correlates: Based on environmental perceptions

5.1 Introdcution

From the preceding field work, phase one identified the extent of CIM- indicated by licenses holding- linked to children's and parents' demographics. Phase two explained how it is spatially used-indicated by CIM range, linked to the perceived environment by both. Findings of the two phases were studied within the framework of the conceptual socioecological model (Fig. 5.1) concluding the variables and conditions that define to what extent, how and where children are afforded independent mobility and activity.

The discussion aims to answer the research question identifying the correlation between the immediate environment the children experience, the phenomenal landscape as termed by Moore, and their independent spatial mobility and activity. Thus fulfilling the research objective which is to highlight the demographic and environmental correlates, their extent and direction of impact on CIM and finally their interrelations and level of dependencies.

The study lacks any objective measures of the physical environment in most studies due to the lack of available geospatial information e.g. GIS or official statistical data for El-Zabbaleen. Hence, studying the neighborhood environment for comparative purposes was not done the conventional way. The alternative was to conclude the physical and social environment correlates for future research

and implications from children's and parent's subjective perceptions of their environment.

The chapter will start by describing the findings illustrating CIM licenses in relation to demographics then the CIM ranges in relation to the perceived environment reflecting the social and physical correlates. Finally, these correlations will colligated to deduce the interrelated demographic as well as the environment correlates of CIM licenses and spatial range as in Fig. 5.1.
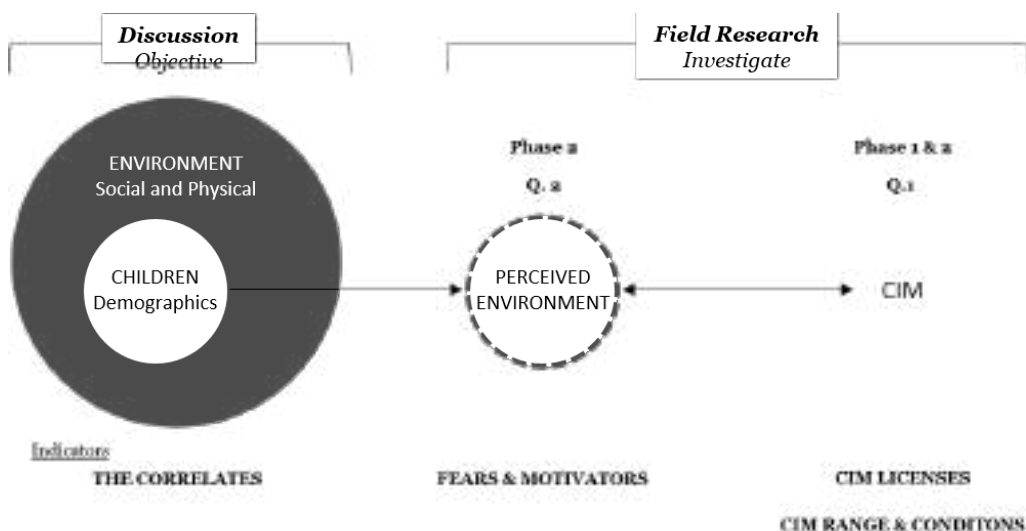
Figure 5.1 — Th conceptual framework of the socioecological model of CIM correlates.
Source: Author

5.2 Demographic Correlates

5.2.1 Age as a Gender-dependent Correlate

After calculating the CIM index for children of different ages and demographic characteristics from the surveys, the following correlations were realized. First, age and gender are two interconnected variables that highly impact CIM. Boys were noticed to enjoy higher CIM licenses than girls across all ages as seen in table 5.1 reflecting a high gender ratio differences. However, age is dependent on gender where boy's CIM index mean value scored 3.1, 4.6 and 4.1 for grade 2, 4 and 6 respectively while girls scored 2.0, 3.1 ad 2.0 respectively with grades.

Both scores reflected a gradual decline after the 4th grade where girls' loss of spatial freedom is doubled to boys. This decline was attributed mainly to gender roles inspired by culture and traditions which will be further studied in the coming section. So in this study, CIM does not increase with age opposite to

many study findings like Blakely 1994, Heurlin-Norinder 1996, Giuliani et al. 1997, Sissons Joshi et al.1997, Timpero et al. 2004, Fyhri and Hjorthol 2009 as cited in Alparone (2012) but is more gender dependent.

5.2.2 Birth Order and Family Routine

Second, birth order was also seen as a determining variable where children with older siblings experience earlier and higher CIM since they had company alternative to adult's supervision. Third, 60% of the participating parents worked within their homes and their children enjoyed higher CIM. This can be attributed to having the parents present on the streets in the home range whether sorting or in their workshops expanding their visual radius over their children.

