CHILDREN'S PLAY BEHAVIOUR IN THE

URBAN ENVIRONMENT

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by

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ABSTRACT

This thesis studies the play behaviour of children, examining specifically their choice of environments, reasons for the selection, activities in each place, and territorial range. Using a questionnaire, data were collected from children in Grade Five or Six in two public schools in Burlington, Ontario. The results of the study show that children play in a wide range of environments - parks, planned indoor recreation centres, schoolgrounds, home areas, streets, institutions, general open space areas, and commercial places. Seven types of reasons were mentioned, including design, function, and locational characteristics of play places. Activities mentioned included both active and passive types, and solitary and group play. Hypotheses relating play behaviour to the personal characteristics of the children were tested. Several significant relationships emerged, with sex and housing type being the most useful independent variables. Other variables considered were length of residence, number of siblings, amount of play with parents, mobility, extra-curricular lessons, occupational aspiration, and amount of television-viewing. Implications of the results for the planning of play environments are discussed in the concluding chapter.

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Many people have made significant contributions to this study. I would especially like to express my gratitude to Dr. Taylor for his guidance and patience throughout the year.

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The Planning Department of the City of Burlington were very helpful in providing, free-of-charge, several large prints of maps for use in this study.

Finally, I would like to thank Sharon for typing this report.

To "The Big Tree" in a field in Belleville, Ontario

in which I and all the other neighbourhood

children spent many happy hours.

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CHAPTER 1

INTRODUCTION

1.1 The Nature and Scope of the Paper

The intent of this thesis is to describe and explain children's choices of play environments. It is held that to be able to provide the best play places for children, we must not make untried assumptions about children, their activities, and how their behaviour relates to the environment. A reliable data base is essential to good planning for play.

To this end, this study will explore the following questions:

(1) What kinds of environments are used by children for play?

(2) What kinds of reasons do children have for choosing each play environment?

(3) What is the nature of the play activities in each place?

(4) How far will children travel from home during play?

(5) Are there significant relationships between characteristics of the individual child and (i) the environments he plays in
(ii) the reasons he plays there
(iii) the activities he does there, and
(iv) his territorial range.

All urban developments contain some areas intended for children's play - parks, schoolgrounds, recreation centres are the most common types. However, some parks and other planned play environments often remain un-used, rejected by children for the more interesting, exciting, or convenient streets, stores, vacant lots, or institutional lots. This is viewed as a serious problem by both planners and parents. Children on busy streets

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are often involved in accidents. Children at play may do unintentional damage to private or public buildings, such as breaking a window during a baseball game in a parking lot. Many children "hanging around" commercial establishments often discourage adult shoppers from patronizing the stores - a loss of business to store owners. Disuse of places planned for children implies that they are dissatisfied, and indicates that tax money allocated to park development has not always been spent wisely. Close examination of where the children play, then, is an important issue for study.

Once the play milieu has been defined for a particular section of a city, we must know the reasons behind the children's selection of particular places for play. This will give us insight into the kinds of criteria children utilize in play area choice.

A common assumption of adults is that children's play consists mainly of the type of activities found most often in traditional playgrounds - swinging, climbing, running, skipping, ball games, and sand play, for example. However, it is possible that children incorporate a very wide range of activities into their play behaviour. This is because the definition of "play" is often unique to the individual. Reading, for example, may be play for one child but hard work for another. Furthermore, adults' notions of play activities may differ greatly from children's concepts. Since planned play places are designed *by* adults *for* children (primarily), the interface of adult/child ideas of play must be examined. This study focuses on the child's viewpoint.

Finally, given that each child has his own set of criteria and preferred play activities, how far will he travel from home to find suitable

places to play? Does he stay close to home or does he roam the district? A description of the territorial range of children will be useful in determining the best location of a new play area.

Once these four aspects of play have been investigated, it is instructive to ascertain whether or not they relate to such personal characteristics of the individual as sex or housing type. If there are significant determinants of play environment preferences and behaviour, then we can have increased confidence in planning for a particular group of children in the future.

1.2 The Structure of the Paper

The remainder of this paper is structured as follows: Chapter Two reviews historical attitudes towards the nature of play. The various definitions and theories of play developed in the past are discussed and compared with contemporary approaches. Recent studies on the topic are described, and their limitations noted.

Chapter Three consists of the research design of this study. A conceptual framework for the study of play environment preferences and behaviour is developed and the resulting hypotheses presented. The methodology for the data collection is explained in detail.

Chapter Four contains an in-depth analysis of the results of the study. The chosen environments, the reasons given, the activities mentioned, and the territorial range of the children in the sample are described. The significant relationships between personal characteristics and the above four aspects of play are analysed.

The final chapter draws general conclusions from the results with

respect to the specific research objectives and implications for planning. As well, Chapter Five comments on the definitions of play held by children in the sample. Finally, directions for future research on the topic are suggested.

CHAPTER 2

REVIEW OF THE LITERATURE ON CHILDREN'S PLAY

There are many definitions of "play", ranging from "sheer fun"
to a "crucial element of the survival of a species". One of the first
theories of play was developed formally by Herbert Spencer in the 1850's.
In his "Surplus Energy" theory play is "an aimless expression of surplus
energy" (Millar, 1968: 15). The amount an organism plays is proportional
to its height on the evolutionary scale, since higher animals have more
time and energy for leisure activities. The theory is based on the phys-
iology of fatigue in nerve-centres - after a rest period the nerve centre
becomes physically unstable and over-reacts to stimulation. Unfortunately,
although we can often observe people releasing physical tension through
play, passive activity is also a part of play. Quiet games, for example,
are often chosen leisure-time activities. Secondly, the physiological
theory of nerve centres is now out of date (Millar, 1968: 16).

In 1899 Karl Groos defined play as the "generalized impulse to
practice instincts" (Millar, 1968: 19). Based on Darwinism, his theory
holds that through play a species prepares for the struggle of the survival
of the fittest. Humans, born with relatively few developed instinctive
behaviour patterns, need a long period of childhood to practice skills
learned in play. For example, play-fighting may prepare an animal for the
rôle of protecting its family. A child's game of tag gives him agility
and speed. However, Groos assumes that play is only for children,

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forgetting that adults, who probably do not *need* to practise instincts, play also. Furthermore, he includes as part of play, the very general functions of all organisms - movement, recognition, and remembering. Surely play is more than just performing the functions of an organism. Susanna Millar (1968: 20) points out, though, that Groos' theory, unlike Spencer's, demonstrates that play can be more than aimless and can be useful to the species.

G.S. Hall arrived at a third theory in the early twentieth century. Like Groos, he based his ideas on Darwinism, assuming that children are a link in the chain of evolution from animal to man. He felt in his "Recapitulation" theory that through play, children "relive" the history of man, and in the sequence of events as they actually occurred (Millar, 1968: 17). Water-play reminds us of our "fishy ancestors"; climbing, of monkeys; and camping, of primitive tribal life. As Millar (1968: 18) points out however, the theory assumes that the skills and culture of a generation accumulate and are hereditary. Additionally, it fails to account for play with synthetic materials and modern toys that have no connection to early history.

A fourth early theory of play regards it as an attitude-laughter, pleasure, enjoyment, and freedom of choice all emerge as important characteristics of play. However, no one mood characterizes all play, either at the group or at the individual level. While one person may feel exhilarated while playing another may feel merely content doing the same activity. While skiing an individual may be excited, but he reads a book for relaxation.

Each of these historical theories makes some valid points, but

because they each focus on a single aspect or type of play, they are in-
complete. Millar (1968: 21) concludes:

> Perhaps play is best used as an adverb not as a
> name of class of activities, nor as distinguished
> by the accompanying mood, but to describe how and
> under what conditions an action is performed.

To approach play with a more comprehensive viewpoint, a multitude of
psychological theories of play have been proposed. Freud's psychoanalysis
at the turn of the century assumed that most behaviour is motivated, so
that play is a manifestation of the wishes and conflicts of the individual
at each developmental stage, and/or an impulse to master a disturbing event
or situation (Millar, 1968: 28). On the other hand, instinct theories
regarded play as "irrelevant" and useless behaviour, and concentrated on
species other than man. Orienting reflex theories held that play is a
"what is it?" reflex to a stimulus from the environment. Perhaps the
most significant psychological theory is Piaget's learning theory. His
major proposition is that "in order to know objects, the subject must
act upon them, and therefore transform them: he must displace, connect,
combine, take apart, and reassemble them" (Piaget, 1970: 704). This
learning process involves three phases:

(i) assimilation of information to make it "part" of oneself,

(ii) accommodation of actions to fit reality, and

(iii) adaptation to the environment. This occurs when the amount
of assimilation equals the amount of accommodation.

To Piaget, "play is assimilation without accommodation" (Ittelson et al.,
1974: 180). A child in play perceives the environment and uses his
imagination to make it "fit" his needs. Piaget's approach, then, contradicts

any notion of environmental determinism within the context of play. He
expands on this idea in his notion that play is an arousal-seeking behaviour
resulting from an absence of stimulation (Ittelson et al., 1974: 181).
Within his learning theory framework, play, he feels, contributes only to
the cognitive development of the individual.

Contemporary concepts of play all seem to incorporate Piaget's
learning theory, but regard play as important to the physical and social
development of the individual as well as to cognitive development. For
example, Joan E. Cass defines play as a process of investigating the un-
known to make it known (1971: 15) but states, very emotionally, that play
"is as necessary and important to a child as the food he eats, for it is
the very breath of life to him, the reason for his existence, and his
assurance of immortality" (1971: 11).

Roger Hart (1973a: 67) provides a more specific and extensive
list of children's needs which play can fulfil. Children, he feels, need:

    (1) a coherent environment in which they can feel secure

    (2) places to be alone, to think, free from interruption

    (3) places to meet others and interact socially

    (4) continuity of experience in a stable environment

    (5) to experience the diversity and extent of the landscape

    (6) to explore, collect, and create

    (7) to feel an effective agent of change by modifying the environ-
        ment.

Several of these needs seem to contradict each other. This is regarded
not as a *problem* by researchers of children's play but as a *challenge*
to provide a variety of environments to meet a variety of needs. Further-
more, current views of play emphasize its dynamic nature. Moore (1974: 118),

for example, defines play as "a continuous process through time and space",
and Bengtsson (1970: 24) states aptly:

> We often plan as if play was a kind of task which
> the child takes to the playground to perform ...
> [But play] varies with mood and stimulus. Play is a
> constant act of creation in the mind or in practice.

In light of these more recent ideas towards the nature of play,
what studies have been done on the types of environments chosen, the
reasons for choosing them, play activities, and the relationships with
personal characteristics?

Research on play environments gathered momentum in the late 1960's
and early 1970's with studies by Hole (1966), Moore (1966), Spivak (1967),
Hurtwood (1968), Dattner (1969), Ittelson et al. (1970), Bengtsson (1970),
White (1970), Nicholson (1971), Cooper and Marcus (1971), Moore (1972, 73),
the Baltimore Department of Planning
(1973), Cooper-Marcus (1974), Hayward et al. (1974), Hart (1975), and
Becker (1976). The results of these studies suggest that planners' and
designers' views of play are often oriented towards the pre-schooler age-
group - children who are quite satisfied with the opportunities found in
the traditional playground - ignoring older children with quite different
needs. Diversity and novelty are seen to be two very important character-
istics of chosen play environments. Moore, for example, from his study,
lists the following implications among others for design (1974: 128):

(1) A specific play space will not attract a majority of
children unless it is more diverse than all other outdoor
spaces in the same spatial range.

(2) Even intensively developed specific play places [i.e., play-
grounds] should be considered only as one place among many
in a continuous play space in and around a neighborhood.

(3) A neighborhood play place will not sustain interest unless
it is diverse enough to support a range of opportunities for
psycho-motor, fantasy, creative and social activity ...
[so that] both fixed and loose resources must be provided.

A consequence of these studies has been the development of two
alternatives to the traditional playground (Appendix A). Instead of the
swings, slides, monkey bars, teeter-totters, baseball diamonds, and goal
posts of the traditional playground, the creative playground has dirt hills,
large concrete pipes, "fireman poles", rubber tires, and other diverse and
novel equipment. On the other hand, adventure playgrounds rarely contain
fixed equipment at all, providing instead scraps of wood, rope, nails and
other "building" materials. The emphasis here is on imagination, and the
appearance of the playground changes each day according to the mood and
activities of the children. However, these new playgrounds have not been
widely accepted, especially in Canada, nor have adventure playgrounds in
particular been totally successful (Spivak, 1969; Ward, 1973; The Post,
August 4, 1976: 4). It seems, then, that the reasons behind the chil-
dren's choice of a play place needed to be examined.

