

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

U·M·I

University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600

Order Number 9207065

**The use and management of toys and “loose parts” on
a playground for integrating children with and without
disabilities: Values, problems and possibilities**

Dien, Laurie R., Ph.D.

City University of New York, 1991

Copyright ©1991 by Dien, Laurie R. All rights reserved.

U·M·I

**300 N. Zeeb Rd.
Ann Arbor, MI 48106**

A

THE USE AND MANAGEMENT OF TOYS AND "LOOSE PARTS"
ON A PLAYGROUND FOR INTEGRATING CHILDREN WITH
AND WITHOUT DISABILITIES: VALUES, PROBLEMS
AND POSSIBILITIES

by

LAURIE R. DIEN

A dissertation submitted to the
Graduate Faculty in Psychology
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy, The City
University of New York

1991

© 1991

LAURIE R. DIEN

All Rights Reserved

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

May 30, 1991.
Date

Roger A. Hart.
Chair of Examining
Committee

June 4, 1991
Date

Herbert D. Seltzer (S)
Executive Officer

Prof. Roger Hart
Prof. David Chapin
Prof. Leanne Rivlin
Dr. Milton Budoff
Prof. Dalton Miller-Jones
Supervisory Committee

The City University of New York

Abstract

THE USE AND MANAGEMENT OF TOYS AND "LOOSE PARTS"
ON A PLAYGROUND FOR INTEGRATING CHILDREN WITH AND
WITHOUT DISABILITIES: VALUES, PROBLEMS AND
POSSIBILITIES

by

Laurie R. Dien

Adviser: Professor Roger A. Hart

The purpose of this research was to examine the values, problems and possibilities of using toys and "loose parts" on a playground built for the purpose of integrating children with and without disabilities. A part of this larger question was to investigate the effect toys have on the social interaction between children with and without mental retardation.

The setting of this research was "A Playground For All Children," (PAC), a public, staffed playground in Queens, New York. Different groups of children with and without disabilities visited the playground each morning. By having a staff, toys and "loose parts" could be added to the playground. "Loose parts" are defined as any objects not nailed down onto the playground.

Four different methodologies were employed. Behavioral map data visually display where children with and without disabilities, aged 3-to-12 years, used the toys provided on the playground. Tracking

data examine: (1) the types of play behaviors in which children with and without mental retardation, aged 3-to-9 years engaged with different toys, and (2) which toys they used in social play. Focused tracking data examine the characteristics of toys that supported the social interaction of children with and without disabilities, aged 3-to-9 years. Interviews were conducted with: (1) three PAC directors about the use and management of toys on the playground, and (2) children with and without disabilities concerning toys.

The results demonstrate that toys and "loose parts" did indeed broaden children's play repertoires on the playground; adding manipulative, constructive and dramatic play opportunities. Comparisons of how and where toys were used are made by age, gender and disability. Toys that were able to support more than one child's activity at the same time, were found to encourage social interaction. Although children enjoyed their play experiences on PAC, the goal of physically integrating children with and without disabilities was generally not accomplished and social integration was a rare phenomenon. (Physical integration refers to the different visiting groups physically being in the same area at the same time.) Design and management implications, including possible

methods of encouraging physical and social integration, are discussed.

ACKNOWLEDGMENTS

This dissertation was researched and written within an environment of support, assistance, encouragement and love.

From that one day in Spring many years ago when Roger Hart, my mentor, called to ask if I would like to work at PAC, he has shared with me his enthusiasm for children's environments, and has introduced me to a field where I have found my niche. Roger, your enthusiasm, support, encouragement and friendship will always be appreciated and valued. And your garden parties will always be a special memory of my graduate school days. Thank you for thinking of me that day in Spring and for believing in my abilities from then on. Leanne Rivlin and David Chapin, my other core committee members, provided me with the push to always think one step further. I always looked forward to receiving your critiques, because I knew that they would lead me down new and interesting paths of thinking. Lee and David, knowing that I had both of your support, really helped me persevere and complete this dissertation.

Dalton Miller-Jones, although referred to as an outside reader, has been there from the beginning of this research along with my other core committee members. Whenever I had questions or concerns his door was always open. Your insightful answers and

suggestions always helped ease my anxieties over what appeared to be a very overwhelming task. Your assistance and encouragement will always be very much appreciated.

Milt Budoff, I appreciate your travelling in from Boston to attend my defense. Your very thoughtful comments and suggestions were very useful in helping me rethink portions of this research. Spending two-hours with you at my defence was definitely an important part of my education regarding integrating children with and without disabilities. I have always enjoyed reading your articles, but briefly discussing this area of study with you was even more enlightening. Again, thank you for attending.

I am very grateful to the Hasbro Children's Foundation for funding me while collecting and coding the data for this dissertation.

My thanks and appreciation also go to the other faculty members and fellow students of both the Environmental Psychology and Developmental Psychology departments who helped me broaden my knowledge of both fields.

A special thanks to Judith Kubran for being such an ever-present calming influence. Half the battle of graduate school is the bureaucracy, and with Jude on my side the battle always seemed manageable.

I would like to acknowledge Roger's three secretaries Nancy Romano, Suzanne Rubenstein and Lisa Price -- all of whom were always very helpful.

I would also like to thank the person whom I consider to be my first mentor in the field of psychology, Lila Braine at Barnard College. Lila, the work that we did during my senior year allowed me to realize how much I enjoyed psychological research.

The diner on the way to PAC, the Lemon Ice King of Corona, the deli -- my colleagues from the Playground Research Group: Kim Blakely, Maria Cheung, and Jason Schwartzman. Thank you for making three, sometimes very frustrating, summers a lot of fun. A special thanks to Jason for your support as I began writing this dissertation and for the copy of your dissertation that I used as a guide. I look forward to sharing memories of graduate school with you and Laura for many years to come.

And to our research assistants, without whom this research could never have been done, although there are too many people to list, a special thank you to everyone! There are a few people, in particular, without whose assistance I could never have done this dissertation: Jeannine DiRosa Treglia, Nancy Calderaro, Danny Rieber, Loretta Takoushian, Claudia Sullivan, Amy Mikula, Jennifer Broomfield and Susan

Ross. Many, many, many... thanks to you all! A very special thanks to Jeannine and Nancy for being my right-hand persons during the summer of 1986.

Thanks also to the Educational Resources Department for providing equipment and assistance for the collection and coding of the data.

My appreciation to the 1985-1987 PAC staff members for all your help. I'm sure that it wasn't easy to have extra people crowding into your office space, asking you to do extra paper work and having our equipment around, but I hope that we gave you all beneficial information in return. Special thanks to the 1985-1987 PAC directors: Diane DaProcida, Tammy Carlyle and Francine Nickelson.

To some fellow students, who took time away from their dissertation worries to help me with mine, a very special thank you: Herng-Dar Bih for teaching me how to plot the behavior maps, Michael Conn for helping me with statistics, and Andre Boucher, Selim Iltus, Herng-Dar Bih, Bill Burton and to any others who helped set-up the behavior maps and the digitizer.

I would like to acknowledge the following toy companies that donated toys to PAC for this study: Hasbro-Bradley, Brio, Blazon-Flexible Flyer, Bright Blocks, Buddy L. Corp., Chicco, Coleco, Fisher-Price, F.J. Strauss, James Industries, Jaymar, Playskool,

Reeves International, Spearhead Industries, Sutton Place Sales, Swallow, and Toy Power.

Many thanks to Wendy Reynolds for typing this manuscript and never complaining about all the revisions that had to be made. I appreciate that you wanted it to be just as perfect as I did. Also, many thanks to your family for their patience when we worked on it until late at night. I'm not sure who was more happy when this dissertation was finally finished.

Also, many thanks to Judith Waldman, the Dissertation Assistant, for always being willing to answer my many questions.

I remember that a long time ago my first "all-nighter" for school involved a report on Mars. My parents stayed up with me, all night, helping me cut and past pictures and editing my report so that I could get it in on time the next day. I guess that it is fitting that this tradition of helping me on my projects continued on through my dissertation. My parents Marilyn and Saul Dien, provided the foundation which enabled me to succeed in my education. They have given me emotional as well as financial support throughout a very long schooling, for which I am very grateful. And in the tradition of helping me with the actual projects, they assisted me with the labeling

of the behavior maps which was not the easiest of tasks. Mom and Dad you are both the greatest!

My brothers, Bruce and Jonathan, were also of great help. Beyond their constant concern and support, they helped me gather data on the playground on their visits to New York. Jon and Bruce, I wish you both well on your future endeavors and I hope that we will always continue to be there for each other.

And my grandparents Anna Dien and May and Louis Karsh who are always so good to me. They constantly display an unwavering support of me. With backing like this I know I can always succeed!

Aunt Jane, being there at my door, the day my dissertation was ready to be distributed, and driving me to midtown at noon was beyond the duty of "aunthood." I am so grateful, because at that time I sure didn't think I could walk one step further. I also appreciated you helping me with my slides as well as taking care of Shabbat the weekend of my defense, which was so lovely. And later, you shlepped me around the city for paper, to the copy shop, and wherever else -- I will never forget all that you have done and always do.

And to my other Aunts, Uncles, and cousins (Amos, Iris, Marc and Adam; Albert, Dora and Joseph) who have called and written with their support and encouragement, as well as my other aunts, uncles and

cousins who I know have been cheering for me too, thank you.

While collecting data for this dissertation I had the pleasure of getting married. With this terrific marriage I also gained wonderful new family members.

Earl and Janet Yaillen, my new set of parents, whose understanding and encouragement have been beyond words. Never did they ask the infamous question, "When will you be done?" for they really knew what this process was all about. Having you know what I was going through was very comforting. I could never have asked for a better set of new parents.

Bruce and Judy, thank you for your constant support and concern. I truly appreciated your belief in me when you consulted me on your selection of play equipment. And Noam and Goldi, thank you for letting me observe the "real thing", books can only tell you so much, but watching actual children develop is much more enlightening.

Barry your understanding and encouragement has also meant so much.

Barry, Bruce and Judy, I could not have asked for a better set of new siblings. And Noam and Goldi you two are the "bestest" nephew and niece!

And to my grandparents Edith and Joe Gould, your continued interest in my dissertation was always

appreciated. Having you both behind me made me feel very special. And to Zaide Louis, who unfortunately passed away just as I was finishing - I always appreciated your encouragement and you will be missed.

And to all of the other family members, aunts, uncles and cousins, I thank you for your concern and support as well.