Some children were allowed to cycle or go to nearby destinations or be on the streets generally as long as they are within their parents' eye sight. This privilege of families' work from home logistics is not present in other neighborhoods and entails acknowledgement. Fourth, family residency age in the neighborhood, parent's education, the number of cars and distance to school did not correlate to CIM. The distance to school only impacted the going to school license but not the other licenses.

Concluded Correlation	Background Variables		N	Mean
exists	Gender	Girl	43	2.3
		Boy	51	4.0
Inconsistent depending on gender	Age	2nd Grade	33	2.5
		4th Grade	33	4.1
		6th Grade	28	3.1
-ve	Birth Order	Oldest	4	2
		Middle	3	4
		Youngest	5	3.8
No relation	Years of Residency	0-15	15	3.6
		15-30	7	3.6
		Life long	29	3.2
No relation	Parents Education	Illiterate	5	2.6
		Read/Write	4	4.3
		Primary	13	3.9
		Prep.	4	2
		Vocational/High scho	17	3.2
		University	10	3.4

+ve (inside)	Workplace	Inside house	24	3.9
		Outside house	16	3
No relation	No of Cars	Zero	31	3.2
		1	16	3.3
		>2	6	3.3
No relation	Distance to School	<5 min	46	3.4
		5-15 min	35	3.2
		15-30 min	10	3.3
		>30 min	3	5.7

Table 5.1 — CIM index mean score in relation to family demographics

5.3 Environmental Correlates based on Perceptions

5.3.1 Traffic Danger, Other Children Misbehaviour and Cultural Norms

From phase two interviews, parents' and children's environmental perceptions were translated into fears and motivators for CIM. This section will deduce from the collected qualitative data the environmental correlates of CIM categorizing them into physical and social variables in order of their impacts.

Parent's main physical environmental fear across all ages consistent with previous studies is traffic (Crawford, et al., 2017; Malone, et al., 2017; Marzi & Reimers, 2018). The second ranked social fear, against most literature imputing stranger danger, is fear of other children's misbehavior and inappropriate spoken language (ibid). Most parents criticized children's streets' manners in the neighborhood expressing concern on the impact it would inflict on their children. Hence, most parents refrain from leaving their children on the streets for long.

Cultural norms and traditions in El-Zabaleen play a significant part in the society's crystallized gender roles. This is a very peculiar social environment correlate shared by all families linked to the neighborhood rural background. Most parents explicitly justified their children's deprivation of independent mobility licenses especially for volitional, recreational trips by gender roles.

Girls were claimed un-entitled to go out for leisure e.g. visit their friends' houses and play or loiter in the streets, cycle or perform any activity that would demand their long unjustified presence on the streets. They were only entitled for non-volitional travel like school trips, church visits and house chores. A girl after maturation is not believed to have equal rights to play like boys or be independent. She is expected to abide by society's norms relenting her freedom with age.

Similarly boy's freedom is jeopardized by their dicitated gender roles and growing responsibilities at early ages. They become involved in their family's businesses and house chores. They do not lose their freedom as much as girls but their choice and opportunities to play and do what other children their age would be doing.

5.3.2 Child is Young, Stranger Danger and Street's Physical Dangers

The fourth demographic correlate expressed by many parents for the different CIM licenses is children being too young or getting lost. This reflected parents' lack of confidence in their children capabilities and over anxiety. It was mainly linked to children's age and gender where this fear was mainly shared at early ages and mainly for girls.

Stranger danger is the least mentioned social correlate in this study opposite to previous studies (ibid). Parents negated the posibility of strangers' harassment, kidnapping or crime except a few. It is mainly dependent on the gender of the child and the parent where this fear was commonly shared by mothers over their girls. However, for the little percentage that confirmed its validity associated it to neighborhood out comers but still prioritized it when considering their children's spatial freedom. Even if the risks were low, any risk at all was considered intolerable to parents (Crawford, et al., 2017).

The least ranked physical environment correlate is streets' physical danger. This was mainly dependent on parent's anxiety level and confidence in the child capabilities. Even though this concern was mentioned by many parents who feared the streets' darkness, stray dogs, lack of pavements, water leakage or insects and dirt, they considered it more neutral relevant to their decision making when considering their children's safety. They normalized it as a usual, daily scene that can be ignored and maneuvered by children. Hence, not directly impactful especially for the non-volitional CIM licenses.

5.3.3 Children's Fears and Mitigation Techniques

On the other hand, children expressed another set of environmental fears and mitigation techniques. The first concern opposite to parents and similar to literature is stranger danger. It was shared mainly by young children till a certain age before gaining competence and social knowledge. However, children communicated different mitigation techniques to maintain their spatial freedom. Some resorted to running in order to reach their destinations fast with minimal

exposure to threats whereas others preferred their siblings company for reassurance. Although this variable was apportioned by most children, it was overcome by wit and determination.