Unfortunately, except for a study by Hayward et al. (1974), little
systematic research has been done on children's actual reasons for chosing
a play place. Instead, common characteristics of chosen places have been
derived by the researcher, and used as implicit criteria.

In contrast, play *activities* have been studied very rigorously,
and experimentally in some cases. For example, Smith and Connolly (1973),
using laboratory conditions, found that for pre-schoolers in Sheffield,
the amount of equipment provided had a greater effect on behaviour than
the amount of space provided (Smith, 1974: 57). Later, Smith
and Connolly did a study on the behaviour in an environment with large

apparatus as compared with an environment with small toys, and a control condition with all types of equipment (Smith, 1974: 58). A major result was that play was very active, social, and creative in the large apparatus condition, which was felt to be more like an adventure playground than a traditional one.

The study of school-aged children's behaviour, it is felt, however, is best done through ecological observation. Hart (1975) and Moore (1974) in their research, followed individual children and observed their behaviour. Moore derives a typology of "Patterns of Activity in Time and Space" (PATS), including "foci", "chains", and "flows". The dynamic nature of play is emphasized. Becker (1976) made a rather cursory inventory of behaviour in different locations, for all age groups, listing only a few activities (Table 1).

LOCATION	ACTIVITY
grass area	walking, ball game
back yard	bar-b-que, sunbathe, playing
dwelling unit	(none listed)
front yard	talking, sitting, playing
play area	sand, swinging, slide, merry-go-round
pathway	talking, tricycle and bicycle riding
parking area	talking, bicycle riding, ball game, fix cars

Table 1: Location of Activities Observed at Low Rise Developments (Becker, 1976: 562)

Studies of the relationships between personal characteristics of the child and play behaviour have focused on the effects of age, sex, and housing type. Based on Piaget's developmental theory, Hart (1973b), for

example, outlines the changes in play behaviour throughout the first ten years of a child's life. During the first year, for instance, most children's play consists of sitting, looking, listening, standing, crawling, creeping, knocking toys against the crib, and practising body movements they have just learned (p.80). By the tenth year, however, most children have developed some specific skills as described below (p.86):

> The 9 year old works and plays hard. [He] is more skilfull in motor performance and is apt to overdo - e.g. rides bikes too far or mows lawn till exhaustion. [He] wants to do endlessly what is enjoyed and spends much time in solitary activities. [He] tries to improve skills more purposely now e.g. some pore over maps and draw them. [He] has a great interest in competitive sports - baseball is a favorite for boys, and girls. Skating, swimming, [and] sliding [are] also enjoyed (Gesell).

Becker's (1976) study describes behaviour for each life-cycle stage. For example, while he found that, for the low-rise development in Table 1, the largest percentages of pre-schoolers and children played on the pathway, the largest percentage of teenagers were found on the grass area, and adults on their front yards. The elderly used the pathway the most of all areas studied (p.562).

Studies of the differences between the play behaviour of the sexes have suggested a gradual increase in boy/girl differences with age (Tindal, 1971; Munroe and Munroe, 1971; Saegert and Hart, 1976). Boys tended to roam farther and liked to modify the landscape more often and more drastically. Cooper-Marcus (1974a) found that boys preferred more vigorous outdoor play and used loose objects such as balls more than girls. Coates and Bussard (1974) noted a more evident parental restriction of girls' play than boys. These marked differences between the behaviour of the

sexes are attributed to the widely-studied differing attitudes of parents and society in general towards "proper" conduct of the sexes.

Effects of housing type have also been shown to affect play behaviour. Studies in Sweden and Czechoslovakia suggest that apartment dwellers stay inside more because of the effort and time it takes to travel down the elevator, to ground level, pass through the lobby, and eventually reach the outdoors. Once outside, the apartment child has no quick "escape route" back to their home (Bengtsson, 1974: 13). British studies have found that apartment children partook more in passive activities than active ones (Hole and Attenburrow, 1966), and Becker's (1976) study showed that most children in high rise developments played almost completely passively (p.564). Becker's study also contrasted resident satisfaction with play environments in low and high density housing developments, but unfortunately considered the opinions of adults only. The children's preferences would also seem to be an important topic of study.

Perhaps one of the most comprehensive studies of children's play environments and preferences was conducted by Hayward, Rothenberg, and Beasley (1974). With behavioural mapping, behaviour settings records, and interviews, they observed play in traditional, contemporary, and adventure playgrounds. The interviews with a small sample were concerned with the children's preferences and satisfaction with his own activities and settings, as well as their interpretation of their own activities. Each interview contained fourteen questions about why the child came to a particular playground, how often he came, the activities he did there, what he liked most about a particular place, whose decision it was to go there, and what other playgrounds he attended and how often he went.

The results of the study are wide-ranging. The contemporary playground was used most, followed by the traditional playground although the latter was used more often and longer. Each type was characterized by the age group of the users, most notably for the adventure playground with 45% of users being school-aged. A detailed inventory of activities at each type of playground was developed from observation. However, no real attempt was made to group the activities, and many of the categories are ambiguous in meaning and overlapping. For instance, the list of activity descriptions includes "Playing" and "Passive Activity" - two very broad categories mixed in with specific activities such as sand play, watching, and talking (pp.287, 288). A modal activity accounted for at least 25% of the total observation time in each playground. Swinging was the modal activity in the traditional playground, use of multiple equipment, in the contemporary playground, and clubhouse activity in the adventure playground. The researchers also note that most of the predominant activities were predicted by the opportunities and constraints of the physical environment (p.292), with the atmosphere of each place being very important. Reasons for attending favorite playgrounds included quietness, no overcrowding, freedom, friends, and activities to do, as well as certain specific characteristics such as a large field, tennis court, or pool.

The conclusions drawn from the study suggest characteristics of playgrounds needed for school-aged children (p.297):

(1) opportunities for choice of equipment and companions

(2) some freedom from adults

(3) peer group interaction and intimacy

(4) opportunities for self-devised challenges

(5) a sense of ambiguity of form

(6) diversity of opportunity

Each of these studies raises interesting questions about play
environments and behaviour. However, there is relatively little empirical
evidence available, and especially within a Canadian context, on the use
of the *total* play environment by school-age children living in different
housing types, but with similar play opportunities. Furthermore, many of
the findings are inferences based on the researchers' observations of be-
haviour. The validity of those inferences remain in doubt. A strong
case can be made for the use of questionnaire survey methods to obtain
information on children's play behaviour and attitudes more directly.
This is the approach adopted in this study with the objective of assem-
bling valid and reliable data on the play environments and behaviour of
children.

CHAPTER 3

RESEARCH DESIGN

3.1 Conceptual Framework and Hypotheses

This study assumes a cognitive behavioural model of man (Downs,
1971; Downs and Stea, 1973) leading to a distinction between two types
of environments - the objective and the perceived. The perceived environ-
ment represents a transformation of the objective environment resulting
from the selection and distortion of environmental information by the
composite of personal filters which affect the individual's perceptual
and cognitive processes. The individual's behaviour is regarded as being
based on the perceived environment (Figure 1).

This general framework within the specific context of play trans-
lates to the following four components (Figure 2):

(1) The objective environment corresponds to all components of
the urban environment.

(2) The personal filters are socio-psychological characteristics
of the child.

(3) The perceived environment consists of the play opportunities
as perceived by each child. These perceptions are the basis
for the evaluation and choice of specific play environments.

(4) The behaviour of the child is expressed by the types of en-
vironments he chooses, the reasons he has for choosing them,
the activities he does there, and his territorial range.

This research excluded examination of the personality and past
experiences of the child as it was felt each warranted a separate, extensive

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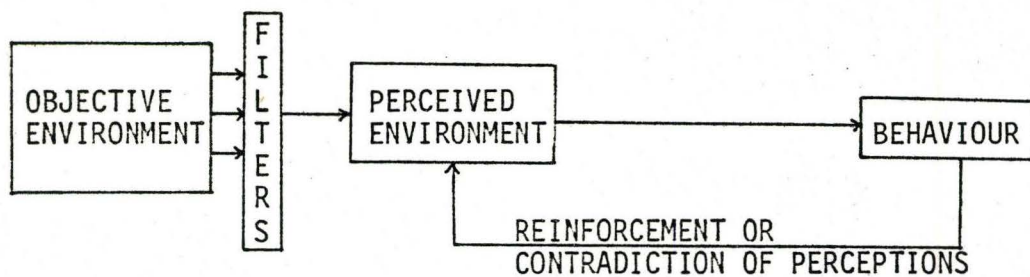
Figure 1: Cognitive Behavioural Model
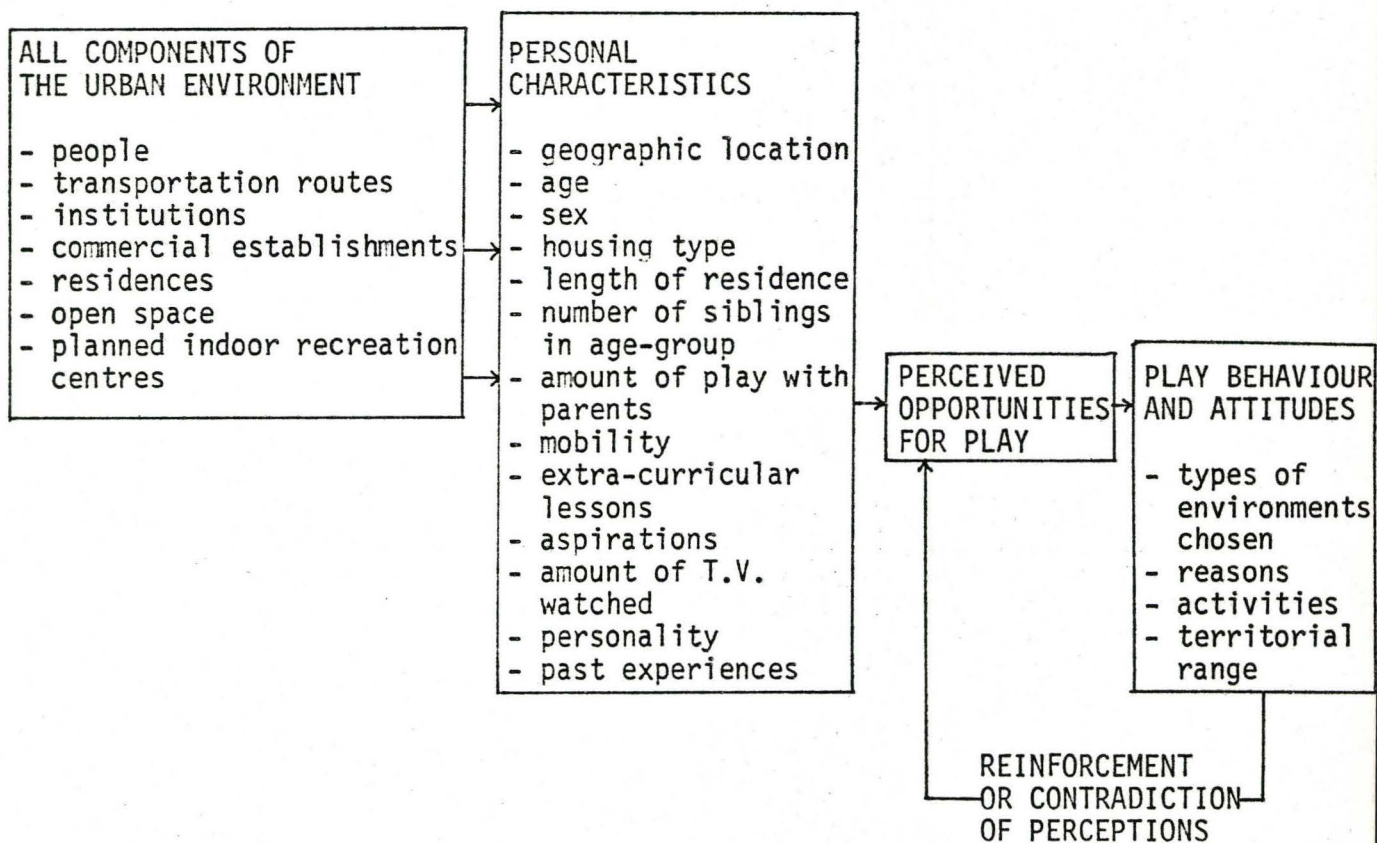
Figure 2: Cognitive Behavioural Model within the context of play

study and each presented difficult data collection problems. Age was controlled in this study because of the recognized large differences in play behaviour between children of different ages. Geographic location was also controlled so that opportunities in the objective environment would be similar for all children studied.