My friends were not safe from this project either. Although I am blessed with too many to name, I want you all to know that having you behind me made this task a much more pleasant one. I would like to thank in particular Shirley Kingsley and David, who are really more like family to me. Your support has been without measure, and I truly appreciate all that you have done for me. Many thanks to Alyssa Gray for going to PAC with me to take inventory of the toys. Although it wasn't an exciting task, I just wanted to let you know that the information was very useful while writing this dissertation. Amy Appelbaum, I truly appreciated your frequent calls to check up on me and your constant offers to proofread. Jennifer Broomfield and Jeannine DiRosa Treglia, although I have thanked you as research assistants, I also want to thank you for your friendship. Both of your encouragement throughout this process has meant so much. David Kritt, I would endorse your delivery service any time. Thank you so much for shlepping

this dissertation to Seattle. I am even more thankful for your friendship and support. Pamela Spearman, we started graduate school together and now, although we are both in different programs, we are (almost) done. Knowing that we were always there for each other, even though we were miles away, made this long haul a much better one. And Ellen Brickman - well Ellen we are both finally "Fudds." I truly am grateful for your help, encouragement and ear. It meant a lot to share this experience with you. Thank you for your constant offers of help, your statistical and editing assistance and staying up to the wee hours of the morning listening to me complain. Now we can really concentrate on T.V. You are one good friend.

If I have omitted anyone I apologize.

I do not think my husband Alan, really knew what he was getting into, especially my tradition of pulling everyone around me into my projects. Without your tremendous amount of support, encouragement, help, and love I know that I could not have completed this dissertation while remaining somewhat sane. I appreciate the nights/mornings you would stay awake listening to me jabber, letting me go to school without working, putting up with my anxieties and bad moods ... you are incredible! You actually read this entire dissertation and edited it -- if that is not

true love and commitment, I do not know what is.

Thank you so much! You are an unwavering pillar of strength and support in my life, which I hope I am for you. If you every decide you want a Ph.D. - I am with you all the way.

Alan, I dedicate my dissertation to you with all my love.

TABLE OF CONTENTS

ABSTRACT	iv
ACKNOWLEDGMENTS	vii
LIST OF TABLES	xxii
LIST OF FIGURES	xxiv
CHAPTER I	1
INTRODUCTION	1
CHAPTER II	3
REVIEW OF THE LITERATURE	3
Theories On The Use Of Toys In Play And Their Value To Children's Development	3
John Locke	3
Frederich Froebel	4
Maria Montessori	5
The Progressive Education Movement	7
Piaget	11
Vygotsky	14
The Psychoanalytic Tradition	16
The Relationship Between Social Interaction And Toys	19
Skills Necessary To Engage In Object Play With Another	19
Social Play	19
Social Perspective Taking	24
Entry Behavior	26
Sharing Behavior	29
Types of Toys That Lend Themselves To Different Kinds Of Play	39
The Social Value Of Toys	39
Size Of Toy As A Factor	43
Size Of Play Area And Number Of Toys Available As Factors	44
Summary	47
Toys For Children With Disabilities	47

Mainstreaming	51
Brief History	51
Definitions	53
Perceptions Of Children With Disabilities	56
Social Interactions Between Children With Mental Retardation And Children Without Mental Retardation	64
Preschool Findings	64
Promoting Social Interaction Between Preschoolers With Delayed Social Skills And Preschoolers Without Delayed Social Skills	68
Summary	80
History of Playgrounds	81
The Importance Of Loose Parts On Playgrounds	82
Definition Of Loose Parts	82
Studies Stressing The Importance Of Loose Parts On Playgrounds	85
The Logistics Of Loose Parts	87
CHAPTER III	94
AIMS	94
CHAPTER IV	96
RESEARCH DESIGN	96
Setting: A Playground For All Children	96
Population	98
Methods	99
Selection And Placement Of Toys On PAC	99
Behavior Maps	101
Purpose	101
Data Collection	101
Population	102
Data Analysis	103
Reliability	105

Tracking	105
Purpose	105
Data Collection	107
Population	107
Data Analysis	108
Social Interaction Coding	108
Play Repertoire Coding	112
Focused Tracking	114
Purpose	114
Data Collection	114
Population	114
Data Analysis	115
Children's Interviews	115
Purpose	115
Data Collection	115
Population	116
Data Analysis	116
PAC Director Interviews	116
Purpose	116
Data Collection	116
Population	117
Data Analysis	117
Critique Of Methodology	117
CHAPTER V	119
RESULTS AND DISCUSSION	119
Behavior Maps	119
Locations Where Toys Were Observed	119
Locations Where Boys And Girls Were Observed Using Toys	130
Locations Where Children Of Different Ages Were Observed With Toys	142
Locations Where Children With Different Disabilities Were Observed	165
The Physical Integration Of Children With Varying Abilities	194
Social Interaction	202
Types Of Social Play Children Engaged In With Different Toys	202
Types Of Social Play Boys And Girls Engaged In With Different Toys	204
Types Of Social Play 3-to-5 Year Old And 6-to-9 Year Old Children Engaged In With Different Toys	206

Types of Social Play Children With Varying Abilities Engaged In Different Toys	208
Summary	211
Play Repertoires	211
Toys Chosen By Children Who Were Tracked	211
Toys Chosen By Gender	215
Toys Chosen By Age	219
Toys Chosen By Children With Mental Retardation And By Children Without Mental Retardation	222
Play Behavior Frequency By Types Of Toys Chosen By Children Who Were Tracked	224
Focused Tracking	228
How Toys Encourage Social Interaction	228
How Caretakers Can Encourage Social Interaction	234
Summary	240
Children's Interviews	240
"What Is Your Favorite Toy?"	240
"What Toys Would You Add To The Playground?"	245
PAC Directors' Interviews	248
Summary of Major Findings	254
CHAPTER VI	260
IMPLICATIONS	260
Implications For Staffed Playgrounds	260
Strategies For Enabling Toys To Influence Children's Interactions	260
The Management Of Toys And Loose Parts On A Staffed Playground	263
Suggestions For Changes To A Playground For All Children	264
Design Recommendations	265
Selection of Additional Toys and Loose Parts on PAC	267
Suggestions For Future Playground Designs	268
APPENDIX A	271
APPENDIX B	275
APPENDIX C	276
APPENDIX D	279

APPENDIX E	280
APPENDIX F	284
APPENDIX G	285
APPENDIX H	292
APPENDIX I	293
REFERENCES	296

LIST OF TABLES

Table 1:	Behavioral Maps Population: Gender, Age, and Disability	104
Table 2:	Tracking Population: Gender, Age, Disability and Year	109
Table 3:	Children's Interviews Population: Gender, Age and Disability	117
Table 4:	Number and Percent of Times Children Observed With Each Toy: Behavioral Mapping Data	123
Table 5:	Number and Percent of Times Boys and Girls Observed With Each Toy: Behavioral Mapping Data	131
Table 6:	Number and Percent of Times Children Ages 3-5, 6-8 and 9-12 Observed With Each Toy: Behavioral Mapping Data	145
Table 7:	Number and Percent of Times Children With Different Disabilities Observed With Each Toy: Behavioral Mapping Data	176
Table 8:	Number and Percent of Times Children Engaged In Solitary, Parallel and Group Play With Different Toys: Tracking Data	203
Table 9:	Number and Percent of Times Boys and Girls Engaged In Solitary, Parallel and Group Play With Different Toys: Tracking Data	205
Table 10:	Number and Percent of Times Children Ages 3-5 and 6-9 Engaged in Solitary, Parallel and Group Play With Different Toys: Tracking Data	207
Table 11:	Number and Percent of Times Children With Varying Abilities Engaged In Solitary, Parallel and Group Play With Different Toys: Tracking Data	210
Table 12:	Number, Percent and Average Time Used For Toys Chosen By Children Who Were Tracked	212
Table 13:	Number, Percent and Average Time Used For Toys Chosen By Boys and Girls Who Were Tracked	216
Table 14:	Number, Percent and Average Time Used For Toys Chosen By 3-5 and 6-9 Year Olds Who Were Tracked	220

Table 15: Number, Percent and Average Time Used For Toys Chosen By Children With and Without Mental Retardation Who Were Tracked	223
Table 16: Number and Percent of Different Play Behaviors Used With Each Toy: Tracking Data	225
Table 17: Number and Percent of Times Each Toy Was Named By Children of Varying Abilities In Response To "What Is Your Favorite Toy?"	242
Table 18: Number and Percent of Times Each Toy Was Named By Boys and Girls of Varying Abilities, In Response To "What Is Your Favorite Toy?"	243
Table 19: Number and Percent of Times Each Toy Was Named By Children of Varying Abilities and Ages In Response To "What is Your Favorite Toy?"	244
Table 20: Number and Percent of Times Each Toy Was Named By Children of Varying Abilities In Response To "What Toys Would You Add To The Playground?"	246

LIST OF FIGURES

Figure 1:	Playground For All Children (PAC)	120
Figure 2:	Areas where children played with sand tools on PAC.	122
Figure 3:	Areas where children played with big wheeled toys on PAC.	125
Figure 4:	Areas where children played with balls on PAC.	126
Figure 5:	Areas where children played with toy replicas on PAC.	127
Figure 6:	Areas where children played with blocks on PAC.	129
Figure 7:	Areas where boys played with sand tools on PAC.	133
Figure 8:	Areas where girls played with sand tools on PAC.	134
Figure 9:	Areas where boys played with big wheeled toys on PAC.	135
Figure 10:	Areas where girls played with big wheeled toys on PAC.	136
Figure 11:	Areas where boys played with balls on PAC.	138
Figure 12:	Areas where girls played with balls on PAC.	139
Figure 13:	Areas where boys played with toy replicas on PAC.	140
Figure 14:	Areas where girls played with toy replicas on PAC.	141
Figure 15:	Areas where boys played with blocks on PAC.	143
Figure 16:	Areas where girls played with blocks on PAC.	144
Figure 17:	Areas where 3-to-5 year olds played with sand tools on PAC.	146
Figure 18:	Areas where 6-to-8 year olds played with sand tools on PAC.	147
Figure 19:	Areas where 9-to-12 year olds played with sand tools on PAC.	148