Secondly, traffic danger similarly to parents was mentioned by all children as influential on their drive for CIM followed by fear of getting lost which was dependent on children's age. Lastly, is the streets physical dangers which was also dependent on age developing with the extending CIM spatial range and exposure to street challenges. It was mitigated through detouring, avoidance or company causing no impact on independent travel. Bullies or other children's misbehavior was not mentioned or seen as important by children.

5.3.4 Community Surveillence and Travel Distances as a Motivators

All the above mentioned environmental perceptions are negatively correlated with CIM. Among the positive motivators shared by parents promoting CIM was the strong social ties and community surveillance resulting from the kinships structure of the social fabric as well as the introverted, socially secluded nature of El-Zabbaleen. This also led to the controlling of social problems and stranger apprehension since everyone knows each other and strangers are directly spotted as described by parents.

This elevated parent's safety perception of the neighborhood granting more spatial freedom to children. 75% of the parents' interviews affirmed community surveillance mitigating their environmental concerns and impacting their CIM licenses. Another positive physical environment correlate that confirms most studies' outcomes is the traveled distance. Even though traveled distance to school did impact only children's CIM in school travel license, the nearby destinations licenses surveyed in both phases was the highest affirmed license.

All parents allowed their boys and girls alike to go to nearby destinations e.g. pharmacy, supermarket, church, school, relative's houses as long as they are within a defined spatial radius. This radius is negotiable depending on each family, the age and gender of the child and the livelihood of the street. The traveled distance is positively correlated with CIM. Hence, having nearby destinations accessible for children within a walking radius is a vital feature and very achievable especially in the context of compact informal settlements.

5.4 Interrelations between the Environmental and Demographic Correlates

This section tackles the last aspect of the research objective which is highlighting the interrelations between the outlined correlates after identifying their extent and direction of impact on CIM. Fig. 5.3 represents how each social and physical environment as well as demographic correlate interrelate with each other and CIM in the case of El-Zabbaleen settlement.

It concludes all the research findings grounded within the socio-ecological model of CIM correlates reflecting their relative impact and mention rates. However, the mention rates is not a measure of impact since some variables were mentioned substantially but were mitigated by certain conditions e.g. child getting lost. Others have intermediate mention rates but huge impact on CIM licenses e.g. gender roles which was relevant mostly to all girls.

The diagram clarifies that CIM is a complex, interrelated and dynamic process defined by children's and parents' environmental perceptions taking place within a specific social and physical setting. Hence, in order to propose interventions to promote CIM and more child friendly cities, change has to include the whole experienced environment.
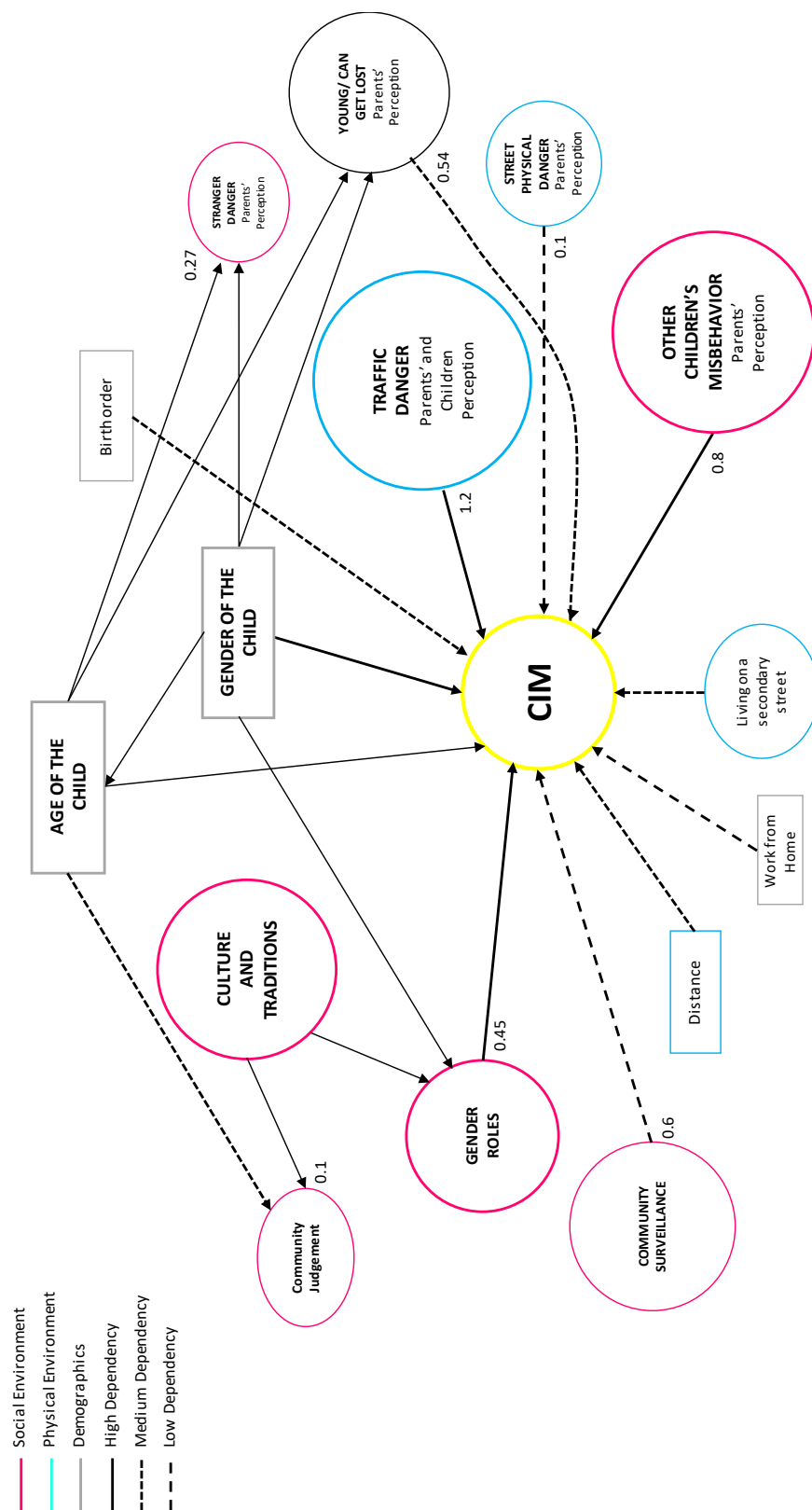
Figure 5.2 — The environmental and demographic correlates of CIM grounded within the Socio-ecological model of CIM. The circles represents the qualitative findings developed from the interviews and the rectangles represent the quantitative findings aggregated from the surveys. The numbers represents the parent's mention rates per each correlate and thya are extracted from parens' and children's interviews only. Source: Author