The studies referred to in the previous chapter suggest that the variables of sex, housing type, and mobility affect play behaviour and attitudes. However, their effects have been the focus of little careful empirical study.

Six other personal characteristics - length of residence, number of siblings in the child's general age group, amount of play with his parents, extra-curricular lessons taken, aspirations, and amount of television he watches - were also expected to act as perceptual filters affecting play behaviour and attitudes. Since length of residence affects the amount of knowledge the child has of his neighbourhood, it might also affect the type of environment he chooses and the distance he travels from home. Cratty (1970: 231) has suggested that the number of siblings a school-aged child has influences play characteristics, and it seems reasonable that two of these characteristics might be the environments he chooses and his reasons for doing so. The amount a child plays with his parents is an indication of their attitude toward play and the child. Within the cognitive behavioural model attitudes are assumed to be learned, so that those who play much with their parents will enjoy social activities more than other types of activities. If play is for practising skills, it is likely that the type of play environment a child chooses and the play activities he does will be affected by the type of lessons he may take.

DEPENDENT VARIABLES	INDEPENDENT VARIABLES								
	SEX	HOUSING	LENGTH OF RESIDENCE	NO. OF SIBLINGS	PLAY WITH PARENTS	MOBILITY	LESSONS	OCCUPATION ASPIRATION	T.V.
ENVIRONMENTS CHOSEN	X	X	X	X		X	X		
REASONS	X	X		X	X	X		X	
ACTIVITIES	X	X					X	X	X
TERRITORIAL RANGE	X	X	X			X			

Table 2. Research Hypotheses

If play is for preparation for adult life, the occupational aspiration of a child will affect his reasoning in the choice of a play place and the activities he does. Finally, since television viewing is largely passive fantasy behaviour, it is expected that a child who watches much television may prefer other fantasy play activities (such as fort-play) and very passive activities, and will have little leisure time left to travel far from home during outdoor play.

This study considers the relationships between the above nine independent variables and four dependent variables - the play environments chosen, the reasons for choosing them, play activities, and territorial range. (It should be noted that two of the independent variables - extra-curricular lessons taken and television-viewing - are actually quasi-independent since these activities are part of play behaviour.) The relationships tested are indicated in Table 2. Each marked cell represents a specific research hypothesis which the data were used to test.

3.2 Operational Definitions

A. Dependent Variables

The first three dependent variables were categorised *after* the data were collected. *A priori* classification would have defeated the exploratory purpose of the study.

1. There were eight types of environments mentioned by the children in the sample. These were:

   (1) Parks

   (2) Planned Indoor Recreation - municipal libraries, arenas, museum, sports complexes

   (3) Schoolgrounds

(4) Home Areas - the homes and yards of the respondent, his relatives, and his friends

(5) Streets - residential, collector, main arterial, highway transportation routes

(6) Institutions - lots belonging to all institutions except schools e.g. government buildings, hospital, church, Legion Hall, transportation stations

(7) Other Open Space - all open space belonging to none of the above categories and that is non-commercial e.g. vacant lots, rights-of-way, lake shores, creeks

(8) Commercial - stores, gas stations

2. There were seven types of reasons mentioned:

(1) Activities - the child liked the environment because of the activities he could do there

(2) Space - large or small-sized environment

(3) Shelter - the place provides shelter from heat, cold, wind, rain, or snow

(4) Topography - surface features of the landscape: hill, pit, flat, asphalt, grass, water, sand, trees, hiding spots, absence of telephone wires

(5) Proximity - to home

(6) Social - friends, relatives, or other people there

(7) Ambience- the mood, atmosphere, affective meaning of the environment; peaceful, quiet, freedom, privacy, interesting, exciting, dangerous, fun, familiarity, prettiness, safe

3. There were three classes of activities, the second having three categories:

(1) Active, no equipment or materials needed - these activities were larger scale motor activities such as running, exploring, animal-catching

(2) Active, equipment or materials needed - these large scale motor activities involved some type of equipment

(i) solitary or parallel - activities not needing co-operation with others e.g. biking, swinging

(ii) unstructured group - activities needing co-operation with others but having informal rules e.g. fort play

(iii) structured group - team sports e.g. baseball

(3) Passive - activities involving a minimum of physical movement e.g. reading

Complete inventories are found in Appendices B, C, and D.

4. The territorial range of the child is defined as the straight-line distance of his furthermost play environment from his home. It was felt that measurement along supposed street routes would result in many inaccuracies.

B. Independent Variables

1. Housing type - the analysis grouped together low and medium-density housing (single-family, duplex, and townhouse) to contrast with apartments.

2. Length of residence - the number of months the child has lived in the home. In a few cases the child had recently moved beyond the study area, and was instructed to answer the questionnaire as if he had not moved.

3. Number of siblings in age-group - the number of brothers and sisters between five and fifteen years old. It was assumed that a ten-year-old would sometimes play with brothers and sisters five years older or younger than himself.

4. Amount of Play with Parents - the child's estimate of the average number of hours a week his parent or guardian plays with him. The definition of "play" was left open to the child.

5. Mobility - use or ownership of a bicycle (since all children in the area have fairly equal access to the bus service).

6. Lessons Taken - all lessons the child takes outside of school-hours e.g. music, drama, arts and crafts, dancing, sports (including gymnastics and team sports).

7. Occupational Aspiration - the volunteered response to the question of what the child wants to be when he grows up. Following data collection the responses were grouped into seven categories (Appendix E):

   (1) Adventure - involves travel, excitement e.g. airline stewardess, police officer

   (2) Athletic - all sports careers e.g. football player, skater, dancer

   (3) Creative - emphasis on imagination e.g. architect, writer

   (4) Domestic - father, mother

   (5) People-oriented - emphasis is on working with people e.g. teacher, veterinarian

   (6) Performer - actor, pianist, singer

   (7) Technical - involves technology, mechanical skills e.g. mechanic, train engineer

8. Amount of Television - the total number of hours a week the child watched television, based on parental assessment, and rounded to the nearest half-hour (Appendix F).

3.3 Methodology

A questionnaire survey approach was adopted to collect data to test the hypotheses previously outlined. School children were requested to complete a questionnaire during school time and in the classroom environment. It was felt that the questionnaire approach was the most reliable method for the data collection for the following reasons:

   (1) it would minimise the researcher/child interaction effects present in the interview approach

   (2) it would avoid the data-organization and standardization problems found in the ecological observation approach

   (3) the data would be on permanent record

(4) the data collection process would be relatively
efficient in terms of cost and time

3.3.1 Pilot Study

A pilot study was conducted in March 1975. The questionnaire de-
veloped consisted of:

(1) one page of questions concerning the age, sex, address,
housing type, length of residence, and mobility

(2) a set of four maps (scale 1:400) comprising the catch-
ment area of the school

(3) a chart to indicate why the child liked each place
and who he played there with.

A scale for rating different environments was *not* used because the sample
consisted of *children* who find the technique difficult to use. The sample
consisted of thirty-four Grade 5 students in one classroom at J.A. Lockhart
School in Burlington. The procedure followed in data collection comprised
these steps:

(1) a half-hour orientation and map-reading lesson by
the teacher, using a large map of the area

(2) completion of the personal data questions

(3) re-orientation and map reading with the set of four
maps for each child

(4) marking of each child's residence on his map

(5) colouring of all places played on each map

(6) completion of the chart

Children's answers were not prompted or elicited, and "collusion" of students
while completing the questionnaires was discouraged.

The data were tabulated with respect to the frequency of inclusion
of each type of environment, and the results mapped. Because of the small

sample size, results were inconclusive. However, the pilot study did demonstrate the students' ability to read and understand the maps. Furthermore, information on the charts was coherent, candid and showed much variation between students. A potential problem of seasonal influence on responses was not observed - children mentioned play activities for all seasons although data collection took place in spring. Since the children also often coloured places at the very edge of the maps, the division of the large catchment area into several maps did not seem to create a problem of lost data at map edges. The usefulness of the procedure, then, was confirmed by the pilot study.

3.3.2 Major Data Collection Procedures

The present study added the independent variables of length of residence, number of siblings, amount of play with a parent, lessons taken, occupational aspiration, and amount of television watched. The mode of transport home from school was also identified. Additional dependent variables consisted of the activities, time(s) of day attended, and frequency of attendance, for each play environment, as well as favourite environments and the reasons for choosing those environments as favourites (Appendix G).

The sample selected enabled control for three variables age, social class, and opportunities available. To control for age differences one Grade 5/6 class and one Grade 6 class were chosen in each of two public schools. Children of this age are not usually extremely limited in mobility or freedom of choice of an environment. Social class is fairly homogeneous in the area, ranging from lower-middle to middle class. Since

the students were all within two adjacent school catchment areas, they all had basically the same play environment opportunities. Furthermore, because of the great mix of land uses in Burlington's core, these opportunities include all components of the urban landscape listed in Figure 2 of this chapter.

The sample size was 119 with a small age range, fairly even sex ratio, varied housing type distribution, and varied length of residence. The overwhelming majority either walked or rode their bicycles home from school, and 81.5% had the use of a bicycle, indicating a high degree of mobility. These distributions are shown in Tables 2-5. The data were collected in the four classes in October and November of 1977. The procedure used in the pilot study was repeated, except that the orientation lessons were taught by the author so that they would be the same for all four classes. Also, the information on the amount of television watched was obtained from a letter sent home to the parents of all the children in the week of November 15th to November 21st (Appendix F). 77.3% of these forms were completed and returned.

The classroom procedures involved two hours initially. A few in-complete questionnaires were returned and completed by the student during class time.

AGE	FREQUENCY	% of 119
9	10	8.4
10	54	45.4
11	47	39.5
12	7	5.9
13	1	.8
TOTAL	119	100.0

Table 3. Age Distribution of Sample

	FREQUENCY	% of 119
BOYS	56	47.1
GIRLS	63	52.9
TOTAL	119	100.0

Table 4. Sex Ratio of Sample

	FREQUENCY	%
SINGLE FAMILY	62	52.1
DUPLEX	11	9.2
TOWNHOUSE OR MAISONNETTE	8	6.7
APARTMENT	38	31.9
TOTAL	119	100.0

Table 5. Housing Type of Sample

LENGTH OF RESIDENCE (YEARS)	NUMBER OF CHILDREN	
	FREQUENCY	%
0 - 1	50	42.4
2 - 3	16	13.6
4 - 5	19	16.1
6 - 7	12	10.2
8 - 9	5	4.2
10 - 11	11	9.3
12 - 13	5	4.2

(missing observations - 1)

Table 6. Length of Residence (Mean - 3.9 years)

TRANSPORT MODE	FREQUENCY	%	CUMULATIVE FREQUENCY
walk	84	70.6	70.6
ride bike	27	22.7	93.3
ride in car or bus	8	6.7	100.0

Table 7. Transport from School

CHAPTER 4

ANALYSIS AND INTERPRETATION

The analysis of the data collected consists of three sections.
Firstly, the general frequencies for each type of environment, reason,
and activities are summarized. Secondly, the characteristics of the
favourite places mentioned by the children are described - what types of
environments, reasons, activities are involved, and how the favourite en-
vironments are related to reasons and activities. The third section relates
the play environment, reasons, activities, and territorial range to the
seven independent variables of sex, housing type, length of residence,
number of siblings in age-group, amount of play with a parent, mobility,
extra-curricular activities, and occupational aspirations.

4.1 General Frequencies

The number of children who included each type of environment
(Table 8) indicates that the most commonly mentioned places are home areas,
parks, and schoolgrounds, each of which is an environment *intended* for
play. The planned indoor recreation areas, though, were included by a
surprisingly low number. This is perhaps because almost all of those
facilities are located in the eastern half of the sample area, and thus
a little more difficult for those children in the western part to reach.
Places not intended for play were also included by the children, with
streets being mentioned by just less than half of the sample.

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	FREQUENCY	% of 119
PARKS	97	81.5
PLANNED INDOOR RECREATION	30	25.2
SCHOOLGROUNDS	85	71.4
HOME AREAS	99	83.2
STREETS	53	44.5
INSTITUTIONS	24	20.2
OTHER OPEN SPACE	37	31.1
COMMERCIAL	15	12.6

Table 8. Number of children mentioning each type of play place

Similarly, the number of children who mentioned each type of reason for playing in an environment is also informative (Table 9).