Figure 20: Areas where 3-to-5 year olds played with toy replicas on PAC.	150
Figure 21: Areas where 6-to-8 year olds played with toy replicas on PAC.	151
Figure 22: Areas where 9-to-12 years olds played with toy replicas on PAC.	152
Figure 23: Areas where 3-to-5 year olds played with big wheeled toys on PAC.	154
Figure 24: Areas where 6-to-8 year olds played with big wheeled toys on PAC.	155
Figure 25: Areas where 9-to-12 year olds played with big wheeled toys on PAC.	156
Figure 26: Areas where 9-to-12 year olds played with balls on PAC.	159
Figure 27: Areas where 6-to-8 year olds played with balls on PAC.	160
Figure 28: Areas where 3-to-5 year olds played with balls on PAC.	162
Figure 29: Areas where 3-to-5 year olds played with blocks on PAC.	163
Figure 30: Areas where 6-to-8 year olds played with blocks on PAC.	164
Figure 31: Areas where 9-to-12 year olds played with blocks on PAC.	165
Figure 32: Areas where children with emotional disabilities played with sand tools on PAC.	168
Figure 33: Areas where children with learning disabilities played with sand tools on PAC.	169
Figure 34: Areas where children with physical handicaps played with sand tools on PAC.	170
Figure 35: Areas where children with mental retardation played with sand tools on PAC.	171
Figure 36: Areas where children without disabilities played with sand tools on PAC.	172
Figure 37: Areas where children with emotional disabilities played with big wheeled toys on PAC.	173

Figure 38: Areas where children with mental retardation played with big wheeled toys on PAC.	174
Figure 39: Areas where children without disabilities played with big wheeled toys on PAC.	175
Figure 40: Areas where children with learning disabilities played with toy replicas on PAC.	178
Figure 41: Areas where children with physical handicaps played with toy replicas on PAC.	179
Figure 42: Areas where children with mental retardation played with toy replicas on PAC.	180
Figure 43: Areas where children without disabilities played with toy replicas on PAC.	181
Figure 44: Areas where children with emotional disabilities played with balls on PAC.	182
Figure 45: Areas where children with learning disabilities played with balls on PAC.	183
Figure 46: Areas where children with physical handicaps played with balls on PAC.	184
Figure 47: Areas where children with mental retardation played with balls on PAC.	185
Figure 48: Areas where children without disabilities played with balls on PAC.	186
Figure 49: Areas where children with emotional disabilities played with blocks on PAC.	189
Figure 50: Areas where children with learning disabilities played with blocks on PAC.	190
Figure 51: Areas where children with physical handicaps played with blocks on PAC.	191
Figure 52: Areas where children with mental retardation played with blocks on PAC.	192
Figure 53: Areas where children without disabilities played with blocks on PAC.	193
Figure 54: Areas where children with and without mental retardation played.	195

Figure 55: Areas where children with and without mental retardation played.	196
Figure 56: Areas where children with and without mental retardation played.	197
Figure 57: Areas where children with and without mental retardation played.	198
Figure 58: Areas where children with and without mental retardation played.	199

CHAPTER I

INTRODUCTION

This research set out to study the values, problems and possibilities of using toys on a public playground. As part of this larger question, the research examines a specific empirical investigation of the effect toys have on the play of, and the social interaction between, children with and without mental retardation. One of the major reasons toys are not usually provided on playgrounds is that there is no staff to manage them. For a variety of other reasons, most notably safety, security, and maintenance, it appears that in the future more playgrounds will be staffed in the United States. Another important reason to have staff, is that they are required in order to successfully integrate children with and without disabilities in play. Federal law requiring children with disabilities to be "mainstreamed" into society is leading to experiments with public playgrounds. This study evaluates the use of toys and other "loose parts" on a prototype of a staffed, public playground in New York City, for integrating children with and without disabilities, called "A Playground For All Children."

"Loose parts" are things that are not bolted down onto the playground. Most frequently in the United States they are toys. In Europe, however, adventure playgrounds are filled with lumber, tools, plants and animals. The possibilities can be endless. The purpose of this study was to add "loose parts" to an already novel playground so as to

broaden children's play repertoires beyond what could be provided by the stationary playground equipment. "Loose parts" were added that would encourage manipulative, constructive and social-dramatic play. In addition, "social toys" that might specifically encourage social interaction between children with and without disabilities were added. Past research suggests that toys can be a valuable facilitator of children's social interactions. Whether toys play a similar role in mainstreamed playgrounds remains uncertain.

This study was carried out in 1985 and 1986, within a larger three-year evaluation of A Playground For All Children conducted by the Children's Environments Research Group of the City University of New York.

CHAPTER II

REVIEW OF THE LITERATURE

Theories On The Use Of Toys In Play And Their Value To Children's Development

A historical perspective in the use of toys is valuable because current educational practice is a reflection of different traditions, revealing the multiple reasons why play, and specifically play with toys is valuable.

John Locke

Before the 1700's, the child centered culture that we recognize today did not exist (Provenzo & Brett, 1983). Children were thought to be miniature adults who, when able, participated in adult chores and adult recreation (Brewer, 1979). Although not the first to espouse a psychology to treat children differently, John Locke's book, Some Thoughts On Education, influenced the affluent in England and America which resulted in a change of attitude toward children (Brewer, 1979). Now that children could be children, they would need objects that would cater to them. Included in Locke's book, were "Locke's blocks", which are given credit as the first toy to popularize toys for educational purposes (Brewer, 1979; Sutton-Smith, 1986). The blocks would be used to teach children the alphabet. Locke further suggested that in using these blocks the child be kept indoors and be taught by a private tutor in order to guard

him from playing with other children who might pass on "bad values", especially from those outside of their socioeconomic class. Thus recreation for the child moved from the public adult world to the home environment, allowing children to be recognized as individuals (Sutton-Smith, 1986). According to Brewer (1979), the introduction of these toys was merely a new way to control children, albeit a less brutal way. Instead of using the rod, the children were getting a rigorous training in social duties and family obligations.

Frederich Froebel

Frederich Froebel, a German educator from the nineteenth century, brought educational toys to the public domain through his development of the kindergarten movement. Froebel's educational philosophy emphasized mankind's spiritual development along with physical and intellectual growth. His philosophy was representative of German idealistic thought which held that all things live and have their being through the Absolute God, and it is the destiny of all to reveal God in their external and transient being (Weber, 1979).

In accordance with this philosophy, Froebel felt that through play, children's mind and soul would be cultivated. And that through manipulating and handling objects, children would come to understand the world. The objects however had to be the appropriate objects. Therefore, Froebel designed

a series of twenty educational toys and activities, which he called "gifts of God" and "divine occupations"

(Sutton-Smith, 1986) that would be of symbolic importance and would lead the child closer to identifying with the divine spirit and social unity (Weber, 1979). Children worked with these alone and in groups to experience being a whole and being part of a whole.

The first gift was a ball which symbolized the concept of divine, all-inclusive unity. The second gift consisting of a sphere, cube and cylinder introduced diversity. The sphere and cube were exact opposites and the cylinder combined the two, allowing the child to reconcile opposites. The gifts progressed from unity to diversity. With the third through sixth gifts the children were directed to build "life forms" (a house or a church), "forms of knowledge" (geometric shapes) and "forms of beauty" (designs for aesthetic appreciation) (Weber, 1979). In 1869, Elizabeth Peabody, a pioneer of the kindergarten movement encouraged Milton-Bradley to manufacture the gifts and occupations so that they would be available commercially (Hewitt & Roomet, 1979).

Maria Montessori

In 1907, Maria Montessori, originally trained as a physician, was invited to plan an educational program for children of working mothers in Italy. Montessori felt that the manufactured toys that children played with had too

little to do with the modern world in which they lived, so she designed an elaborate system of didactic materials to give children practice in important activities; such as concepts of color, form, texture, and quantity. The materials were divided into categories which were: practical life exercises, sense-training devices, and materials to promote reading and writing. The exercises were formal and exact and the children were expected to use the materials individually in the prescribed manner given by Montessori. The purposes of the exercises, according to Montessori, were to help children learn to observe things; to make comparisons between objects; to form judgments and opinions; to reason; and to make decisions (Provenzo & Brett, 1983). The materials were "auto-educative" (Weber, 1979), in other words, self-corrective. For instance, one of the activities required a child to fit solid geometric cylinders of graded size into a wooden frame. The exercise could only be completed if all the cylinders were put into their correct spaces.

After an initial positive reception in the United States, Montessori's methods faced criticism because the methods did not foster children's spontaneous activities. There was no room for creativity, imagination or motivation in problem-solving. For instance, if a child attempted to play with the blocks in a non-prescribed manner, the blocks were taken away.

The Progressive Education Movement

Differing in philosophy from Froebel and Montessori, a new breed of child educators came forth to develop the progressive education movement. Their philosophy was that learning situations should be flexible and open ended to allow children to think and express themselves, as opposed to children engaging in activities that have already been prepared and are directed by the teacher.

John Dewey in The School and Society suggests that Froebel's activities were reflective of German culture at the time they were developed. The United States was undergoing change and progress and thus it was time to rethink Froebel's principles, to make them more representative of current life. When describing the kinds of materials with which a child should be playing, Dewey opposed prepared gifts which really did not have much to do with the child's life outside of school, and instead said that the materials must be as real as possible, "the more natural and straightforward these are, the more definite base there is for calling up and holding together all these allied suggestions which make (the child's) imaginative play really representative... To the children these occupations are surcharged with a sense of the mysterious values that attach to whatever their elders are concerned with" (Dewey, 1900, p. 124). The supposed symbol that the adult thinks is being given to a child according to Dewey, is not a symbol to the child. For example, Froebel's ball more likely means

motion to the child as opposed to all-inclusive divine unity. The materials must therefore be, according to Dewey, as real in character as possible. They must allow the children to express their ideas and interests. Dewey did not want monotony, but wanted children to be presented with continuity based on their lives. A child could play house enacting an endless number of situations, yet all still forming a united theme. "The whole, constructive or 'built up' work seems better fitted than anything else to secure these two factors - initiation in the child's own impulse, and termination upon a higher plan. It brings the child in contact with a greater variety of material: wood, tin, leather, yarn, etc., it supplies a motive for using these materials in real ways instead of going through exercises having no meaning except a remote symbolic one" (Dewey, 1900, p. 128). Furthermore, the purpose of playing with these materials is to experience and to learn - doing something purposeful for the child to learn about the world in which he/she lives. It requires motivation and judgment from the child. The "start must come from the child" (Dewey, 1900, p. 128) and then the child can be assisted. The teacher and materials should not be a model to copy, but rather should be a guide. The task of the teacher is not to alter the child's goal or destination, but to be aware that there is more than one way of getting there.