Towards an Integrated CIM Study and Practice

This study aims to reduce the gap between urban planning and development practices on the one hand and children's needs in informal settlements on the other. It advocates for more accessible, safer and interactive environments that realize children's rights and development in the urban realm.

Based on the reviewed wide-ranging literature, children independent mobility and activity within their local environment is one of the most fundamental ways to directly perceive, explore and engage with their surroundings. This dynamic relationship helps in enhancing children environmental representation as well as social, emotional and physical development. The study examines the demographic and environmental correlates influencing children independent mobility, their extent and direction of impact and how they interrelate.

To achieve this objective, a sequential explanatory mixed-methods approach divided the empirical research into two phases. The first phase surveyed CIM licenses to understand how much spatial freedom children of El-Zabbaleen enjoyed in relation to their demographics. Phase two investigated CIM spatial range to understand how children used their spatial freedom in relation to theirs and their parents' environmental perception. It analyzed CIM range conditions, children's and parents' fears and motivators and mitigation techniques. The discussion colligated both phases' findings to identify the influencing demographic and environmental correlates.

From the analyzed findings, age and gender are overarching variables that interrelated and impacted most correlates making them the most dominant. Parent's fear of traffic and other children's misbehavior in the streets were the two most prominent concerns impacting CIM followed by gender roles dependent on the community's traditions. On the other hand, children's environmental fears were not as impactful on their CIM range development since they eagerly developed mitigation techniques to overcome them except for traffic danger which left some children more prone to adults' chaperonage.

Based on this research findings and limitations juxtaposed with previous studies, a set of implications and recommendations for future CIM research and urban planning practices is outlined.

1) The mixed-methods approach proved very efficient where the quantitative part allows for comparative measurements across studies and the qualitative provides a deeper understanding of the participants' views verifying, negating or justifying certain CIM behaviors that quantitative data alone would not concieve (Malone, et al., 2017).

2) It encourages cross-cultural comparative studies between and within the same country. This study's very particular, context specific setting represents a substantial urge for application in other contexts. It can be carried out in informal settlements of other typologies e.g. on agricultural land or in deteriorated cores or formal settlements to contrast the urban structures and social fabrics or in rural contexts to emphasize the role of culture and urban-rural dichotomies.

Furthermore beyond extending the spatial boundary of study settings, the sampling categories can be expanded to include children with disabilities which were not included in this study or children not enrolled in schools and experiencing a totally different lifestyle.

3) Since streets' traffic is a main fear threatening parents and children alike and dominating informal settlements public space, it needs to be addressed as a first step towards any positive transformation. How to organize it, provide alternative transportation modes and mitigate its impacts should all be among the first concerns of every urban developers agenda.

4) Lack of destinations designed for children in informal areas, makes streets their only solicited space. Children loiter, cycle, play football and spend their times on the streets. This deprives girls of any chances for recreation due to society's norms disapproving girls' street play. Also, parents fearing other children's misbehaviors in the streets further restricted children's autonomy. Hence, a special attention should be paid to providing children's places that fits their needs. Gender-based space programing balancing destinations for both genders is also a priority.