	NUMBER OF CHILDREN	% of 119
ACTIVITIES	111	93.3
SIZE	36	30.3
SHELTER	10	8.4
TOPOGRAPHY	46	38.7
PROXIMITY	28	23.5
SOCIAL	48	40.3
AMBIENCE	37	31.1

Table 9. Number of children mentioning each type of reason

That almost all children said they liked a place because of what they could do there is not surprising. However, other reasons seem to figure significantly as well. The presence of friends, family, or other people in a place were important to two-fifths of the sample. This is an indication that no matter what the design of some areas, some children will play there if others are there. Two components of design - topography and size - were mentioned by many of the children, but shelter seemed to be of minor

importance. This contradicts suggestions by critics of urban playgrounds that a major reason why some places are not used is lack of shelter (Bengsston, 1970: 9). Proximity to home and the ambience of the environment were both more important. The relative importance of each of these reasons is further demonstrated when the total number of times a particular type of reason is examined (Table 10).

	FREQUENCY	%
ACTIVITIES	442	55.5
SIZE	67	8.4
SHELTER	10	1.3
TOPOGRAPHY	85	10.7
PROXIMITY	37	4.6
SOCIAL	90	11.3
AMBIENCE	66	8.3
TOTAL	797	100.0

Table 10. Frequency of mention of each type of reason

What are the activities that are so important to the children? The majority of children mentioned solitary/parallel activities or passive play the most (Table 11).

ACTIVITY TYPE	NUMBER OF CHILDREN	% of 119	TOTAL TIMES	% of 804
(1) ACTIVE, NO EQUIP.	65	54.6	135	16.8
ACTIVE, EQUIP. NEEDED				
(2) SOLITARY OR PARALLEL	100	84.0	272	13.8
(3) UNSTRUCTURED GROUP	22	18.5	25	3.1
(4) STRUCTURED GROUP	50	42.0	113	14.1
(5) PASSIVE	96	80.7	259	32.2
TOTAL			804	100.0

Table 11. Frequency of activities

Although one type involves much physical activity and the other involves very little, a common element of both is the freedom of the child to do what *he* wants. Active play requiring no equipment is the next most mentioned type (e.g. running, tag games, exploring). This could be a function of convenience - the child can get a good deal of exercise on the spur-of-the-moment. Conversely, the unstructured group type of activities such as pretend play, tobogganing, or skipping, requiring spontaneous action by several children simultaneously, were mentioned the least.

4.2 Favourite Places

To indicate which places are not merely used by children but also preferred, the children were asked to list up to three favourite places and explain why they were chosen. Out of a total possible number of 357 places (three per child), 261 favourite places were named.

The home area emerged as the favourite type of play environment (Table 12), being mentioned twice as frequently as the next favourite type - parks. Schoolgrounds come a close third, followed by streets, other open space, institutions, and planned recreation areas. The least favourite environments are commercial. This could be attributed to the message of "hands off and don't hang around" conveyed by most shopkeepers to children.

Table 12 shows that parks attract children largely because of the activities they can do there. Closely connected to these park activities is the large space to run in, comprising 11.8% of the reasons for playing there. However, another 11.8% of the reasons can be attributed to the park's ambience.

ENVIRONMENT	REASON							TOTAL
	ACTS.	SIZE	SHELTER	TOPOG.	PROX.	SOCIAL	AMBIENCE	TOTAL
PARKS	31 60.8%	6 11.8	0 0	4 7.8	3 5.9	1 2.0	6 11.8	51 * 100.0%** 19.5%***
PLANNED INDOOR RECREATION	9 90.0%	0 0	0 0	0 0	0 0	0 0	1 10.0	10 100.0 3.8
SCHOOL- GROUNDS	22 56.4%	2 5.1	0 0	5 12.8	0 0	7 18.0	3 7.7	39 100.0 14.9
HOME	49 48.5%	2 2.0	5 5.0	7 6.9	11 10.9	22 21.8	5 5.0	101 100.0 38.7
STREETS	12 50.0%	1 4.7	0 0	4 16.7	1 4.7	2 8.3	4 16.7	24 100.0 9.2
INSTITU- TIONS	10 71.4%	0 0	0 0	1 7.1	1 7.1	1 7.1	1 7.1	14 100.0 5.8
OTHER OPEN SPACE	6 33.3%	1 5.6	0 0	6 33.3	1 5.6	1 5.6	3 16.7	18 100.0 6.9
COMMERCIAL	4 100.0%	0 0	0 0	0 0	0 0	0 0	0 0	4 100.0 1.5
TOTAL ROW %	143 54.8%	12 4.6	5 1.9	27 10.3	17 6.5	34 13.0	23 8.8	261 100.0%

```
*     ABSOLUTE FREQUENCY
**    ROW PERCENT
***   COLUMN PERCENT
```

Table 12. Reasons for playing at each type of favourite place

Reasons for playing in planned indoor recreation areas are over-whelmingly because of the activities there - reading in the library, swimming at the Y.M.C.A., and touring the museum for example. Possible activities accounted for over half of the reasons for choosing school-grounds with social reasons being the next most frequently mentioned, followed by topographical characteristics. Reasons of shelter or topo-graphy do not figure at all. Instead, schoolgrounds seem to be viewed as very busy places, worthwhile going to because of the friends and acti-vities there.

While almost half of the reasons for playing in home areas are activity reasons, the friends and relatives there constitute a second major attraction. Also, while shelter was not mentioned for any other types of favourite places, it was mentioned five times for home areas. Furthermore, proximity reasons were mentioned more for home areas than any other type of environment. The home area, then, emerges, as might be ex-pected, as a place of variety, social security, convenience, comfort, and familiarity to the children in this sample.

Exactly half of the reasons for playing on streets are related to street activities, and linked to these is the topography of a street - smooth, flat, hard asphalt - comprising 16.7% of the reasons. Another 16.7% of the reasons are because of the ambience of the street environment - interesting, fun, and always offering opportunity for adventure.

The play activities on the lots of institutions involve almost three-quarters of the reasons for playing there, with the remainder split evenly between reasons of topography, proximity, social interaction, and ambience. Considering that lots of courthouses and post offices, for

example, neither offer shelter to children nor a lot of room, it is not surprising that these reasons were not mentioned.

Other open space areas, such as creeks, vacant lots, and the railroad tracks are attractive equally because of activities and topography. Ambience, especially the exciting, dangerous nature of the railroad and the freedom that open space allows also figure as commonly mentioned reasons.

Finally, those few children choosing commercial environments as favourite places play there only because of the activities they can do.

The distribution of the various types of reasons for choosing a place as a favourite (Table 13) resembles Table 12, but there are a few noticeable differences. Proximity to home is more a reason for making a street "special" than it is for merely using it, since it comprises 4.7% of the reasons in Table 12 compared with 21.7% in Table 13. Also, the ambience of a play place increases in importance relative to other characteristics of the site, in choosing a favourite. These children, then, seem to be perceiving their play environments in their *totality* - a combination of location, the people (or absence of people), and the physical characteristics of the place.

The activities occurring in each type of favourite place (Table 14) are consistent with the results based on all play places, showing that most of the activities are either active, solitary/parallel or passive, and the fewest are of the unstructured group type (4.2%). Half of the activities in parks are solitary/parallel, but one quarter are passive. Most of the planned indoor recreational areas' activities are also solitary/ parallel activities, especially swimming. Schoolgrounds are not as dominated by this type of activity since the structured group play is also

ENVIRONMENT	REASON							TOTAL
	ACTS.	SIZE	SHELTER	TOPOG.	PROX.	SOCIAL	AMBIENCE	
PARKS	31 62.0%	2 4.0	0 0	3 6.0	2 4.0	3 6.0	9 18.0	50 * 100.0**
PLANNED INDOOR RECREATION	4 40.0%	0 0	0 0	0 0	0 0	3 30.0	3 30.0	10 100.0
SCHOOL-GROUNDS	26 68.4%	1 2.6	0 0	3 7.9	2 5.3	4 10.5	2 5.3	38 100.0
HOME AREAS	45 46.9%	1 1.0	2 2.1	1 1.0	13 13.5	18 18.8	16 16.7	96 100.0
STREETS	13 56.5%	1 4.3	0 0	1 4.3	5 21.7	2 8.7	1 4.3	23 100.0
INSTITU-TIONS	10 71.4%	0 0	0 0	0 0	1 7.1	0 0	3 21.4	14 100.0
OTHER OPEN SPACE	7 36.8%	2 10.5	0 0	3 15.8	0 0	1 5.3	6 31.6	19 100.0
COMMERCIAL	1 .25	0 0	0 0	0 0	1 .25	1 .25	1 .25	4 100.0
TOTAL	137 53.9%	7 2.8	2 .8	11 4.3	24 9.5	32 12.6	41 16.1	254 100.0

(MISSING OBSERVATIONS - 7)

*   ABSOLUTE FREQUENCY
** ROW PERCENT

Table 13.   Reasons for choosing a place as a favourite

ENVIRONMENT	ACTIVE, NO EQUIPMENT	SOLITARY/ PARALLEL	UNSTRUC- TURED GROUP	STRUC- TURED GROUP	PASSIVE	TOTAL
PARKS	4 7.8	27 52.9	1 2.0	6 11.8	13 25.6	51 * 100.0**
PLANNED INDOOR RECREATION	0 0	6 60.0	0 0	2 20.0	2 20.0	10 100.0
SCHOOL- GROUNDS	4 10.3	17 43.6	1 2.6	11 28.2	6 15.4	39 100.0
HOME AREAS	17 16.9	14 13.9	3 3.0	8 7.9	59 58.4	101 100.0
STREETS	4 17.4	7 30.4	0 0	5 21.7	7 30.4	23 100.0
INSTITUTIONS	2 14.3	5 37.7	2 14.3	0 0	5 37.7	14 100.0
OTHER OPEN SPACE	5 27.8	3 16.7	4 22.2	1 5.6	5 27.8	18 100.0
COMMERCIAL	1 0.25	1 0.25	0 0	0 0	2 0.50	4 100.0
TOTAL	37 14.2	80 30.8	11 4.2	33 12.7	99 38.1	260 100

(MISSING OBSERVATIONS - 1)

*   ABSOLUTE FREQUENCY
**   ROW PERCENT

Table 14. Activities at favourite places

important. Home areas are characterized by passive activities, but *all* types of activities were mentioned as well. The street activities are mainly either solitary/parallel or passive, and no unstructured group activities were mentioned for favourite streets. Structured group activities, however, were not mentioned for the institutional areas, probably because of space restrictions. No one activity type predominates in other open space areas - a possible indication of the diversity of these areas.

The mean distance from home these children travel to their favourite places is 0.4 kilometres, much less than the mean *maximum* distance they travel to all places of 1.1 kilometres. This suggests implicitly that distance has an indirect effect on the choice of play environments. Places closer to the child's home become familiar to him. He feels comfortable there and it becomes a favourite haunt.

4.3 Relationships of Independent Variables to the Environments Chosen, Reasons Given, Activities, and Territorial Range

The data collected indicate a wide variation in the total number of places each child plays at. While the mean of the total is 6.84 places per child, and the mode is 4.00, seven children play in only two environments while one listed twenty-one different places! (Appendix I). To control for this variation when testing the relationships between type of environment, reason, or activity and the independent variables the absolute frequency for each variable for each child was divided by his total number of places. It will be implied hereafter, that these proportional measures are used.

In testing for significant relationships, various tests were used depending on the level of measurement of the variables. The t-test for

differences between two group means was used when the independent variable was one of the dichotomous nominal variables - sex, housing, mobility, or type of lessons taken. The F-test in analysis of variance was used to test for differences between more than two group means when the independent variable was "occupational aspiration". The Pearson product-moment correlation coefficient was calculated when the independent variable was length of residence, the number of siblings, or amount of television watched - all interval/ratio variables. Finally the non-parametric Spearman's rho was used for the independent ordinal variable "hours of play with parents". All four dependent variables were measured on the interval/ratio scale.

The summary of the results contains four subsections - environments chosen, reasons, activities, and territorial range.

4.3.1 Environments Chosen

Table 14 indicates the relationships found to be significant at the 0.05 level of significance (the values of the statistics and probabilities are found in Appendix J).