With Dewey's philosophy, came a desire to change the kindergarten's (which he called sub-primary, so as not be

linked to Froebel's philosophy) curriculum. In 1905, Patty Smith Hill was appointed to the faculty of Teacher's College at Columbia University to develop new kindergarten materials and methods. The teacher's role of "directress" was now that of a guide. And the materials that were being introduced allowed for gross motor development and materials relating to the child's own background. One of Hill's major developments was building blocks. They were continually developed with the help of twelve years of testing through observations of children.

Housekeeping activities also became a part of the classroom. There were brooms, irons, ironing boards, dust mops, and dishes; the real materials that Dewey spoke of to allow the child to explore his/her world. Also included were other constructive toys, like sand toys, dramatic toys and fine motor toys which allowed children to have freedom of choice and expression.

Caroline Pratt was another child educator from the progressive educational movement who had an important influence on the field. Pratt developed her personal philosophy of education by abandoning her training and observing the behavior of the children she was teaching. Convinced, that in the process of children's play, was "the germ of serious learning" (Winsor, 1984, p. 7), the rehearsal for the task awaiting them in growing up. Pratt developed the "unit system" of building blocks which consisted of blocks based on a proportion of 1:2:4. Being

the creator of the unit system is what Pratt is probably best known for. It was with these materials that the children could create a world of their own. With these blocks, the children could be participants instead of spectators and could use them without guidance.

Like Dewey, Pratt disagreed with Froebel and Montessori's philosophies. To distinguish her blocks from theirs, she called her blocks "free materials" (Leeb-Lundberg, 1984). Her blocks were not designed for the specific educational purpose of adults, but they were for children to experience and learn from in their own way. Harriet Johnson, a colleague of Pratt, after many observations of children playing with the blocks suggested these three points of emphasis: "first,... the power to deal effectively with his environment accrues to a child through his free use of constructive materials; second,... possibilities are offered by the blocks and similar materials for expressing rhythm, patterns, and design; and third,... by means of these materials, children may review, rehearse, and play out their past experience" (Winsor, 1984, pp. 10-11). In addition, social interaction is another important aspect of the children's learning (Brody, 1984). Pratt's classrooms at her school, The City and Country School in New York City, probably looked a bit different than those of educators who held Dewey's philosophy. Both agreed that play should build upon real life experiences and that children should come into contact with a great variety

of materials such as wood and yarn, but Pratt emphasized that children should create supplemental objects for their constructions. Pratt believed in only having the blocks and supplemental materials such as crayons, clay or yarn. If the children wanted a sky they would then paint a piece of paper for the sky, or form people out of clay if they wanted people, and use wood pieces for cars, instead of using dolls or plastic cars. The debate of whether children should use lifelike objects or ambiguous objects continues to be an issue in the literature, yet most kindergartens are filled with both blocks and lifelike toys, perhaps as a compromise.

John Brewer (1979) suggests that the history of toys has gone through three stages. The first stage was the emergence in the eighteenth century of recognizing childhood and the toy as we know it today. The second stage, between c. 1760 and 1840, demonstrates the widespread market of playthings, but the narrow definition of play and learning as was disseminated by Froebel and his disciples. The final phase from the mid-nineteenth century through the present, finds continued developments in the theories of play and a billion dollar toy industry constantly introducing many, many different kinds of toys.

Piaget

Piaget's theory of cognitive development is fundamentally a theory of the child's adaptation to the environment. According to Piaget, intellectual adaptation

results from an equilibrium between two complementary processes: assimilation and accommodation. "In assimilation, children incorporate events, objects, or situations into existing ways of thinking" (Rubin et al., 1983). Whereas accommodation is the readjustment of existing ways of thinking to new information. According to Piaget, play is pure assimilation. Any new exchange with an object is exploration and learning, not play. The child's repetitions with the object is play. The child receives pleasure by repeating actions from having a sense of control over self and environment by repeating actions. The child practices and the new skills become "consolidated." Rubin, Fein and Vandenberg (1983) give a very appropriate example of Piaget's theory of play with regard to a slide. The first time or two a child goes down a slide, according to Piaget, it is not play. The child is learning about his/her "physical and spatial relation" with respect to the slide. After going down the slide and accommodating to these new physical and spatial relations, the remaining variations of going down the slide-head first, running down, or waving hands, are all ways of consolidating the skill of going down a slide, thus the child is assimilating these actions, or playing. "In Piaget's terms, the initial learning is adaptation, but the subsequent exercise is play, serving to consolidate the initial learning by incorporating old skills into the new one, by smoothing out the new performance, or

perhaps, by separating the essential, elaborative variations" (Rubin et al., 1983, p. 705).

Piaget's theory of development is a stage theory, and within the different stages he describes different forms of play. The four phases of development that Piaget describes, are sensorimotor, preoperations, concrete operations and formal operations. Within this framework Piaget lays out a sequential order of play.

First is sensorimotor practice play where children's actions are exercised and elaborated for their functional value. Then there is pretense play, which develops from solitary to social. Within this type of play Piaget suggests that two levels occur. Pretend play involves symbol making and, like psychoanalytic theory, there is the child's ability to change life-experiences which produce discord for the child (Rubin et al, 1983). This discord is addressed by the child's play. According to Piaget, pretend play develops like an inverted "U"-shaped curve. Pretend activities emerge during the second-year of life and begin to decline by age 4. Just as the onset of pretend play is accompanied by the decline of sensorimotor practice play, so the onset of the next type of play, games-with-rules, is met by the decline of pretend play (Fein, 1981). Piaget still considers games assimilation, but notes that games also rely on the thinking abilities of the concrete operational child. A problem with this category is that Piaget requires that games with rules include not only rules, but competition as

well. This is problematic when observing children's play in cultures that do not teach the same kind of competition that is representative of cultures with free-market economies (Laosa, 1989). This is an important correction to Piaget's theory for persons interested in integrated play. When attempting to integrate children with and without disabilities, it is valuable to know that games can be played which encourage success for all, as opposed to failure for some.

Since children on the playground are engaged in all three types of play, there should be toys and loose parts available to support each of them. This should include equipment for games that do not necessarily depend on competition.

Vygotsky

Unlike Piaget, Vygotsky emphasized objects and play more, in his theory of children's play. According to Vygotsky, play involves children in immediately gratifying themselves through imaginary situations. As children's play develops so does the development of separating object and meaning. At a very young age (less than 2-1/2 years) children are confined to their contextual constraints. Objects dictate young children's actions, such as when seeing a bell, it must be rung. As children develop, objects "lose their determining force" (Vygotsky, 1978, p. 96). The children are not constrained by the objects,

but can act independently on them. "Action in an imaginary situation teaches the child to guide her behavior not only by immediate perception of objects or by the situation immediately affecting her but also by the meaning of this situation" (Vygotsky, 1978, p. 97). Thus a stick can be used as a horse. At this "pivotal" point children develop the ability to detach meaning from the object-the meaning of horse from a real horse in this case; meaning now dominates object. Rubin et al. (1983) explain why this is such a critical event: "For higher mental processes to develop, things must become 'objects of thought' and practical actions must become mental operations (e.g. volitional choice). Play precipitates this emancipation of meaning from object and action" (p. 709). Meaning in play becomes the central point and objects are moved from a dominant to subordinate position. Thus the capability of creating imaginary situations forces children from their situational constraints such as the need for realistic toy horses or trains.

Objects then have an important role to play especially in young children's imaginary play. But, Vygotsky (1978) points out that children's play is not symbolism: "A symbol is a sign, but the stick does not function as the sign of a horse for child, rather play retains the property of things but changes their meaning" (p. 98). The stick is the horse during play. Empirical research has examined children's

play with real and ambiguous objects. According to Fein (1981) children's dependence on realistic objects decreases with age. Contrary to Vygotsky, however, preschool children were found to refuse to substitute prototypical objects across categorical boundaries, such as using a hair brush as a bottle. Older children's use of ambiguous play materials were found to produce a greater variety of play themes, than if they had used realistic objects (Fein, 1981).

For children in the preschool years it would be useful to have a variety of toys and loose parts in their play environment. For younger children, particularly below the age of three years, some of the objects should resemble actual objects so that they can be used as pivots for representing those things. Ambiguous objects should be made available for older children. In summary, for Vygotsky pretend play and toys have an important role to play in the child's acquisition of language and problem-solving and some useful implications for the designers and managers of play settings.

The Psychoanalytic Tradition

Freud proposed that play provides an outlet for wish fulfillment and mastery of traumatic events (Freud, 1961). Play allows children to take on the roles of adults, such as parents, who they desire to be, and play also allows them to go beyond the constraints of reality, to let out their

aggression resulting from traumatic events. Children can use play as a medium to be "active masters in situations where they were once passive victims" (Rubin et al., 1983, p. 703). Doll play emerged as a clinical device from this theory; its first use is attributed to Melanie Klein (Klein, 1932). The basic procedure was to present a child with dolls, usually of a family, and the child was told to manipulate the dolls while telling a story. Doll play was additionally used for research concerning aggression, doll preference, father absence and prejudice. Rubin, Fein and Vandenberg (1983) suggest that doll studies were not concerned with play, "but (were) merely used a vehicle to study other presumably more important variables" (p. 703).

Freud's theory of play embodied wish fulfillment and mastery, whereas Erikson elaborated on the mastery element. Erikson (1950) sees play as a function of the ego, where children try to coordinate their bodily and social processes with the self. Play allows children to master situations that they find troubling. "Play creates an arena in which the uncertainties, anxieties and hoped for solutions of the ego can be dramatized" (Rubin et al., 1983). The development of play, according to Erikson, begins with "autocosmic play," where play centers around the child's body. The next step is the "microsphere - the small world of manageable toys" a place where children go when they need to overhaul their egos. And at nursery-school age children reach the "macrosphere - the world shared with others."

Play therapy is derived from Erikson's theory (Rubin et al., 1983). Unlike doll therapy, the child is provided with a variety of toys and the opportunity to engage in spontaneous play. Therapists must have an idea of what all the children at a given age in a given community are apt to play, in order to discover if children have given personal meaning to the way they are playing with toys. While watching the child's spontaneous play, with biographical knowledge of the child, the therapist can attempt to understand what is bothering the child. Toys then not only help the children master their problems, but they also act as a window for adults into the children's world. Erikson explains the value of toy play for children's development in this way:

If the first use of the thing-world is successful and is guided properly, the pleasure of mastering toy things becomes associated with the mastery of traumata which were projected on them, and with the prestige gained through such mastery (Erikson, 1950, p. 221).