5) Moreover, spreading awareness in the community towards the benefits of children's autonomy, the capacity of girls as much as boys to maneuver their neighborhoods and equal need to participate in the public scene would positively impact parent's attitudes towards CIM.

As a conclusion, environment being children's locus of experience and source of knowledge and development where they move, play and interact must not be neglected. Children's rights-based urban development approaches urges to be contextualized globally and specifically in the underprivileged and marginalized informally growing communities. Their need for a place to actively exist and realize their social, cultural and economic needs can not be solely achieved through social services and provisions but also through a positive tangible change in their immediate environments (Bartlett, 2009). And any intention of transformation or intervention must be accompanied with a profound understanding of the environmental variables not only the physical but also the socio-cultural to fulfill an integrated, interrelated socio-ecological system.

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Appendix A

Children's Questionnaire Template

استطلاع رأي رقم ....   الاسم (اختياري) ....

استطلاع رأي عن حرية تنقل الأطفال في منطقة منشأة ناصر (موجه للأطفال سن ٦-١٢)

الرجاء الإجابة على كل سؤال عن طريق وضع علامة في المربع مثل هذا ✓ أو عند السؤال ، اكتب رقماً مثل هذا [١]

اكتب في المربع صراه [ ]   ضع علامة في المربع إذا كنت فتى أو فتاة   فتى [ ]   فتاة [ ]

١. كيف وصلت إلى المدرسة هذا الصباح
- [ ] مشى على طول الطريق
- [ ] دراجة
- [ ] توك توك
- [ ] عربية خاصة
- [ ] اخر ....

٢. أ) هل وصلت مع شخص اخر
- [ ] نعم
- [ ] لا

ب) إذا كان الجواب نعم من هو/ هي
- [ ] والديك
- [ ] شخص بالغ (قريب، جار، اخر)
- [ ] طفل أكبر سنا (أقل من ١٨ سنة)
- [ ] طفل نفس العمر أو أصغر

٣. كيف تذهب و تعود من المدرسة يوميا

	ذهاب	عودة
مشى على طول الطريق	[ ]	[ ]
دراجة	[ ]	[ ]
توك توك	[ ]	[ ]
عربية خاصة	[ ]	[ ]
اخر	[ ]	[ ]

٤. أ) هل تذهب و تعود من المدرسة يوميا مع شخص اخر

	ذهاب	عودة
نعم	[ ]	[ ]
لا	[ ]	[ ]

١

ب) إذا كان الجواب نعم فمن يكون

ذهاب	عودة	
☐	☐	عائلة
☐	☐	شخص بالغ آخر
☐	☐	طفل أكبر سنا
☐	☐	طفل نفس العمر أو أصغر

٥. كم من الوقت تستغرق في الذهاب الى المدرسة؟

☐ أقل من ٥ دقائق
☐ من ٥ الى ١٥ دقيقة
☐ من ١٥ الى ٣٠ دقيقة
☐ أكثر من نصف ساعة

٦. أ) هل لديك عجلة

☐ نعم
☐ لا

ب) إذا كانت الإجابة بنعم ، هل يُسمح لك باستخدامها على طرق بها سيارات

☐ نعم
☐ لا

ج) إذا كان الجواب بالنفي ، هل ترغب في أن يُسمح لك بذلك

☐ نعم
☐ لا

د) اكتب في الفراغ كم عمرك عندما سمح لك لأول مرة بالتجول على طرق بها سيارات .... سنة

٧. أ) هل يسمح لك بعبور الطرق الرئيسية (شارع المقطم) بنفسك

☐ نعم
☐ لا

ب) إذا كان الجواب بالنفي ، هل ترغب في أن يُسمح لك بذلك

☐ نعم
☐ لا

ج) إذا كانت الإجابة بنعم ، اكتب في الفراغ كم عمرك عندما سمح لك بذلك لأول مرة .... سنة

٨. هل تستخدم مواصلات نقل(نوك نوك)مص نقل ,ميكروباص) .... بمفردك

نعم ☐
لا ☐

٩. هل تعمل, او تساعد اهلك في العمل بعد المدرسة

نعم ☐
لا ☐

١٠. هل تخرج من المنزل بمفردك بعد حلول الظلام

نعم ☐
لا ☐

١١. هل تخرج من المنزل بمفردك للعب (بمقابلة اصدقائك , اللعب بالشارع ...)