ENVIRONMENT	(a) SEX	(b) HOUSING	(c) LENGTH OF RESIDENCE	(d) SIBLINGS	(e) MOBILITY	(f) LESSONS
PARKS				X		X(SPORTS)
PLANNED RECR.					X	
SCHOOLGROUNDS	X					
HOME AREAS	X				X	
STREETS		X			X	X(SPORTS)
INSTITUTIONS	X	X	X			
OTHER OPEN SPACE		X				
COMMERCIAL						

(X = significant at .05 level)

Table 15. Significant relationships with environments chosen

(a) Sex

While a mean of 19% of the play environments listed by boys were schoolgrounds, only 15% of the environments listed by girls were schoolgrounds. This could be because of two reasons: (i) schoolgrounds are generally farther from home than other environments, and the boys are "allowed" to roam farther (see section 4.3.4), or (ii) parents do not let their daughters play in schoolgrounds after school hours because of their "bad" reputation. The mean proportion of environments that were institution lots was 6% for boys and only 2% for girls. Perhaps the boys are more willing to "trespass" than girls on often well-manicured institutional lots. As Roger Hart (1973: 67) notes:

> [Many] Children will not manipulate or modify an
> overtly cared for and guarded landscape. Manicured
> lawns, miniature trimmed trees, and the absence of
> dirt piles, surface water, and large trees all convey
> a strong message to a child - "do not touch".

In contrast to schoolgrounds and other institutional space, girls mentioned a significantly higher proportion of home areas than boys (37% for girls vs 23% for boys). In our society girls are often encouraged to "domesticate" and parents feel more secure when their daughter is at a friend's house rather than roaming the streets.

(b) Housing

For both streets and other open space areas, children in low and medium-density housing had a higher proportion of their play places in those categories than did apartment-dwellers (Table 16). That children with direct access to the streets use them more confirms the notion of

Environment	Housing Type	
	Low and Medium Density	Apartments
Streets	17%	9%
Other open space	9%	3%

Table 16. Effect of housing type on use of streets and other open space

the marked distinction between the indoor/outdoor environments for apartment children. The difference in use of open space may be a function of the situation of single-family and medium-density homes as compared to apartments in this sample area. Almost all apartments are clustered at intersections of streets, while residential areas bordering open space areas are of low or medium density. It therefore is very convenient for many non-apartment children to step out their back door and play on the beach, in a farmer's field, or on a vacant lot, but not so easy for the apartment children.

Apartment children do use institutional areas more than other children (6% vs 2%). This may be because of the ease of parental supervision of children in low and medium-density housing as compared to apartments (Becker, 1976: 566). If parents would rather their children *not* play in the manicured gardens, it is much easier to enforce this policy when both parents and children are on the ground level.

(c) Length of Residence

A correlation of $r = -.1536$ with a significance of .048 was found between length of residence and the number of institution areas chosen. This small but statistically significant association indicates that the

longer a child lives in the area, the less likely he is to play in these lots. There are two possible interpretations of this result:

(i) the child is told often enough by either parents or employees of the institutions not to play there that he finally stops going or,

(ii) he eventually gets bored with these areas and looks for more interesting or stimulating environments.

(d) Number of Siblings

A small correlation of -.1535 was found between the number of siblings between 5 and 13 years old a child has and his use of parks. This means that with more brothers and sisters to play with at home, a child is less likely to use parks. The reason for this is not immediately apparent, since no significant (positive) relationship was found between the number of siblings and use of home areas. Is there some kind of social stigma attached to playing in parks with one's brothers and sisters? Further research is needed to delve into this question.

(e) Mobility

81.5% of this sample have the use of a bicycle. Three significant relationships were found with this variable. Firstly, while those with use of a bicycle listed 5% of their environments as the planned indoor, recreation type, only 2% of those without a bicycle did. This is largely a result of the relative location of the Central Park Complex (Y.M.C.A., arena, park, bandshell, and library) within the sample area. Although it is readily accessible by bicycle, the area is at least two kilometres from many children's homes in the western half of the sample area. A bus does pass by the complex but it entails unwanted costs both in fares and

travel time. Secondly bicycle-users also use the streets more than those
without bicycles (i.e. 16% for bicycle-users as compared to 7% for those
without). Indeed, the most common street activity was bicycling. Home
areas proved to be more attractive to the less mobile children than those
with bicycles. 37% of the play environments for those without bicycles were
home areas compared with 28% for the more mobile.

(f) Lessons Taken

From the data collected it was found that 41.2% of the children in
this sample take some kind of lessons. However, only sports lessons, taken
by 46.2% of the entire sample, were found to have any significant bearing on
the types of environments the children played in. Specifically, 21% of the
environments chosen by children taking sports lessons are streets, compared
with only 8% for other children. This is reasonable since many quiet, res-
idential streets are used for practising skills learned in soccer, hockey,
football, and baseball.

On the other hand, children who do *not* take lessons in sports act-
ivities mentioned more parks proportionately than children who *did* take
sports lessons.   Since baseball, football, and soccer lessons in
Burlington all take place in local parks, this result seems paradoxical.
There are, however, two possible explanations. One reason may be that
these children consider their sports lessons as "work" more than "play",
and thus did not consider them in their completed questionnaire. A more
plausible explanation is that the majority of sports lessons in this sample
were in gymnastics, swimming, hockey, skating, and other activities that
require specific recreational buildings. Children without the opportunities

to use these buildings play elsewhere, and in this case they turn to parks.

4.3.2 Reasons Given

A summary of the significant relationships found between the reasons children liked their play environments and the relevant independent variables is shown in Table 17. (see Appendix K for values of statistics).

REASONS	(a) SEX	(b) HOUSING	(c) NUMBER OF SIBLINGS	(d) PLAY WITH PARENTS	(e) MOBILITY	(f) OCCUPATIONAL ASPIRATIONS
ACTIVITIES			X			
SIZE		X			X	
SHELTER						
TOPOGRAPHY	X					
PROXIMITY	X					
SOCIAL			X	X		
AMBIENCE						

(X = significant at .05 level)

Table 17. Significant relationships with reasons given

(a) Sex

Boys listed a higher proportion of topography reasons (14%) than did girls (7%). This could be in part related to the emphasis on activities in play by boys, but may also be attributed to Saegert and Hart's (1976) observation that boys tend to modify the environment more noticeably during play than do girls. Boys are therefore perhaps more *aware* of the physical landscape they play in than girls.

Proximity played a more important role in choosing play places for girls than it did for boys. 7% of the girls' reasons were "proximity"

in comparison to only 3% of the boys' reasons. This is further evidence of the restricted territorial range of girls.

(b) Housing

Children living in low and medium-density housing mentioned size more than did apartment-dwellers (10% compared with 4%). The former children are accustomed to having more living space than are the latter. We would expect, then, that apartment children would prefer to play in spacious areas to release their "surplus energy" more than would other children. This does not seem the case. Instead, the play environments appear to be an extension of the housing environments. Those in low and medium-density housing with plenty of space like play places with lots of space. Conversely, children from comparatively small homes place less emphasis on size as a reason for playing in a place. Perhaps apartment children need the security of a confined space. This line of thought might be fruitfully pursued in future research.

(e) Number of Siblings

Two significant results were found with this independent variable. A correlation of -0.3093, with a significance of 0.001 was found between the number of siblings and the "activities" reasons. In other words, the more brothers and sisters the children have to play with, the less important play activities were in choosing a play place. This can be explained best in terms of the other relationship found - a correlation of +.3231, significant at the 0.001 level - between siblings and social reasons. Thus, the presence of friends, family, and other people at a place is more important

than the activities he can do there, to a child with many brothers and sisters to play with.

(d) Hours of Play with Parents

The social influences of *parents* also seems significant, since an association was found with the proportion of "social" reasons (rho = .1801 significant at .02 level). .

(e) Mobility

Children with the use of a bicycle mentioned proportionately more "size" reasons (9%) than did those without use of a bicycle (4%). Room to manoeuver, to have races, to go a long distance in a short time are likely to be the specific attractions of a large area to bicycle-riders.

(f) Aspirations

No significant relationships were found between occupational aspiration and the reasons for playing in a certain environment.

4.3.3 Activities

The relationships found to be significant at the 0.05 level are again indicated by an "X" in Table 18 (exact values for statistics given in Appendix L).

	(a)\nSEX	(b)\nHOUSING	(c)\nLESSONS	(d)\nOCCUPATIONAL\nASPIRATIONS	(e)\nAMOUNT OF\nTELEVISION
(1) ACTIVE, NO EQUIP.				X	
ACTIVE, EQUIP.\n(2) SOLITARY/\nPARALLEL					
(3) UNSTRUC-\nTURED\nGROUP	X				
(4) STRUC-\nTURED\nGROUP	X		X\n(DANCING)	X	
(5) PASSIVE					

Table 18. Significant relationships with activities

(a) Sex

Only two significant relationships between sex and the type of activities were found. Boys listed more active group activities requiring equipment as a proportion of their total than did girls (Table 19).

	BOYS	GIRLS
UNSTRUCTURED GROUP	5%	2%
STRUCTURED GROUP	18%	10%

Table 19. Mean of proportion of group activities by sex

Children at this age are on the verge of the "gang age", and it seems that the boys in this sample prefer group play more than girls. It must be

noted also that the structured group activities involve sports that typ-ically involve more boys than girls - football, hockey, and lacrosse in particular.

(b) Housing

No significant relationships between type of housing and activities were found.

(c) Lessons

Only twelve children (10.1%) take dancing lessons, but it was found that these children mentioned significantly fewer (1%) structured group activities than those who did not (15%). Perhaps this is because dancers dislike the highly structured nature of these group sports, that involve team co-operation and many rules to follow. It seems more likely, however, that the relationship is a function of sex - more girls tend to take dancing lessons and more boys prefer these structured group activities.

(d) Occupational Aspiration

A significant difference among group means was found for active play behaviour requiring no equipment such as exploring, running, playing tag, catching field animals (Table 20). There does not seem to be an intuitive explanation for this pattern. It was expected that adventure- or athletic-oriented children would be most likely to prefer these gross motor activities, not those who are domestic- or performer-oriented. It is likely, then, that other variables besides occupational aspiration were in operation here.

OCCUPATION ASPIRATION	MEAN OF % OF ACTIVITIES THAT WERE "ACTIVE, NO EQUIPMENT NEEDED"
ADVENTURE	14%
ATHLETIC	14%
CREATIVE	7%
DOMESTIC	39%
PEOPLE-ORIENTED	14%
PERFORMER	36%
TECHNICAL	12%

Table 20. Effect of occupational aspiration on active play with no equipment.

A significant difference among group means was also found for structured group activities (Table 20).

	MEAN % OF STRUCTURED GROUP ACTIVITIES
ADVENTURE	13%
ATHLETIC	30%
CREATIVE	4%
DOMESTIC	4%
PEOPLE-ORIENTED	13%
PERFORMER	7%
TECHNICAL	7%

Table 21. Effect of occupational aspiration on structured group play

Athletic-oriented children, then, are likely to use their play activities to practise the skills they intend to use later on in life.

(e) Television

No significant relationship was found between the amount of television watched and the type of play activities. In other words, the idea

that television encourages only passive activities, or anti-social be-
haviour is not confirmed by this data set.

4.3.4 Territorial Range

The significant factors affecting the territorial range of the
children are summarized in Table 22 (statistics in Appendix M).

	(a) SEX	(b) HOUSING	(c) LENGTH OF RESIDENCE	(d) MOBILITY	(e) TELEVISION
TERRITORIAL RANGE	X	X (QUALIFIED)			

Table 22. Significant relationships with territorial range

(a) Sex

It was found that boys had a mean range of 1.3 km while girls had
a mean range of only 1.0 km. This is further empirical evidence of the
differences in attitudes of both parents and boys and girls towards the
distance from home each sex should go.

(b) Housing

Although no significant difference was found between apartment
children and others in the mean maximum range of play areas, there *was*
a significant difference found between children in single-family housing and
children in medium- or high-density housing (Table 23). While children
in townhouse developments and apartments often have many others their age
to play with in the immediate vicinity of their homes, children in detached

(dispersed) housing usually have to travel further to find friends to play with. Perhaps they also have more sense of adventure than other children. Further research is needed with respect to this issue.

HOUSING TYPE	MEAN RANGE (km)
SINGLE-FAMILY	1.3
DUPLEX OR TOWNHOUSE	0.9
APARTMENTS	0.9

Table 23. Range of children in different housing types

(c) Length of Residence

It was expected that children living longer in an area would have a greater territorial range than children who have not had the time to explore places far from home. This relationship did not hold for this data set. Possibly this is because children who are new residents did not feel intimidated by strange environments but instead view them as a challenge. Perhaps a significant relationship between these two variables *does* exist but on a smaller scale. Children who may have lived in a neighbourhood for only a few days may stay close to home, but once friends are made behave much the same as children who have lived in the area for years. In this study the unit of measurement was one month.