In summary, Erikson has argued that toys are valuable for all children in helping them establish a secure manageable world. One might argue that for some children with special needs for whom the world is a little more threatening this "toy world" might take on even more importance. His theory also reveals that children with problems do not always need to consult play therapists. According to Erikson, play with toys can be a self-cure. Thus, it may be assumed whether children are trying to

imitate an adult or master a trauma, toys will help children deal with their problems and hence should be available in their play settings.

The Relationship Between Social Interaction And Toys

Early on objects are found to have a place in children's social interactions. Mueller and Brenner (1977) note that first social interactions depend on toddlers' toy skills. Young children are brought together physically because of their interest in toys, but then they have to accommodate one another socially (Mueller & Bergstrom, 1982). Toys continue to play a role in their social interactions as children develop, but just as their interactions change, so does the role of toys. Yet even as we mature, an interesting object can still manage to elicit a social exchange.

Skills Necessary To Engage In Object Play With Another

Social Play

Parten (1932, 1933) observed children at play and developed a hierarchy for levels of social play. The categories were unoccupied behavior, onlooker, solitary play, parallel play, associative play, and cooperative play. Solitary play was defined as the child making no effort to get close to other children. Parallel play can be thought of as independent play within a group--the similarity of the activity brings the child near the others. Associative play

is the recognition by the group members of their common activity, but each child has his/her own independent goals. This category of play has generally not been used by subsequent researchers as it is difficult to distinguish adequately from cooperative play (Rubin, Watson, & Jambor, 1978). Cooperative play is the most highly organized form of group play. There is a division of labor and control by one or two members. From her study, Parten (1932) concluded that social participation among children is largely dependent upon their age. The youngest children either play alone or in parallel groups, while the oldest children play cooperatively.

Parten made a significant contribution to the study of children's social play, but her hierarchical levels have not remained unequivocal. For instance, Rubin and his colleagues (Rubin & Krasnor, 1980) have nested Smilansky's play categories: functional, constructive, dramatic, and games with rules into Parten's play categories (Rubin, Watson, & Jambor, 1978). By nesting the cognitive play categories with the social play categories a more accurate description of children's play is elicited. For example, Parten puts solitary play on the bottom of the hierarchy. Instead, what researchers have found is that solitary play develops and is not necessarily an immature form of play in and of itself. Moore, Evertson, and Brophy (1974) observed more mature forms of solitary play, namely, solitary-constructive play, solitary-educational play, and

solitary-dramatic play. They suggest that solitary play is a continuum in which children move from passively watching, to acting in more active and expressive activities, to becoming independently involved in more challenging, problem-solving activities. Rubin (1982) notes that solitary-functional play is the least mature form of play, while solitary-constructive play is often carried out best when done alone (e.g. putting together a puzzle). By 4 years of age, however, Rubin (1982) suggests that solitary-dramatic play may be indicative of a lag in a child's social-cognitive development since the norm of this age is to pretend play in small groups as opposed to alone. Rubin et al. (1978) conclude from the research that instead of a hierarchy, younger children show less mature cognitive play within each social category and older children display more mature cognitive play behaviors.

Parallel play as a hierarchical level has also undergone challenge. Smith (1978) found that children he observed went from predominantly "alone" play to group play without much intervening parallel play. Smith suggests that parallel play is optional. Bakeman and Brownlee (1980) suggested that parallel play is a type of play that allows children to evaluate who is around them and coordinate with those individuals' actions in order to eventually socialize with them. By surmising that parallel play is not a developmental level, but rather a momentary behavior, Bakeman and Brownlee reanalyzed Parten's data. They found

that parallel play did not decrease from the youngest to the oldest children's play behaviors, but rather remained stable. Bakeman and Brownlee conclude then that parallel play does not serve a developmental function but rather the function of coordinating attention paid to an object and to another person. Rubin, Maioni, and Hornung (1976) also agree that parallel play is not the middle of the hierarchy, but rather they conclude that parallel play is the least mature form of play. According to these researchers, children who play by themselves may do this purposely. Whereas those who desire the company of other children, but may not be able to successfully take another's point of view, play alongside instead of together with them. As support for this explanation, Rubin (1976) presents findings that preschoolers' role-taking skills correlated negatively with parallel play and did not correlate with solitary play. This issue could be studied further, by observing the differences of children's behavior who go from parallel play to group play as opposed to those who do not. Perhaps two different types of behavior, seemingly the same, have been caught under the same label. Also, as Rubin, Maioni, and Hornung (1976) note, few studies have examined these norms for children older than preschool age. Studying older children's play may also be helpful in better distinguishing these play categories.

Cooperative play is seen as early as infancy, however, Eckerman and Stein (1982) found that the interactive skill

of answering a partner's signal occurs later than sending signals. While studying two-year olds at play Eckerman and Stein (1982) observed these necessary interactive tasks that need to occur for successful cooperative play to occur:

(1) Establishing joint agreement on a topic. Two-to-three year old children were found to need to use concrete objects as the basis of their pretend play, while, four-to-six year old children did not (Rubin, Fein, & Vandenberg, 1983).

(2) Assuming related roles in acting upon the topic (e.g. building the blocks or knocking them down). (3) Managing the temporal structure of cooperative action (e.g.

turn-taking, co-action, such as chasing one another around a table). (4) Handling interruption. DiLalla and Watson (1988) found that children go through a developmental sequence in being able to handle interruptions to their pretend play. By approximately six years of age children are found to be able to integrate fantasy and reality, so that fantasy is seen as a subject of reality.

(5) Communicating about the joint activity (can be non-verbal such as laughing or smiling). (6) Varying the topic in order to sustain interest when necessary. Garvey (1974) asks why children go through the work of meshing behaviors with others. "It is reasonable to postulate that an intrinsically satisfying feature of social play, which is present for each participant, is the feature of control...Furthermore, the satisfaction derived is mutual, since each party is instrumental in eliciting and

maintaining the responsive behavior of the other" (Garvey, 1974, p. 179).

Social Perspective Taking

Piaget assumed children to be egocentric, i.e. unable to take someone else's perspective, until they decenter upon reaching concrete operations at approximately 7 or 8 years of age. Piaget thus thought young children to be ineffective social communicators, since they did not recognize that another might not have their same perspective. Critics, however, have found that Piaget concentrated on the small percentage of speech that was non-social rather than the larger percentage that was social (Newman, 1978). Research has found that when the tasks are not too strenuous, rudimentary forms of perspective taking abilities do appear in the young child's repertoire. Perspective taking abilities are not an all-or-none proposition, instead they develop from simple to complex forms (Rubin & Peplar, 1980). Knowing that young children are capable of play with others, they must possess some perspective taking abilities.

Selman (1980) defines social perspective taking as an individual's ability to coordinate psychological perspectives of self and other. This is an important skill for group peer relations. Selman developed five levels of social perspective taking that examine an individual's understanding of self and other in coordination. (Since this research deals with early and middle childhood, levels

4 and 5 will not be discussed, c.f. Selman, 1980). Level 0 (approximately ages 3-6) is labelled as "Egocentric Perspective Taking" where "selves and others are clearly differentiated as physical entities, not psychological entities...That another may interpret the same situation differently is not recognized" (p. 37). The child is also confused about the distinction between intentional and unintentional behaviors. Level 1 (approximately ages 5-9) is labelled as "Subjective Perspective Taking" where "the subjective perspectives of self and other are clearly differentiated and recognized as potentially different...However, another's subjective state is still thought to be legible by simple physical observations" (p. 38). The child recognizes that he/she can put him/herself in another's shoes and the other can do the same. The child also understand that feelings cannot be read from sheer physical appearance, i.e. that an individual's physical expression can be covering for his/her true inside feelings.

Researchers such as Flavell who have studied children's perspective taking skills examine how children think about how others think. Selman, however, adds the component of subjective thought; i.e. children's capability of recognizing another's feelings. This is an important addition for a situation such as when one child has a toy and the other does not. It is helpful to understand whether or not a child will be able to put him/herself in another's

shoes in order to understand that the other is sad because the child will not share the toy. As children's understanding of intentionality and complex social messages increase, their social interactions are sure to change.

Entry Behavior

Before playing together, children must first approach one another. Gaining entry into a group of peers is considered one of the most formidable tasks of childhood (Putallaz & Gottman, 1982). Corsaro (1982) found that kindergartners' initial attempts to enter into a peer group were unsuccessful about half the time, demonstrating the difficulty of the process. Phillips, Shenker and Revitz (1951) suggested that the new child's most successful strategy for integration was to first determine the group's "frame of reference" and then establish him/herself in that frame of reference by imitating the actions or words of a child in the nucleus of the group. A child would not be successful, according to Phillips et al. if he/she tried to redirect the group's activity to him/herself, as inevitably the child would be ignored by the others.

The entry research often focuses on how children's entry behaviors can predict their sociometric status with familiar children. Even though part of this dissertation research studied how toys influence unacquainted children's social interactions, findings from entry behavior research will help illuminate the larger context of their play. Dodge, Schmidt, Schocken, and DeLugach (1983) developed a model

concerning children's entry behaviors. The first component of the model is that children's behavior during a peer group entry situation can be conceptualized as involving one or more strategies which the child uses to gain entry. The second component is that the strategies involve a certain amount of risk of being rejected. The successful child begins with low risk strategies, i.e. a strategy that will most likely get a neutral response, and moves toward higher risk strategies as he or she realizes initial positive responses. And the third component notes that the strategies most likely to receive positive peer responses are those that avoid interrupting the group's activity by calling attention to the entering child. The successful strategies keep the focus of attention on the peer group activity, while integrating the entering child into the group. The child thus needs to be able to take into account the responses he/she receives while progressing. Dodge et al. (1983) found that the most successful entry episodes include children who approach a group by waiting and hovering. They then proceed by imitating the behaviors of a member of the group. And in order to maintain interaction, the children make group-oriented statements, since waiting and hovering alone are ignored, and disruptive tactics receive negative peer responses.