نعم ☐
لا ☐

١٢. اكتب في الفراغ عدد الأصدقاء بالمدنشية الذين يمكنك زيارتهم بمفردك .... صديق)
(اجب فقط إذا كان مسموحا لك بذلك بمفردك)

١٣. أي من هذه الأنشطة قمت بها بالأمس أو في نهاية الأسبوع الماضي ، إن وجدت
(ضع علامة في العمود الأول إذا كنت قد قمت بأي من هذه الأشياء بمفردك وفي العمود الثاني إذا تم مرافقتك بواسطة شخص بالغ)

بمفردك	مرافق		بمفردك	مرافق	
☐	☐	حديقة	☐	☐	زرت اصدقائك
☐	☐	لعبت امام المنزل	☐	☐	زرت اشخاص بالغين
☐	☐	لعبت بيلياردو	☐	☐	محلات
☐	☐	كنيسة	☐	☐	مكتبة
☐	☐	ذهبت للمشي	☐	☐	مركز شباب
☐	☐	ساعدت اهلك في الشغل	☐	☐	مشاهدة مباراة

اكتب اي اماكن اخرى ذهبت اليها

☐ ☐ ....
☐ ☐ ....

اسم الشارع الذى تسكن فيه .... نوع السكن ....
اي وسيلة نقل خاصة بالاسرة ان وجدت ....

3

Parent's Questionnaire Template

استطلاع رأي عن حرية تنقل الأطفال في منطقة منشأة ناصر (موجه لأهالي الأطفال من ٦-١٢)

الرجاء الإجابة على كل سؤال عن طريق وضع علامة في المربع مثل هذا ☑ أو عند السؤال ، اكتب رقماً مثل هذا 1

١. أ) هل يُسمح لطفلك عادة بالذهاب إلى والعودة من المدرسة بمفرده

ذهاب عودة

☐ ☐ نعم

☐ ☐ لا

ب) إذا كانت الإجابة بنعم ، فاكتب في الفراغ العمر الذي يُسمح لطفلك فيه بالذهاب بمفرده : .... سنة

ت) إذا كانت الإجابة لا ، فاكتب في الفراغ عدد الأيام التي يتم فيها توصيل طفلك بنفسك في الأسبوع .... أيام

د) كم من الوقت يستغرقك للوصول إلى المدرسة .... دقيقة

ث) ما هو السبب الرئيسي لعدم السماح لطفلك بالذهاب وحدها

(ضع علامة في مربع واحد فقط)

☐ خطر السيارات

☐ طفل صغير جدا أو ممكن يتوه

☐ الخوف من التحرش من الكبار

☐ المدرسة بعيدة جدا

☐ الخوف من البلطجة من الأطفال

☐ الطريق غير مؤهل للمشي للأطفال (التكسير، المنحدرات، عدم وجود رصيف)

☐ آخر ....

٢. أ) عندما يذهب طفلك إلى أماكن أخرى بخلاف المدرسة (مثل النادي، الفرن...) التي تقع على مسافة قريبة بمفرده1

من المنزل، هل يُسمح له / لها بالذهاب بمفرده أو هل يأخذها شخص مع أقربه1

ب) أو مرافق، ما هو السبب الرئيسي لعدم السماح لطفلك بالذهاب وحده

(ضع علامة في مربع واحد فقط)

☐ خطر السيارات

☐ طفل صغير جدا أو ممكن يتوه

☐ الخوف من التحرش من الكبار

☐ الخوف من البلطجة من الأطفال

☐ الطريق غير مؤهل للمشي للأطفال (التكسير، المنحدرات، عدم وجود رصيف)

☐ آخر ....

1

□ ت) اكتب في المربع الحد التقريبي لرحلات ذهابا وإيابا التي تتم كل أسبوع بعرض مرافقة طفلك بنشاط الرحلات المدرسية

ث) ما هي طريقة النقل الأكثر استخداما

مشى على طول الطريق □

(ضع علامة في مربع واحد فقط أو إذا كان "الآخر" اكتب في المساحة المتوفرة)

دراجة □

لواح تزلج □

عربية خاصة □

اخر .... □

٣. أ) هل يُسمح لطفلك عادة بعبور الشوارع التي بها سيارات وحدها

نعم □

لا □

ب) ما مدى قلقك بشأن خطر إصابة طفلك في حادث سيرعند عبوره الطريق

للغاية □

الى حد كبير □

ليس جدا □

لا على الاطلاق □

٤. أ) هل يُسمح لطفلك عادة بالخروج بمفرده للعب

نعم □

لا □

٥. أ) هل يُسمح لطفلك عادة بالخروج بمفرده بعد حلول الظلام

نعم □

لا □

ب) إذا كانت الإجابة لا، ما هو السبب الرئيسي لعدم السماح لطفلك

خطر المرور □

(ضع علامة في مربع واحد فقط)

طفل لا يحول طريها أو صغار جدا □

الخوف من التحرش من قبل الكبار □

الخوف من البلطجة من قبل الأطفال □

اخر .... □

٦. أ) هل يُسمح لطفلك عادة باستخدام وسائل النقل المتاحة (الكوكولة، نص النقل) بمفرده