(d) Mobility

That no significant correlation was found between use of a bicycle and the maximum territorial range of the children is contrary to the study by Marie Tindal (1971: 31) and is also counter-intuitive. A possible

DEPENDENT VARIABLES	INDEPENDENT VARIABLES								
	SEX	HOUSING	LENGTH OF RESIDENCE	NUMBER OF SIBLINGS	PLAY WITH PARENTS	MOBILITY	LESSONS	OCCUPATIONAL ASPIRATIONS	AMOUNT OF T.V.
ENVIRONMENTS CHOSEN (8 TYPES)	3	3	1	1	NOT TESTED	3	2	NOT TESTED	NOT TESTED
REASONS (7 TYPES)	2	1	NOT TESTED	2	1	2	NOT TESTED	0	NOT TESTED
ACTIVITIES (5 TYPES)	2	0	NOT TESTED	NOT TESTED	NOT TESTED	NOT TESTED	1	2	0
TERRITORIAL RANGE (INTERVAL/ RATIO VARIABLE)	1	1 (WHEN 3 GROUPS OF HOUSING)	0	NOT TESTED	NOT TESTED	0	NOT TESTED	NOT TESTED	0

 NOT TESTED

Table 24. Summary of significant relationships

explanation is that children in both groups (mobile or non-mobile) do not ride their bicycle to their furthermost play places but walk instead. Unfortunately no information on this was gathered. A second interpretation might be that the furthermost play places from home for each child were actually within walking distance. Again, data on what the children considered "walking distance" was not collected in this study.

(e) Amount of Television Watched

This variable did not significantly correlate with the territorial range of the children.

4.3.5 Summary of Results

The number in each cell of Table 24 represents the number of significant relationships found for each general hypothesis.

In general, the summary results show that the personal filters examined affect to a varying degree the environments chosen, the reasons given, the play activities, and the territorial range of the child. Of the seven predictor variables included in the study, sex was the most useful. Marked differences between boys and girls were found for all four aspects of play behaviour studied, with the boys being generally more active and free to roam. Housing type also proved to be a useful variable. Apartment children mentioned fewer streets and open space areas, but more institutional lots than other children. They were less concerned with the size of play places than other children, and had a smaller territorial range than those living in single-family detached homes. Several relationships between mobility and the first two dependent variables were found

although bicycle ownership somewhat surprisingly did not significantly affect the territorial range. Less important independent variables were length of residence, number of siblings, amount of play with parents, lessons taken, and occupational aspirations. The amount of television watched did not relate to either play activities or territorial range.

These results have important implications for planning residential environments and play environments, and these are discussed in the following chapter.

CHAPTER 5

CONCLUSIONS

5.1 Discussion of Results and their Implications for Planning

As described in the Introduction, this study had four basic ob-
jectives. These related to the environments chosen, the reasons given,
the activities of play, and the relationships of play behaviour to personal
characteristics of children. The information obtained yielded results of
interest to wide segments of the population - the geographer, the psychol-
ogist, the urban planner, and the playground designer, and last but not
least, the parent.

What types of environments are actually used by children for
play? It was found that children in Grade Five or Six play in *all* com-
ponents of the objective urban environment to a certain extent. In ad-
dition to the environments intended for childrens play - home areas, parks,
schoolgrounds, and planned indoor recreation areas - the children also
make use of streets, institutional lots, general open space, and commercial
areas. As Arvid Bengtsson (1974: 21) notes, "Children play wherever they
happen to be, whether the area is "suitable" or not." However, it was
also found that at an aggregate level the types of environments used
and preferred *most* were home area, parks, and schoolgrounds. That home
areas emerged as overwhelming favourites indicates to parents that the
children in this study feel the home influence very strongly. The heavy

use of parks and schoolgrounds for play is indeed encouraging to planners, for it means that the traditional and creative playgrounds in the area are *not* obsolete for today's child. On the other hand, the relatively little mention of the planned recreation areas by these children indicates the need for a more dispersed distribution of these facilities throughout the area.

The reasons given for playing at each place also suggest a wide variation between children. Although many of the reasons were connected to the activities the child could do in an area, other physical, social, and psychological characteristics of the environment also emerged as significant. Proximity, shelter, space, unique surface condition, the presence of friends, relatives, and other people, and the ambience of a place were the additional types of reasons mentioned by these children. To the environmental psychologist this result reinforces the notion of a strong man/environment link. Children, and the boys in particular, seem to be very aware of the physical environment that they play in. They have different reasons for playing in different environments, and many of the children in this study had strong emotional feelings about certain places. While a few children were unable to clearly articulate these feelings commenting only that the place was "fun", most were able to label the atmosphere of a place as private, free, exciting, interesting, dangerous, safe, or familiar.

The activities mentioned by the children were both passive and active, solitary and group, structured and unstructured. Each child generally listed a variety of activities, varying with the different types of places he played at. For example, activities in home areas were

mainly passive, but in parks they were mostly of the active, solitary/
parallel activities such as swinging, climbing, or biking. These results
mean, then, that, it is necessary to examine closely the type of environ-
ments concerned when planning play places for children. Specifically,
parks, for instance, should have a variety of surface features and equip-
ment to match the variety of activities children like to do. Since very
few unstructured group activities were mentioned in connection with parks,
it is advisable to provide more facilities for fort play or tobogganing,
for example. For planned indoor recreation areas no active (no equipment)
or unstructured group activities were mentioned, so perhaps a more varied
landscape outside the buildings would attract more children.

What do these findings mean for the various notions of what play
is? Each of the theories presented in the literature review is partially
substantiated by the data. The idea of surplus energy appears in some
children's desire for plenty of room to run around in, found most often
in large parks or on the streets. Children planning on becoming sports-
persons in later life use streets and parks to practise their skill in
those sports. The Recapitulation Theory is in part illustrated by the
swimming, climbing, and fort play of the children. The thought that play
is an attitude is seen in the ambience reasons many children gave for
choosing a place to play- freedom, fun, relaxation, excitement and interest.
Freud's concept that play is a manifestation of wishes and conflicts is
evidenced by the relationships of occupational aspirations to play be-
haviour. His other idea that children play in order to master a disturbing
event or situation is demonstrated by some children's need for danger and
excitement and the frequent mention of climbing activities. The instinct

theories, citing play as "useless" behaviour depend, however, on one's definition of "useless", and do not apply easily to the human situation. Sitting and other passive activities, for example, may not seem to accomplish much, but at least serve to relax the child. The idea that play is an orienting reflex is shown in the exploring activities of the children, done often in open space areas. The learning theories are in part substantiated by the pretend play activities mentioned and the heavy emphasis by the children on action-moving around in the environment and making it one's own. The dynamic element of play is illustrated by each child's list of *several* different environments and activities, each selected at any moment in time according to his particular mood or desires.

The observed differences in attitudes and behaviour between children with different personal characteristics also suggest possible planning directives. Assuming that in a residential area there will be an even distribution of boys and girls, the most suitable play environment will have a *mix* of the various kinds of play areas, allowing varied types of activities to occur within them. So that all children will have equal access to play places, planned indoor recreational centres in particular might be more dispersed throughout the community.

Developers of apartment complexes might well consider providing play areas for the tenant children either on the property or close to it. This could be accomplished easily by locating the apartment adjacent to a field or other open space area. The size of the play area need not be large, but the place should be relatively easy to reach from the child's home.

Planned recreation areas should have some asphalt sections for

games such as "road" hockey. Bicycle paths in parks and following street routes would encourage children to play in safer places than busy streets. More children might also be attracted to the planned recreation centres if the lots surrounding the buildings had a more varied topography.

The research methodology used in this study is potentially very useful to planners in determining the types of environments the "client group" of children use and like. The questionnaire gives us a *complete* inventory of the play environments and the activities in each, and with a minimum of researcher-bias. Data regarding the type of playmates and frequency and times of attendance for each play place were also collected but not discussed in this paper. With this research methodology data can be relatively quickly collected (as compared with ecological observation), are on permanent record, and can be codified for use with a computer. Since the data were collected in the classroom, normally not a play environment, the children were able to think of *all* their play places. In contrast, interviews with children in a playground setting, for example, are likely to obtain results biassed toward the environment the children are in at the time. An added benefit of the questionnaire is that the process of completing it is a learning experience in orientation and map-reading for the children. It must be noted, however, that the written questionnaire is unsuitable for children younger than nine years of age.

5.2 Suggestions for Additional Research

As noted above, some of the information on use of play areas collected has not been discussed in this research paper. Within the data set also is information about how types of environments, reasons, and

activities vary for individual children - considered in the discussion but not formally analysed.

Two of the variables used in the study could be refined. Rather than straight-line distances for territorial range, it would be useful to consider each child's *actual* paths to arrive at more accurate estimates of travel time and distance. Additional measures of aspirations, particularly for a shorter time horizon could be included. For example, social or athletic goals to be achieved within the next year might be appropriate variables.

Useful information in subsequent studies would be some explicit indication of parental restrictions on the play environments their children can use, what they can do there, and the distance they are permitted to travel from home.

Other independent variables of personality, creativity, and past experience could be studied with respect to play behaviour. As noted earlier, however, reliable and efficient methods of data collection appropriate for use with children need to be developed.

Comparisons could be made across social class or ethnicity, or between children in the urban core and those in the suburbs. A study of the changes in play environment preferences and play activities of a group of children over time would also be valuable.

These possible extensions aside, this study has succeeded in fulfilling the research objectives stated at the outset. Based on data collected directly from the children, the environments they play in, their reasons for the choice, and the activities in each place have been fully described. Furthermore, explanations for the children's attitudes and

behaviour in terms of personal characteristics have been suggested. It
is hoped that empirical evidence of this nature will be considered in
future planning for play.

PHOTOGRAPHS OF EACH TYPE OF PLAY ENVIRONMENT

1. Central Park *(Traditional Playground)*

2. Y.M.C.A. *(Planned Indoor Recreation)*

3. John A. Lockhart Public School *(Creative Playground)*

4. Townhouses on Hyde Street *(Home Areas)*

5. Maple Avenue *(Street)*

6. Post Office *(Institutional)*

7. Site of Halliday Homes Co., now burned down *(Open Space)*

8. Burlington's "Downtown" *(Commercial)*

APPENDIX B

INVENTORY OF ENVIRONMENTS

1. Parks - Brock
            - Central
            - Elgin
            - Lions
            - McDonald
            - Optimist
            - Spencer Smith
            - Wellington

2. Planned Indoor Recreation - Central Arena
                               - Joseph Brant Museum
                               - Central Library
                               - Y.M.C.A.
                               - Karate Studio
                               - Pool Hall

3. Schoolgrounds - John A. Lockhart Public
                   - Burlington Central Public
                   - Burlington Central High
                   - Lakeshore Public
                   - Tom Thompson Public
                   - Wellington Square Public
                   - St. John's Separate

4. Home Areas - Own yard or home
                - Friend's yard or home
                - Relative's yard or home

5. Streets

6. Institutions - C.N.R. Station
                  - Court House
                  - "Hospital Hills" (Joseph Brant Memorial Hospital)
                  - Legion Hall
                  - St. Luke's Church
                  - Wellington Square Church
                  - Canada Centre for Inland Waters
                  - Post Office

7. Other Open Space - Beach Strip
                    - Lots at end of - Brant Street
                                     - Carol Street
                                     - Lockhart Road
                    - Creek near Burlington Street
                    - Creek near Torrance Street
                    - Parking lot on Ghent St.
                    - Farmer's field off - Maple Ave.
                                         - Graham's Land
                    - Lot for Halliday Homes (now burned down)
                    - Railroad track
                    - H.E.P.C. Right-of-Way

8. Commercial - Stores on Brant Street
              - Ontario Variety
              - Becker's
              - Susan Shoes
              - Gas Stations

APPENDIX C

INVENTORY OF REASONS

1. Activities - (see Appendix D)

2. Size

3. Shelter - warm
           - cool
           - from wind, rain, or snow

4. Topography - hill
              - pit
              - flat
              - asphalt
              - grass
              - lake or pool
              - stream
              - trees
              - hiding spots
              - absence of telephone wires

5. Proximity - to home

6. Social Reasons - friends there
                  - relatives there
                  - other people there

7. Ambience - peace, quiet
            - freedom
            - privacy
            - interesting
            - exciting
            - dangerous
            - fun
            - familiarity
            - pretty
            - safe