Black and Hazen (1990) identified responsiveness and relevance as key dimensions in interactions of children. They found that children labelled as "unpopular" were more

likely to respond noncontingently to the initiations of others in both the unacquainted and acquainted preschool groups that they studied. They suggested that because of having been previously rejected, the "unpopular" child does not want to put him/herself in a possible situation where he/she could be rejected. These children talk indirectly to the other children. The "popular" children, however, provide a structure for conversation that allows cohesive social interaction to occur. An interesting note that Black and Hazen (1990) make is that the "unpopular" children interacted better with children who did not know them previously, their discourse was more coherent and their turn-taking more relevant. Dodge et al. (1983) and Putallaz (1983) note that children, whether popular, unpopular, or average used all entry strategies, but the behaviors were accepted and/or rejected based on the sociometric status of the group and entering child. Perhaps since children were not interacting with others who had previously rejected them, they felt that they could take more risks. This is an important finding to consider for the playground, because children meeting for the first time are not bound by previous "reputations" and hence may be willing to interact more readily.

Jormakka (1976) observed the first encounters of pairs of 6- and 7-year old children during their free play. Their behaviors are similar to those previously mentioned. According to Jormakka (1976) initial encounters usually

began with gazes directed at the other child's face.

Putallaz (1983) described this strategy as hovering. The author suggests that looking plays an important role in establishing contact between strangers, in that through the gazes the child can determine whether or not the other child wants to interact (i.e. a low risk strategy). If there were a willingness shown, then questions followed about the other child, such as "What is your name?" or remarks about what the other child was doing. (Jormakka did not suggest which was a more successful approach, personal questions or questions regarding the child's activity.) The acquainted children used high-risk strategies more frequently at the initial stages of meeting, such as describing what the other child was playing, and then influencing control over the play. Another difference that Jormakka found between the children was that less verbal output was emitted by the unacquainted children.

Playing with toys that are of interest to all the children may provide a common frame of reference for them to enter into each other's play more easily. But the child's previous use of entry strategies has to be considered as it may also influence his/her success with others.

Sharing Behavior

Sharing is a large part of children's interactions with each other (Damon, 1977). For instance, in the sand area of the Playground For All Children there are trucks and sand toys and the children must decide how they are to be

distributed, because there are not enough toys for everyone. Thus, sharing or attempts at sharing will necessarily occur. "The crux of sharing is the logic of distribution [and]...attempts...made to award the resources fairly,...a problem in what Aristotle first called 'distributive justice'" (Damon, 1977, p. 72).

Piaget (1965) was the first to propose a theory on the development of distributive justice (Berndt, 1982). According to Piaget the most favorable setting for children to develop the concept of distributive justice is with their peers. Adults can teach justice to children through preaching and modeling, but it is through children's mutual respect and cooperation with one another that they truly develop a sense of justice (Piaget, 1965). It is because of their mutual respect that when they need to resolve a conflict they can come to understand fairness. Piaget (1965) suggested that children's sense of justice develops as follows:

One period, lasting up to the age of 7-8, during which justice is subordinated to adult authority; a period contained approximately between 8-11, and which is that of progressive equalitarianism; and finally a period which sets in towards 11-12, and during which purely equalitarian justice is tempered by considerations of equity. (p. 315)

Interestingly, those studying children living on a kibbutz in Israel have found that the concept of distributive justice develops earlier than in Piaget's framework. The reasoning is that these children are exposed to peer

interactions earlier and more intensely (they live with other children the majority of the day) than most children in Western non-traditional societies who are studied. Hence, these circumstances seem to induce the development of cooperation and equality at an early age (Furby, 1978).

Damon (1977) elaborated on children's positive justice reasoning. As with Piaget, Damon read children various hypothetical dilemmas that required the distribution of unequal resources. From his studies, Damon conceptualized a series of six levels that described the children's positive justice choices when solving the dilemmas. Damon notes that most children do not use any one level of reasoning exclusively, but rather they tend to use the advanced levels more frequently as they get older and the lower levels less frequently. The levels begin with children basing their decisions purely subjectively, "I should get it, because I want it" - Level 0-A (seen at 4 years). They then realize that this is not universally accepted and add observable characteristics as a justification, while still gratifying themselves, "I should get more, because I am older" - Level 0-B (seen at 4-5 years). Children then make their decisions based on strict and inflexible equality, "everyone should get the same" - Level 1-A (seen at 5 years). The notions of reciprocity and merit are then added, persons should get paid back for the good and bad things they do - Level 1-B (seen at 6-7 years). Moral relativity then becomes a part of their reasoning, suggesting that different people can

have different, yet equally valid claims - Level 2-A (seen at 8 years). The last level Damon describes, entails children coordinating equality and reciprocity, taking into account claims of various people in addition to the demands of the specific situation - all persons should be given their due, although this does not necessarily mean equal treatment - Level 2-B (seen at 8 years). Level 2-B does not describe the most advanced level of positive justice reasoning development, because children still need to be able to view the distribution situation beyond the actual parties involved.

Although logic plays an important part in how children decide to distribute resources, affect plays a decisive role as well. Empathy, the affective component of perspective taking, is considered to be the chief motivator for altruism (Eisenberg & Mussen, 1989). Sharing goes beyond distributing resources in that it requires giving up something to another, being left without tangible personal gain. Therefore, beyond knowing the right thing to do, one has to be able to feel another's needs. Thus Hoffman (1981) proposed a developmental model that incorporates both cognition and affect. Hoffman (1981) theorizes that empathic responses develop early in infancy before children differentiate themselves from others. Children less than a year old, for example, may respond to another's pain as though the pain were their own. Rheingold, Hay and West (1976) found from studying children less than a year old,

that at 9.5 months old one child gave an object to another and at 10.4 months old there was partner play. The researchers claim that the children do not bring the toys over to bring attention to themselves, nor to get assistance, but rather to "share." The purpose is probably not altruistic, as the babies usually take back the toy, but rather the modeling of their parents' behaviors or sharing their desires to play with another. Children 1- and 2-years old who have person permanence, but do not yet understand that others have different feelings than they have will respond by doing something that would ease their own distress, such as sharing a favorite toy, to make the sad person happy. At 3- and 4-years of age some children are capable of rudimentary role-taking and are highly motivated to put themselves in another's shoes in order to understand and relieve the other's distress rather than their own. By age 6- through 9-years, children's empathic responses go beyond the immediate, to global distressing situations such as poverty and war, that involve a group or class of people. "And in adulthood distress clearly contributes to altruistic action...[A]s the person grows older, increasingly more appropriate action suggests that empathy is developmentally antecedent to altruism and is...causally related" (Hoffman, 1981, p. 132). Since sharing is considered an altruistic act, one could assume then that empathy would be the motivating force. Sharing behaviors, however, are lumped together. For example, it can occur for egoistic instead of

altruistic reasons, such as to maintain a friendship or keep a play interaction from ceasing (Eisenberg & Mussen, 1989; Zahn-Waxler, Iannotti, & Chapman, 1982).

Sharing should not be thought of as a unitary construct. Many studies, however, have operationalized "sharing as an isolated behavior... They typically operationalize 'sharing' and 'generosity' as the donation or giving away of something which has just been acquired by the subject during the experimental situation" (Furby, 1978, p. 596). Many doing research, such as described above, do not place a child in an interaction with an actual peer (see for e.g., Hull & Reuter, 1977; Midlarsky & Bryan, 1967; Rushton & Weiner, 1975). Radke-Yarrow, Zahn-Waxler and Chapman (1983) do not consider these methodologies as adequately representing children's sharing behaviors with peers, as sharing most commonly takes place between interacting individuals. Piaget (1965) and Damon (1977) both note that what children think and actually do in real life do not always match. Furthermore, mitigating factors such as the subjective value of the object, socialization, and the perceived ownership of what is to be shared affect the outcome of sharing.

The value of objects to be shared by the potential sharer can influence whether or not sharing will occur. Mosbacher, Gruen, and Rychlack (1985) found that when kindergartners and fourth graders were given opportunities to share highly preferred, less preferred and disliked

candy, they shared the disliked candy most and the preferred candy least. Birch and Billman (1986) found incidents of what they referred to as "dumping" in their study. (In their study, during snack time, one child received 10 pieces each of his/her favorite food and least favorite foods, while the other child received one of each of these foods.) This egoistic as opposed to altruistic behavior was an "aggressive" approach to dealing with inequity, one that includes the recipient's demands for food or the sharer's desire to be rid of 'yucky' food. An older boy's (approximately 5 years old) dumping strategy included the following pitch: "Try the broccoli instead of the M&Ms. It's green and crunchy" (p. 394). This child appears to have been using Damon's 0-B Level of positive justice reasoning. As for empathy, apparently the other child's desire for food was not worth the sacrifice. It would have been interesting to have discovered from the sharer (or dumper) whether he felt that even though the other child did not want the broccoli if he now thought the situation were fair. (Unfortunately Damon does not integrate affect into his levels of justice reasoning.) Also, it would be interesting to examine whether unequal distribution of snack food is considered distressing enough to elicit altruism as opposed to eliciting the degree of the child's generosity (Furby, 1978). Birch and Billman (1986) report few occurrences of spontaneous sharing, in fact the would-be recipients elicited the sharing themselves.

Bregman, Libscomb, McAllister and Mims (1984) suggest that younger children (in their study kindergartners) have not internalized the norms of altruism. As a personal note, I was once with a 5-year old child on the subway in New York City and a person in need was asking for money. I told the child that we would give the person money and when we did the child asked why the person did not give us something in return. The child was not from New York, so it was possible he did not understand exactly what was happening. Children may need to be exposed to a variety of situations before fully internalizing the norms of altruism. It should be noted that this child is very empathic toward others in distress and is also quick to share his toys. Hoffman (1981) notes that it is not until approximately 6- to 9-years of age, that children's empathic responses go beyond the immediate; perhaps this is because once in school they are exposed to world events which evoke empathic responses and altruistic acts, such as canned food drives. A 1981 study done by Roberts and Bachens cited by Radke-Yarrow et al. (1983) found that newscasts influence children's knowledge of world affairs in early elementary school years, thereby expanding their knowledge of distressing problems which other's face.