نعم □

لا □

2

٧. أ) هل يملك ابنك/ابنتك عجلة

نعم ☐
لا ☐

ب) إذا كانت الإجابة بنعم ، هل يُسمح لها باستخدامها على طرق بها سيارات

نعم ☐
لا ☐

٨. رتب المخاوف التالية على حسب درجة أهميتها اتجاه اتخاذ قرار ابنك/ابنتك بمفردهم خارج المنزل
حيث ١ الأكثر أهمية و ٥ أقل أهمية

☐ خطر المرور
☐ طفل لا يحول عليها أو صغار جدا
☐ الخوف من التحرش من قبل الكبار
☐ الخوف من الأماكن بعيد
☐ الخوف من البلطجة من قبل الأطفال
☐ الطريق غير مؤهل للمشى للأطفال (التكسير، المنحدرات، عدم وجود رصيف)

<u>الأسئلة التالية هي عن نفسك</u>

٩. عندما كنت طفلاً ، كيف سافرت إلى المدرسة في سن ٧ إلى ١١

(ضع علامة في مربع واحد فقط أو إذا كان "الأخر" ، اكتب في المساحة المتوفرة)

☐ مشي على طول الطريق
☐ دراجة
☐ مواصلة
☐ اخر ....

١٠. هل تعتقد أن لديك فرصتا أكثر أو اقل للخروج بنفسك مقارنة بطفلك اليوم

☐ أكثر بكثير
☐ أكثر
☐ نفس الشيء
☐ اقل
☐ أقل بكثير

١١. اكتب في كل صندوق عدد الأشخاص الذين يعيشون في منزلك
بصرف النظر عن نفسك

☐ الأطفال الذين تتراوح أعمارهم بين ١١ سنوات أو أقل
☐ الأطفال الذين تتراوح أعمارهم بين ١٢ أو ١٨ سنة
☐ الزوج أو غيره من البالغين

استطلاع رأي رقم ....

١٢. اكتب في المربع العدد الإجمالي للأشخاص في منزلك ، بمن فيهم أنت ، مع رخصة قيادة كاملة .... سنة

١٣. هل تستخدم أسرتك سيارة

- [ ] لا
- [ ] نعم سيارة واحدة
- [ ] نعم ٢ سيارة أو أكثر

١٤. أ) هل أنت في عمل مدفوع

الوالد/الوصي   ذكر   أنثى

- [ ] [ ] [ ] نعم - بدوام كامل
- [ ] [ ] [ ] نعم - بدوام جزئي
- [ ] [ ] [ ] لا

ب) إذا كنت تعمل بأجر ، هل تعمل في المنزل أو في أي مكان آخر

- [ ] المنزل
- [ ] مكان آخر

١٥. ما هو اسم أو لقب وظيفة العائل الرئيسي في منزلك

....

١٦. اكتب في المربع عمرك

- [ ] ٤٥ فما فوق
- [ ] ٣٠ إلى ٤٤
- [ ] أقل من ٣٠

١٧. ضع علامة في المربع

- [ ] أنثى
- [ ] ذكر

١٨. التعليم

- [ ] ابتدائي
- [ ] قراءة وكتابة
- [ ] أمي
- [ ] جامعة
- [ ] ثانوية/فني/مهني
- [ ] إعدادي

١٩. الوضع الحالي

- [ ] في البيت
- [ ] تتنقل
- [ ] تتدرس

٢٠. اسم شارع السكن .... عشت كام سنة في المنطقة؟ ....

يرجى وضع هذا الاستبيان المكتمل في الظرف وإعطاءه لطفلك لإعادته إلى المدرسة غدا أو في اليوم التالي على أبعد تقدير