APPENDIX D

INVENTORY OF ACTIVITIES

1. Active, No Equipment or Materials Needed
                    - catch animals (in field)
                    - hide-and-seek
                    - tag
                    - run
                    - walk
                    - play with pets
                    - explore

2. Active, Some Equipment or Materials Needed

        2.1 Solitary/Parallel - bike
                        - boating
                        - climb
                        - exercise
                        - sand play
                        - slide
                        - swim
                        - swing
                        - combination swing, slide, climb
                        - skateboard; go-cart
                        - horseback riding
                        - skate

        2.2 Unstructured Group - fort play or other group pretend play
                        - pool
                        - toboggan
                        - teatherball
                        - skipping

        2.3 Structured Group - baseball
                        - football
                        - hockey
                        - soccer
                        - basketball
                        - tennis
                        - lacrosse
                        - cubs

3. Passive - dolls
              - eat
              - fish
              - watch trains, boats, or trucks
              - get warm
              - lay on grass
              - play with toys
              - read
              - records
              - shop
              - sit
              - talk
              - visit
              - play with chestnuts, rocks, leaves
              - lessons
              - unspecified play activities

INVENTORY OF OCCUPATIONAL ASPIRATIONS

1. Adventure - airline stewardess
             - motorcyclist
             - navy officer
             - police officer or agent
             - truck driver

2. Athletic - general sportsperson
            - coach
            - dancer
            - diver
            - equestrian
            - football player
            - gymnist
            - hockey player
            - runner
            - skater

3. Creative - architect
            - artist
            - chef
            - naturalist
            - set designer
            - writer

4. Domestic - father or mother

5. People-Oriented - businessman
                   - dentist
                   - doctor
                   - lawyer
                   - nurse
                   - Salvation Army officer
                   - secretary
                   - teacher
                   - veterinarian
                   - waitress

6. Performer - actor, actress
             - pianist
             - singer

7. Technical - copywriter
   - knife-maker
   - mechanic
   - train engineer
   - T.V. camera operator
   - watchmaker
   - lab technologist

APPENDIX F

LETTER TO PARENTS

McMASTER UNIVERSITY
Department of Geography

1280 Main Street West, Hamilton, Ontario, L8S 4K1
Telephone: 525-9140 Local 4535

Monday, November 15, 1976.

Dear Parent,

I am a geography student researching children's play behaviour
and preferences.   It would be appreciated if you would record
the number of hours your son/daughter watches television each day
from Monday, November 15th to Sunday, November 21st inclusive.
Results will remain confidential.   Please return the completed
chart to the school as soon as possible.   Thank-you very much.

Yours truly,

(Miss) Ellen Nightingale

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Number of Hours							

Name of pupil _____

School _____

Teacher _____

APPENDIX G

QUESTIONNAIRE

Teacher _____   Site_____
                                           Resp. No. _____
                                           Date _____

Please fill in the blanks or put an X in the boxes:

1. Your name is _____   _____
                        first name   last name
2. You are _____ years old.
3. You are a   (1) boy [ ]   (2) girl. [ ]

4. Your address is _____
5. What kind of home do you live in?

                (1) separate house   [ ]
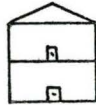
                                    (2) duplex   [ ]

                                    (3) townhouse or maisonnette [ ]

                                    (4) apartment   [ ]

6. How long have you lived there? _____
7. How many brothers and sisters do you have who are between five and
    fifteen years old?_____
8. How many hours a week do your parents or guardians play with you?

                        (1) 0 - 1   ┌──┐
                        (2) 2 - 3   ├──┤
                        (3) 4 - 5   ├──┤
                        (4) 6 - 7   ├──┤
                        (5) 8 - 9   ├──┤
                        (6) 10 or more └──┘

9. Do you own a bicycle (or use someone else's)?   (1) Yes ┌──┐
                                                    (2) No   └──┘

10. How do you usually get home from school?
                        (1) walk   ┌──┐
                        (2) ride a bicycle   ├──┤
                        (3) ride in a car or bus └──┘

11. (a) Do you take any lessons outside of school? (1) Yes
                                                      (2) No

     (b) If so, what kind?   (1) Music
                              (2) Art or crafts
                              (3) Drama
                              (4) Dancing
                              (5) Sports

12. What would you like to be when you grow up? _____

13. On the following set of maps, please:
             (a) Put an arrow beside where you live.
             (b) Colour the places where you play. They can be indoors
                 and outdoors, and at any time of the year.
             (c) Number all the places you play, beginning with the first
                 map, then the second, and so on.

14. On the chart, for each of the places you play write:
             (a) Its number. (Begin with number 1, then 2, and so on).
             (b) What you call the place (its name).
             (c) Why you like playing there.
             (d) What you do there.
             (e) Who you play there with.
             (f) What time or times of day you play there.
             (g) How often you usually play there.

15. Fill in the chart for any places you play that are not shown on the
     maps.

16. Write the numbers for your 3 favourite places and why you chose them
     as your favourites.

NUMBER	WHY YOU CHOSE IT AS ONE OF YOUR FAVOURITE PLACES TO PLAY

CHART

(a)	(b)	(c)	(d)	(e)	(f) TIME(S) OF DAY					(g) HOW OFTEN		
NUMBER	WHAT YOU CALL THE PLACE	WHY YOU LIKE PLAYING THERE	WHAT YOU DO THERE	WHO YOU PLAY THERE WITH	MORNING	NOON	AFTER-NOON	SUPPER-TIME	EVEN-ING	ONCE OR TWICE A MONTH	ONCE OR TWICE A WEEK	AT LEAST ONCE A DAY

MAPS USED WITH J.A. LOCKHART STUDENTS

GLEN

PLAINS ROAD

H. E. P. C.

C. N. R.

C N R STATION

GRAY'S LANE

H. E. P. C.

H. E. P. C

LEGION ROAD

LEGION HALL

HARBOUR

SCHOOL

GRAHAM S

LANE

PROSP

GHENT AVE

QUEEN ELIZABETH WAY

KING'S ROAD

MAPLE AVENUE

RICHMOND ROAD

H. E. P. C.

C. N. R.

OLGA DRIVE

ROSS ST.

BRENTWOOD DR.

ALFRED CRESC.

POST OFFICE

HYDE RD.

RAMBO

WELLINGTON PARK

CENTRAL HIGH SCHOOL

CENTRAL PUBLIC SCHOOL

ST. JOHN ST. PARA SCHOOL

VICT

STREET

CLARK AVE.

HAGER AVE.

WELLINGTON AVE.

BALDWIN STREET

EDEN PLACE

HALIFAX PLACE

BLENHEIM STREET

BIRCH AVENUE

AVE.

STREET

BRANT

CAROLINE STREET

HURD

CUST

CAROL ST.

JOHN A. LOCKHART
PUBLIC SCHOOL

REGINA DR.

BELLVIEW

REGINA CRESC.

BELLVIEW STREET

ONTARIO STREET

ST. LUKES
ANGLICAN
CHURCH

CITY
HALL

AVE.

BURLINGTON

COURT
HOUSE

ELGIN

NELSON AVE.

STREET

H. E. P. C.

HYDRO
PARK

LAKESHORE ROAD

JOHN STREET

BROCK

NORTH SHORE BOULEVARD

SPENCER SMITH
PARK

D. BRANT
MUSEUM

ONTARIO
PROVINCIAL
POLICE

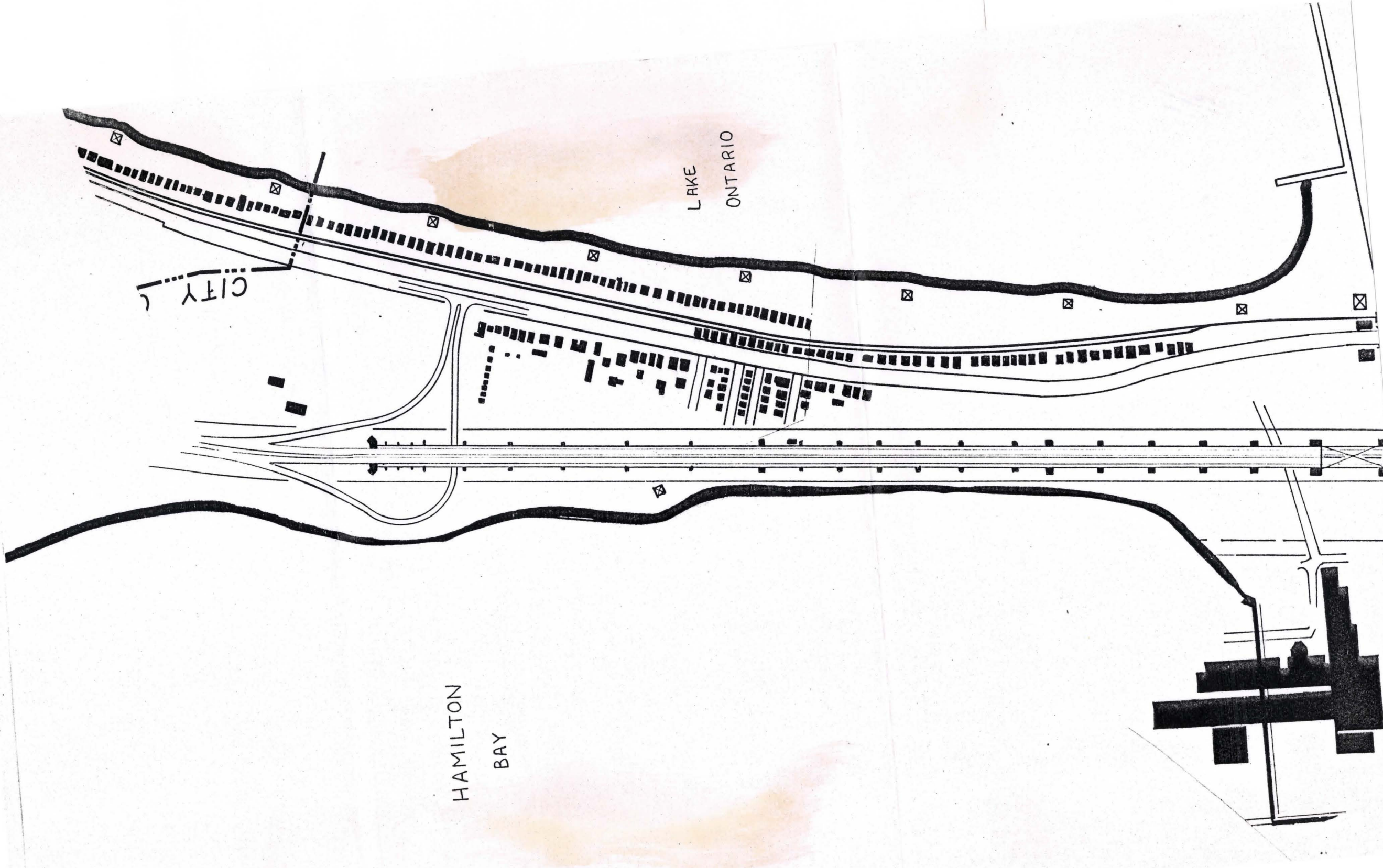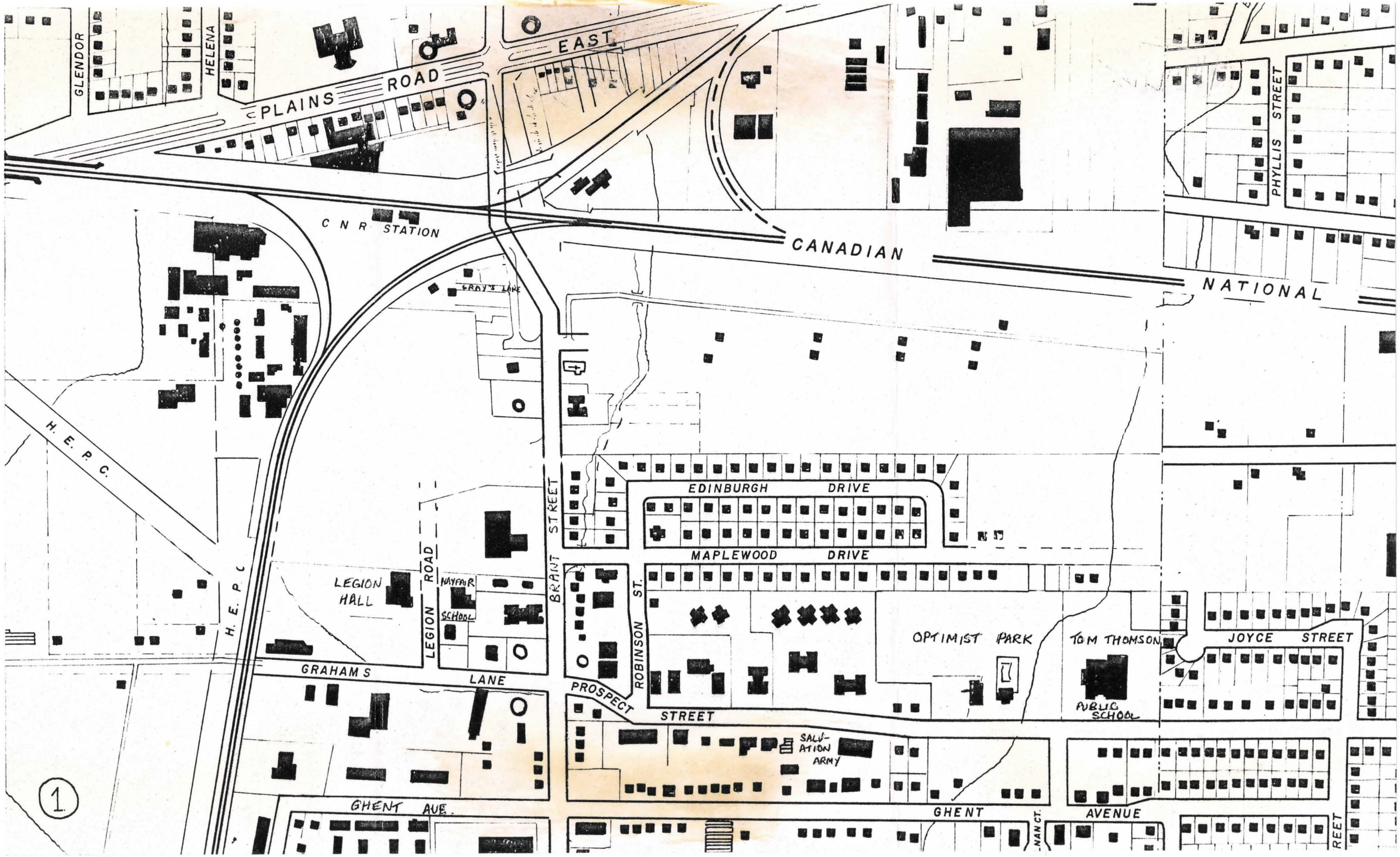ONTARIO
DEPARTMENT
OF
HIGHWAYS