Sharing is a type of prosocial behavior. Prosocial behavior is defined as a voluntary action that is "intended to help or benefit another individual or group of individuals" (Eisenberg & Mussen, 1989, p. 3). Each culture

has its own norms for prosocial behavior, and children within the culture learn and internalize these norms (Eisenberg & Mussen, 1989; Furby, 1978). Furby (1978) found that in her American sample the youngest children (kindergartners) frequently mentioned when asked if people should share, that "it is good to share and bad not to share" (p. 604). Demonstrating perhaps not the norm of American society, but its professed values. Internalizing the norms however, does not guarantee that people will behave accordingly. Children have individual differences in their sharing behaviors, part of which is due to their socialization. Social norms are integrated into children's behaviors through such processes as, modeling, punishment, reward, reciprocity, child-rearing and settings such as religious institutions and schools (Eisenberg-Berg et al., 1981; Radke-Yarrow et al., 1983; Zahn-Waxler et al., 1982). In Birch and Billman's (1986) study, they expected that the inequity of food distributed would cause a distressing situation causing children to foster sensitivity toward one another shown by sharing. Instead they found that "a successful experience as a recipient seemed to facilitate sharing, and unsuccessful experiences did not, supporting the idea of the potential importance of modeling in the socialization of sharing" (p. 394). In their review of the literature, Radke-Yarrows et al. (1983) note other studies that have found that children model and then generalize prosocial behaviors. Developing logical structures and

affective stages are not enough to explain children's prosocial behaviors. Children are immersed into societal norms from everyone around them and through the interaction of internal mediating factors with these external mediating factors a child has the potential of becoming what his/her culture deems a prosocial individual.

Another influence as to whether one will share is the possessor's perceived rights to an object. To possess something means the position to decide on who else uses it, which will affect whether or not the object will be shared. Studies have demonstrated that children as young as 30 months are aware of the norms regarding ownership (Eisenberg-Berg, Haake, & Bartlett, 1981; Newman, 1978). Children who were told that a toy belonged to themselves defended it more than children who were instructed that it belonged to the group (Eisenberg-Berg et al., 1981). In settings such as nursery schools, a phenomenon Newman (1978) calls "transitory ownership" (p. 215), occurs where children claim temporary ownership of toys, chairs, etc. that officially belong to the school. When transitory ownership occurs it can become the source of dispute and considerable negotiation. Straub and Noerenberg (1981) also found that third and sixth graders' perception of property rights affected how they shared available goods. Other factors that have been found to be taken under consideration when one owns an object is the potential damage that may occur to it, how much the potential recipient is liked (Furby, 1978),

and the beliefs by the potential recipient of the rights of the "owner" to the object (Straub & Noerenberg, 1981). When the children in my study were introduced to the Playground For All Children, there was no mention that the toys belonged to everyone, therefore the idea of transitory ownership is an important concept to consider, as children's perceived ownership could act as an obstacle to their social interaction.

Types of Toys That Lend Themselves To Different Kinds Of Play

The Social Value of Toys

Since the 1930's researchers have studied the ways in which different types of toys and loose materials have affected children's behavior. The earlier investigators in particular studied the social value of different types of toys. In 1930, Hulson studied ten four-year old children during free play with different loose materials. The social value of the loose material was determined by the number of children playing at a given time with a child using the given material. Hulson found that the materials having the greatest social value were the blocks, house corner, sand and kiddie kars. Hulson further explained that sand could actually have great "antisocial" as well as social possibilities, because in the sand table the amount of sand was limited. Hulson also noted that after constructing structures with the blocks, which was usually done

independently (although she noted sometimes one child would be the leader) the children would continue playing with the blocks in a dramatic mode. According to Hulson, books, balls, animals, clay, dolls outside of the house corner and blackboards have low social value.

Van Alstyne (1932) also determined the social value of different toys. Instead of observing just the number of children playing in a group, Van Alstyne noted the children's social interaction by observing their cooperation with one another and their conversations. Van Alstyne found that active cooperation between two-and-three year olds occurred with the wagon, dishes, hollow blocks, wooden blocks, doll corner, colored cubes and dump trucks. Passive cooperation was associated with clay, crayons, scissors, painting, beads, puzzles, books and balls.

While studying children's play and social behaviors in 1932, Parten studied the social value of various toys among children two-to-four years old. Parten noted that younger and older children differed in the manner in which they played with the toys and hence that the social value differed. For the younger children, the sand did not afford much social activity, whereas the older children either passed the time away or were involved in a construction project which would require social assistance, when desired. When playing with trains the younger children rarely engaged in social contact; whereas the older children's train play either involved associative or cooperative play. While

riding the kiddie kars the younger children rode slowly, between children while watching other children around them. The older children played games such as "auto races", "gas station", or "traffic light". For both ages the house and dolls afforded the most highly cooperative play. Arts and crafts materials were played with in a parallel manner. And block play occurred about equally in each category of social participation (solitary, onlooker, parallel, associative and cooperative).

Updegraff and Herbst (1933) compared the social interaction between two-and-three-year olds when they were presented with clay and blocks. When the children played with the clay they watched each other more than when they played with the blocks. According to Updegraff and Herbst the combined sociability index and the frequency of cooperative behaviors were higher for clay. There were more instances of conversations unrelated to clay and more watching and imitating. When playing with the blocks the three-year olds engaged in more conflict, but also more mutual activity related to the blocks.

Other researchers from the 1930's reported that dramatic play materials (Green, 1933), tricycles with a place for other children to ride or to pull other objects (Murphy, 1937) and blocks (Markey, 1938) elicit frequent cooperative behavior among young children.

In 1977, Rubin researched how the levels of social play related to materials in a preschool environment. In

addition to examining the different types of social behavior that the children engaged in, he also added categories of play that Piaget described that related to children's cognitive abilities to better describe the children's behavior with the toys. Rubin found that when children played with playdough their play was either solitary or parallel 65% of the time and functional 75% of the time. For sand and water play, 80% was solitary or parallel and 90% was functional; painting and crayoning, 82% was solitary or parallel and 78% was constructive. Houseplay and cars encouraged more social interactive play 55% and 50%, respectively and dramatic play 75% and 32%, respectively. When children played with blocks in a constructive manner it was usually either in a solitary or parallel mode, whereas when the children played in a dramatic manner it was usually in a cooperative mode.

Hendrickson et al. (1981) observed three-to-five-year olds to determine the social value of toys that could be used for social training. From their observations they found that materials particularly associated with "isolate" play were puzzles (84%), pull toys (100%), templates (100%), toy sink (100%) and pegboard and pegs (60%). The materials primarily associated with parallel play were musical instruments (63%), toy trucks (49%), paint (99%) and sand and water (69%). Materials primarily associated with cooperative play were books that teachers read to groups of children and encouraged participation (76%), balls (96%),

puppets (64%), dress-up clothes (67%), post-office toy (90%), wagon (82%), giant pillows (67%), clay (70%), blocks (55%) and housekeeping (61%). Connolly, Doyle, Resnick (1988) found in their study the strong influence of toys on play. As they expected, when observing four-and-five-year old children during play sessions, playing with objects such as dress-up materials, toy doctor kits and stuffed animals, the objects led to social pretend play.

Size Of Toy As A Factor

In 1949, Marjorie Reeves noted in her guide to toys another aspect to be considered concerning loose materials and play among children. Reeves suggested that the size of a toy is important. For example, the advantage of having big toys such as large blocks is that many children can play with them at the same time.

In 1981, Vandenberg investigated the effects of two environments which contained differing play materials on preschoolers' (three-to-five years old) social play. In the first environment ("big muscle room") there were a jungle gym, two slides, tumbling mats and large blocks. In the second environment ("fine motor room") there were paper, crayons, pencils, scissors, paste and paint. The results revealed that the "big muscle room" "pulled for" more associative play and large play groups. And those who did play in a parallel play fashion had smaller play groups. In the "fine motor room" more parallel and solitary play

occurred. But for those children involved in parallel play the group sizes were larger than those involved in associative play. Thus, the author concludes, the different equipment affected the types of play, as well as the group size. In addition, according to the study's results no cooperative play was seen. The author suggests that since there were no materials present such as puppets or dolls there were no materials to promote cooperative play. Furthermore, Vandenberg suggests that the "lack of cooperative play is a testimony to the power of these environments to 'pull for' physical exercise at the expense of social interaction" (p. 175). Rubin concurs with this sentiment by pointing out that Montessori students engage in less dramatic play because the opportunities for them to engage in dramatic play do not exist (see "Theories On the Use of Toys In Play and Their Value To Children's Development").

Size Of Play Area And Number Of Toys Available As Factors

Shure (1963) observed that the varying size of the areas (art, book, doll, game and block) may have affected her results when she studied children and loose materials. In her research, she observed four-year old children in a nursery school during free play in which art, books, dolls, games, and blocks were provided. According to her results, the doll corner elicited the greatest proportion of social interaction, while within the block area there was both

solitary play and play involving social interaction. Parallel play occurred mainly in the art and book areas. The additional aspect that Shure observed was that the varying size of the areas (art, book, doll, game and block) may have affected the study's results.

In 1973, Smith and Connolly observed two matched playgroups of children aged two-and-one-half to-four-years old in different sized play areas and with different amounts of play equipment. At any particular playgroup session the play area used was either one-third, two-thirds or the entire area; and either one, two, or three identical sets of toys and apparatus were available. Smith and Connolly found that decreasing the amount of play equipment available meant that fewer children played alone, and that there was more parallel play, but that the amount of group play did not change; i.e. visual contact increased but not verbal contact. There was also a moderate increase in fighting, object conflict and finger-sucking and a decrease in manipulative object play. Decreasing the amount of toys and decreasing the amount of space led to increased physical contact and some tendency to cluster around adult activities. Decreasing the amount of toys, but increasing the amount of space increased motor activity and rough-and-tumble play. In general, according to the authors, the amount of play equipment appeared a more potent variable in the children's behavior than the amount of space available.

In 1974, Smith continued to study how children's behavior is influenced by varying environmental features such as, the amount of space available, partitioning of space, the amount of play equipment available and the kinds of equipment and toys provided. In this study, Smith investigated the difference in children's behavior when only apparatus was available (30 chairs, three pairs of tables, and three each of toy chest and lid, climbing-frame and slide, Wendy house with table and two stools, pram, tricycle and rocking boat) and with children's behavior when only small toys were available (20 chairs, three pairs of tables, and three each of large jigsaws, small jigsaws, plastic links, beads and string, doll, teddy, dressing-up clothes, tea set, drum, cymbals, bells, musical roller, doll's house, sandpit and toys, easel and paints, bookcase and books, wooden blocks and telephone) and with children's behavior when both apparatus and small toys were available (20 chairs, two sets of tables and two of all apparatus and toy items). When comparing the apparatus-only condition with the all-inclusive condition (control condition) there was significantly more talking between children, more physical contacts and more gross motor activity. Children who usually played alone or in parallel groups were more likely to be in cooperative group play. Smith points out that this result was not achieved by greater sharing brought about when play equipment was simply reduced (as in 1973 study), but that the apparatus-only sessions were marked by

children's unusual uses of apparatus. In the all-inclusive condition there was appreciably less aggressive behavior and less thumb-sucking. Smith adds that the advantage of moveable items over fixed structures is that they have much greater potential for promoting new uses and experiences. Children can use the pieces of apparatus at a level appropriate to their stage in development.