شكرا جزيلا لك على مساعدتك!   النهاية

4

Appendix B

Neighborhood map for the Mapping Activity

Geographic Diary Template

Appendix C

Children CIM Licenses Aggregate Data

Parent's Interviews transcribed data

نبذة مختصرة

اما مدى أمان تنقل أطفالنا بدون إشراف؟ إلى أين يذهبون؟ مع من؟ وما هو النشاط الذي سيمارسونه؟ هذة الأسئلة يجب على كل والد أن يجيب عليها وكل مخطط حضري وصانع سياسات يحتاج إلى النظر فيها. ومع ذلك ، فإن الفجوة بين احتياجات الأطفال في العالم سريع التحضر وممارسات التخطيط الحضري آخذة في التصاعد مما يؤدي إلى انخفاض في التنقل المستقل للأطفال في جميع أنحاء العالم. تهدف هذه الدراسة إلى تقليص هذه الفجوة من خلال الدعوة إلى توفير بيئات أكثر سهولة وأمانًا وتفاعلية تعزز نمو الأطفال. هذا البحث يتم في أكبر التجمعات الحضرية في القاهرة ، منطقة الزبالين الغير رسمية. تبحث الدراسة في التنقل المستقل للأطفال (CIM) ثم المتغيرات البيئية والديموغرافية التي تؤثر عليه. ومن ثم ، تم إجراء دراسة متعددة الأساليب حيث شارك 94 طفلاً تتراوح أعمارهم بين 7 و 13 عامًا و 61 من الآباء والأمهات في استبيانات كمية لقياس التنقل المستقل للأطفال. ثم شارك 12 طفلاً مع والديهم و 7 معلمين في مقابلات لتحليل التصورات البيئية للأطفال والآباء التي تؤثر على تراخيص التنقل المستقل للأطفال والنطاقات المكانية. نتيجة لذلك ، تم تحديد مجموعة من الارتباطات الاجتماعية والبيولوجية والديموغرافية ثم تم دراسة مدى واتجاه تأثيرها وكذلك العلاقات المتبادلة بينها. من بين أهم النتائج التي توصل إليها البحث أن متغيرات العمر والجنس هي الأكثر سيطرة وتأثيرًا على المتغيرات الأخرى حيث يتمتع الأولاد بنسبة تنقل مستقل أعلى من الفتيات ، وكلما زاد نمو الفتيات ، قلت الحرية التي يتمتعون بها. علاوة على ذلك ، فإن خطر المرور هو أكثر عامل بيئي مادي تأثيرًا يتبعه عامل اجتماعي أكثر تحديدًا للسياق وهو الخوف من سوء سلوك الأطفال الآخرين. يعتبر خطر الغرباء عكس معظم نتائج الدراسات غير موجود بسبب طبيعة مجتمع الزبالين الموجه نحو الأسرة حيث يعرف معظم الناس بعضهم البعض. علاوة على ذلك ، أثرت أدوار الجنسين كنتيجة للمعايير الثقافية للمجتمع بشكل أساسي على الرحلات الطوعية للفتيات وفرضت مسؤوليات وواجبات على الصبيان متزايدة تقيد حريتهم المكانية مع تقدم العمر. في الختام ، يجب أن تكون أي نية للتدخل الحضري مصحوبة بفهم عميق ودراسة للارتباطات البيئية المحددة للسياق ليس فقط المادي ولكن أيضًا الاجتماعي والثقافي لتحقيق نظام اجتماعي - إيكولوجي متكامل.

الكلمات المفتاحية: التنقل المستقل للأطفال ، ارتباط البيئة ، العمر ، الجنس ، التصورات البيئية ، المستوطنات العشوائية..

إقرار

هذه الرسالة مقدمة في جامعة عين شمس وجامعة شوتجارت للحصول على درجة العمران المتكامل والتصميم المستدام. إن العمل الذي تحويه هذه الرسالة قد تم إنجازه بمعرفة الباحث سنة ...

هذا ويقر الباحث أن العمل المقدم هو خلاصة بحثه الشخصي وأنه قد اتبع الإسلوب العلمي السليم في الإشارة إلى المواد المؤخوذه من المراجع العلمية كلٌ في مكانه في مختلف أجزاء الرسالة..

وهذا إقرار مني بذلك،،،

التوقيع:

الباحث: سارة زكريا

التاريخ: اغسطس 2020

البيئة و التنقل المكاني المستقل للاطفال

قضية الزبالين، منطقة غير رسمية بالقاهرة

مقدمة للحصول على درجة الماجستير في العمران المتكامل والتصميم المستدام

أعداد:سارة زكريا

لجنة أشراف

أ.د هبة صفى الدين	أ.د أستريد لي.	أ.د محمد صالحين.
أستاذ العمارة و التصميم	أستاذ التخطيط والتصميم العمراني	أستاذ التخطيط والتصميم العمراني
جامعة مصر الدولية	جامعة شتوتجارت	المتكامل

جامعة عين شمس جامعة

لجنة الحكم

التوقيع

أ.د ....الممتحن الخارجي
أستاذ.............
جامعة ....

أ.د. ....
أستاذ.............
جامعة ....

أ.د ....
أستاذ.............
جامعة ....

تاريخ المناقشة:.............

الدراسات العليا

ختم الإجازة   أجيزت الرسالة بتاريخ:.............

موافقة مجلس الكلية .../.../...   موافقة مجلس الجامعة .../.../...

جامعة عين شــــمس
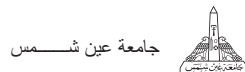
جامعة شتوتجارت

MM/DD/YYYY

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إعداد

سارة زكريا

المشرفون

أ.د هبة صفى الدين	أ.د أستريد لي	أ.د محمد صالحين
أستاذ العمارة و التصميم	أستاذ التخطيط والتصميم العمراني	أستاذ التخطيط والتصميم العمراني
جامعة مصر الدولية	جامعة شتوتجارت	المتكامل

جامعة عين شمس جامعة