J BRANT
MEMORIAL
HOSPITAL

D.H.O.
GARAGE

OF HAMILTON

BEACH BOULEVARD

LAKE ONT

LAKE
ONTARIO

CITY L

HAMILTON
BAY

MAPS USED WITH CENTRAL P.S. STUDENTS

CLARENDON PARK DR.

SHARRON STREET

DEYNCOURT DRIVE

HILL CREST DR.

PAISLEY AVENUE

WOODWARD

GARY CRESC.

YORKSHIRE CRESC.

WATERLOO ST.

WELLINGTON SQ. PUBLIC SCHOOL

GEORGE S

WAGNER

CRESC.

CORNICK DRIVE

COURTLAND

DRIVE

WOODLAND AVE.

TALLMAN AVE.

LANE

ORCHARD

BASE-BALL DIAMOND

P. P.

BELLWOOD AVE.

EMERALD ST.

STREET

BRIDGMAN AV.

DRURY

POLLUTION CONTROL

WELLINGTON AVE.

FAMILY Y.M.C.A.

CENTRAL RECREATION CENTRE & SENIOR CITIZEN'S CENTRE

CENTRAL ART, DRAMA AND MUSIC CENTRE

WELLINGTON SQ. UNITED CHURCH

AVENUE

STREET

AVENUE

P.

CENT. PUBL. LIBRARY

P.

BURL. TENNIS CLUB

BASE-BALL DIAMOND

STREET

HOLTBY AVE.

CROSBY AVE.

WOODLAND

LORNE

BRIDGMAN

BOWL CLUB

BURLINGTON CURLING CLUB P.

CENTRA ANNEX

LIONS PARK STREET

NEW

STREET

CENTRAL YOUTH CENTRE

P.

MARTHA

AVE.

LYNSON AVE.

FAIRLEIGH PLACE

H. E. P. C.

SMITH

DRIVE

STRATHEDEN

STRATHALLAN AVE.

NEWBOLD DRIVE

STREET

AVENUE

HARRIS CRESC.

TORRANCE ST.

BRUCE STREET

SENECA

DELAWARE

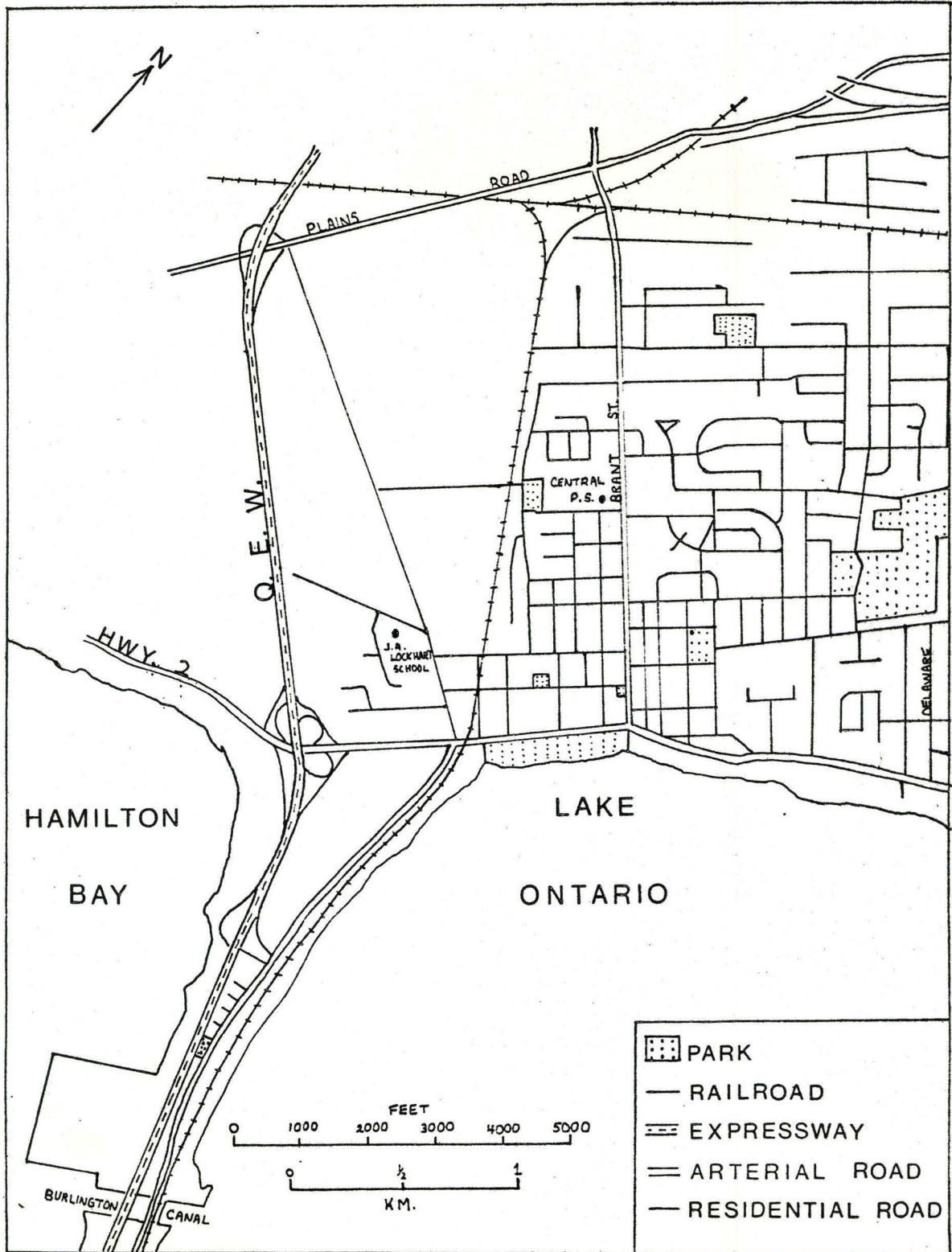JUNCTION ST.

LAKESHORE PUBLIC SCHOOL

CT.

LAKESHORE

CREST CT.

ROAD

③ LAKE ONTARIO

APPENDIX H: SITE MAP

APPENDIX I

NUMBER OF PLAY PLACES/CHILD

Number of Places	Number of Children	Percent
2	7	5.9
3	6	5.0
4	23	19.3
5	19	16.0
6	17	14.3
7	13	10.9
8	2	1.7
9	7	5.9
10	4	3.4
11	5	4.2
12	3	2.5
13	3	2.5
14	5	4.2
15	3	2.5
16	1	0.8
17	0	0.0
18	0	0.0
19	0	0.0
20	0	0.0
21	0	0.0
22	1	0.8
Total	119	100.0

Mean = 6.84

Mode = 4

APPENDIX J

STATISTICAL TEST RESULTS FOR ENVIRONMENTS

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	STATISTIC	1-TAIL PROBABILITY (OR SIGNIFICANCE)	GROUP MEANS (PROPORTION OF TOTAL AREAS)
Schoolgrounds	Sex	$t = 1.66$	.049	Boys .1907 Girls .1448
Home Areas	Sex	$t = -3.63$	.000	Boys .2251 Girls .3645
Institutions	Sex	$t = 2.72$	.004	Boys .0552 Girls .0171
Streets	Housing Type	$t = 2.02$	.023	Low and Medium Density .1657 Apts. .0869
Institutions	Housing Type	$t = -2.07$	.022	Low and Medium Density .0238 Apts. .0591
Other Open Space	Housing Type	$t = 2.78$	.003	Low and Medium Density .0848 Apts. .0308
Planned Indoor Recreation	Mobility	$t = 2.23$	.015	Mobile .0520 Not Mobile .0159
Home Areas	Mobility	$t = -1.77$	.040	Mobile .2821 Not Mobile .3728
Streets	Mobility	$t = 2.54$	.007	Mobile .1577 Not Mobile .0651
Parks	Lessons	$F = 4.4817$	.0364	Sports .1873
Streets	Lessons	$F = 13.66$	.0003	Sports .2106

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DEPENDENT VARIABLE	INDEPENDENT VARIABLE	STATISTIC	1-TAIL PROBABILITY (OR SIGNIFICANCE)	GROUP MEANS (PROPORTION OF TOTAL AREAS)
Institutions	Length of Residence	$r = -.1536$	.048	
Parks	Number of Siblings	$r = -.1535$	.048	

STATISTICAL TEST RESULTS FOR REASONS

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	STATISTIC	1-TAIL PROBABILITY (OR SIGNIFICANCE)	GROUP MEANS
Topography	Sex	t = 2.09	.0195	Boys .1357 Girls .0737
Proximity	Sex	t = -1.95	.026	Boys .0314 Girls .0728
Size	Housing Type	t = 2.20	.015	Low and Medium Density .0959 Apts. .0412
Size	Mobility	t = 1.79	.039	Mobile .0863 Not Mobile .0435
Activities	Number of Siblings	r = -.3093	.001	
Social	Number of Siblings	r = .3231	.001	
Social	Play with Parents	rho = .1881	.021	

STATISTICAL TEST RESULTS FOR ACTIVITIES

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	STATISTIC	1-TAIL PROBABILITY (OR SIGNIFICANCE)	GROUP MEANS
Unstructured Group	Sex	t = 1.99	.025	Boys .0459 Girls .0176
Structured Group	Sex	t = 1.94	.027	Boys .1788 Girls .1042
Structured Group	Lessons	F = 5.3385	.0224	Dancers .0076
Active, No Equipment	Occupational Aspiration	F = 2.8462	.0132	Domestic .3880 Performers .3566 Adventure .1388 Athletic .1433 Creative .0646 People-Ortd. .1414 Technical .1161
Structured Group	Occupational Aspiration	F = 2.4348	.0305	Athletic .3012 Adventure .1248 Creative .0348 Domestic .0357 People-Ortd. .0639 Technical .0625

APPENDIX M

STATISTICAL TEST RESULTS FOR TERRITORIAL RANGE

INDEPENDENT VARIABLE	STATISTIC	1-TAIL PROBABILITY (OR SIGNIFICANCE)	GROUP MEANS
Sex	t = 2.28	.012	Boys 1.3 km Girls 1.0 km
Housing	F = 3.4219	.0360	Single Family 1.3 Med. Density .9 Apartments .9

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