Summary

Studies depicting children's involvement with loose materials and toys tend to demonstrate that these materials have a strong influence on the children's behavior. Children with puppets tend to engage in sociodramatic play, whereas children drawing are less likely to interact with one another. From examining the literature, however, one finds that attempting to categorize toys and the behavior that they encourage is not an easy task. Other conditions influence the effect toys have on children as well; namely, the skills necessary to initiate and maintain their social interactions. Thus, although the type of toys with which children play has an effect on their behavior, these other factors are important to consider also.

Toys For Children With Disabilities

Children with disabilities usually use the same toys as children without disabilities. Just as with any child, special care is used by parents and teachers to match a toy

with the child's developmental abilities or special needs. In addition, adaptations are frequently made to the manufactured toys so that the children, who have special needs, will benefit from the toys (Ross, 1982). Most importantly, however, is how the toy is presented and how the toys must be used with the child (Riddick, 1982).

Children with sensory impairments need to play with toys that are able to provide input to their intact senses (Musselwhite, 1986). As with all disabilities, the degree of severity has to be considered. For example, children who have no sight, will be aided by toys that are anchored so that if the child drops the toy, the child will know that the toy can be retrieved. Also, toys can be adapted by adding textured pieces of material to them. For children with partial sight, bright colors are recommended as are toys that make sounds (Riddick, 1982). Musselwhite and Childs (Musselwhite, 1986) have found that music can be used to create a strong bond between children with disabilities and children without disabilities in mainstreaming projects.

Children with physical impairments need toys that can be used at their level of motor skills. Special adaptations are available that allow children to operate manufactured toys with special switches. The switches can be operated, for example, by sounds the child emits by the child using his/her mouth if the child lacks use of his/her hands. These adaptive switches provide children with physical impairments with the power to act upon the world

independently. Also, because these switches are unique, they may encourage children without physical impairments to approach children with physical impairments in order to examine those toys that have special features.

Children with cognitive impairments use the same toys as other children, but the skills the toys require should match the child's level of skill. This sometimes can be a difficult task, requiring a bit of creativity, because in the case of a child with any type of disability, a child should not be made to play with toys that are not age appropriate, especially in a mainstreamed situation (Musselwhite, 1986). A child who is chronologically age six, but developmentally age four, should not be given rattles to play with, because the child should be interacted with in an appropriate manner by the teacher and by other children. If the child is playing with age-appropriate toys then a child who is chronologically the same age will be able to interact with the child who is developmentally delayed in a more normalized manner. (Examples of books and articles suggesting different uses of toys with children with special needs are Mueller and Bergstrom, 1982; Musselwhite, 1986; Riddick, 1982; Ross, 1982; Wehman, 1979).

Toys can also have another important role in encouraging social interaction between children with disabilities and children without disabilities. Often ignorance produces fear causing children and adults to avoid others who have disabilities. One way in which to combat the fear is with

knowledge. In some classrooms, children use blindfolds or pretend hearing aids to try to understand those respective experiences (Ross, 1982). Another method, one which was used by the staff of the Playground For All Children, involves using specially designed puppets from "The Kids On The Block". These puppets are made to represent children with disabilities and children without disabilities. Teachers or others use the puppets to share information on such topics as disability awareness. The staff at the Playground For All Children presented these special "puppet shows" to children without disabilities in their classrooms before they visited the playground. The staff also performed these shows on the playground.

Other companies have variations of these puppets. One company, Bodi-puppets, provides puppets that have disabilities that children can wear. Stuffed animals, called "Special Friends" and "New Friends" dolls which also have disabilities are available for children as well. These can also be very important for children with disabilities because they can be used by children to understand their own disabilities or as a "special friend" with whom they can share their thoughts. Musselwhite (1986) lists these and other organizations' addresses in her book.

Thus, the same toys can be used for all children. Yet, it is very important to insure that the varying levels of skills and abilities for all children be met within an age-appropriate range. With various adaptations to already

manufactured toys this can be made possible. These adaptations may even elicit curiosity toward another child's slightly different toy. And in order to not let fear of the unknown be a hindrance, toys can also be used to promote social interaction by reducing ignorance and allowing children to begin to understand and accept one another's individual differences.

Mainstreaming

Brief History

Deciding whether children with special needs should be in self-contained classrooms or integrated with children who do not have special needs has had educators in a quandary since the turn of the century. The issue gained momentum during the civil rights movement, because many of the students labeled as mentally retarded were from minority groups. The standardized tests being used were not taking into account children's English language deficits or differences in cultural background. Through a series of state court cases culminating with the federal Education For All Handicapped Children Act, Public Law 94-142, all children with special needs have been given legal rights to free and equal public education. (See Bricker, 1981 and Semmel, Gottlieb, & Robinson, 1979 for a more complete legal history of mainstreaming.)

With PL 94-142 a child with special needs is guaranteed an Individual Educational Plan (IEP) in which the child's teacher, with other specialists, is supposed to design a detailed plan in which goals are outlined; the child and parents are given the right to due process to challenge educational placement decisions deemed unfair; and the child will be educated in the same setting as a child without special needs, in the least restrictive, yet appropriate environment (Bricker, 1981). The actual word, "mainstreaming", is never used in the law, therefore, many interpretations of what "least restrictive environment" means exist (Tawney, 1981). Some of these interpretations include self-contained classrooms, in which children with special needs are integrated with children without special needs during lunch, gym and music; resource rooms, where children with special needs go for part of the day for some of their academic instruction; support services, in which the child with special needs stays in the regular classroom except for speech therapy or physical therapy; or teacher assistance, in which the child with special needs remains in the regular classroom, but in the classroom receives additional assistance from a specialist. Many studies have been done to determine the efficacy of mainstreaming programs and which programs work the best, but the methodologies of efficacy studies have been questioned, and thus so have the results (Guralnick, 1981; Semmel, Gottlieb, & Robinson, 1979). Guralnick notes that "the typical

anxiety reaction to efficacy research edges rapidly toward the psychopathological" (Guralnick, 1981), based on empirical investigations "there appears to be relatively little support for the effectiveness of any particular mainstreaming model on the academic achievement of handicapped children". Those studying mainstreaming need to collaborate on goals that mainstreaming needs to meet, the issues that need to be studied, and the ways in which to study them.

Definitions

Instead of using the comparison of academic achievement approach in examining mainstreaming school programs, Bogdan (1983), wanted to see how the programs worked within a historical, social and political context which he claims efficacy studies fail to do. Bogdan examined 25 schools which were recommended by professionals as the best programs for integrating children with disabilities and children without disabilities. In the different schools he studied, Bogdan notes that there were radical differences in how "disability" and "mainstreaming" were defined and perceived. In some cases economics was the key to how mainstreaming was defined. If a principal were concerned that having children with disabilities would make children without disabilities leave the school to go to private schools, mainstreaming would be construed as a negative program where "other kids would make fun of them". On the other hand, if a principal

needed to add students to his/her school for funds, he/she would consider having children with disabilities as a "learning situation", because it was less likely that other principals would fight over children with disabilities for their schools. Unfortunately, a similarity Bogdan (1983) found among these "integrated" programs was that children with special needs were more add-ons to existing arrangements than actually a part of the schools. It is not surprising that economic, social and political contexts form school administrators' views of what mainstreaming should be, therefore, it is important that these contexts be understood when studying mainstreaming programs and presenting them to schools. These contexts, however, should not be the primary basis in forming the content of what is best for the children. Instead the programs should be based on educational and psychological knowledge with an understanding of the political, economic and social contexts so that the programs are feasible and will be well received and implemented properly by the school administrators.

There is no agreed upon model of mainstreaming, but the intent of the definition was more than just placing a child with disabilities into a classroom. Gottlieb (1981) for example, feels that an appropriate education has not yet been developed for children with mental retardation no matter what classroom situation they are in. Originally the creation of special education programs were based on the assumption that children with special needs needed special

services. It is therefore important that this realization not be neglected, but included in all mainstreaming programs. In one high school program that Bogdan (1983) examined, he found that the students were encouraged to just fit in and pass, as opposed to spending time working on skills that would better their chances to be successful adults. Children with special needs should then only be in a regular class if the classroom is able to accommodate them.

Perhaps the structure of the common classroom needs to be re-examined. The Research and Development Center at the University of Pittsburgh developed "The Adaptive Learning Environments Model" (Meece & Wang, 1982) on the assumption that "through adapting instruction to individual learning needs, regular, handicapped, and gifted students can be educated on a full-time basis in a regular classroom setting where they can equally share resources and learning opportunities. It is also believed that in a mainstreaming setting, where learning experiences are based on a wide continuum of academic and social goals, students will be less likely to develop perceptions of themselves as being 'special'" (Meece & Wang, 1982, p. 7). This program, with an interdisciplinary approach using parents as volunteers, can be of benefit to all children. All children have their strengths and weaknesses, whether or not they have been labeled. As Bricker (1981) notes, placing a child in a program for a specific disability may ignore many other

aspects of that individual which fall in a range that is not considered to require special services. Of course a program like the above is easier for a research group at a university to develop than for the United States to take on as its norm. Today the educational system faces difficulties such as lack of funds, overcrowded classes and a lack of trained teachers, which are crucial elements to the success of mainstreaming. For the sake of all children, the nation needs to solve these problems in order to establish the best programs for all children.

Perceptions of Children With Disabilities

Beyond giving children with disabilities a free and public education, the actual physical integration with children without disabilities put children with disabilities into the mainstream of society. Educators and policy makers hoped that through this integration public attitudes toward people with disabilities would become more positive. As legislative actions increase mainstreaming opportunities, it is crucial that successful programs are developed to promote awareness and acceptance of individual differences. Unfortunately, much of the literature examining children's attitudes toward children with disabilities is confusing and contradictory. But as Bricker (1981) points out, peer interaction can have an influence only when children are given the opportunity to observe and have contact with one another.

Conant and Budoff (1983) examined children's awareness of disabilities. The results indicate that at preschool level, children were aware of visual impairments, hearing impairments, and orthopedic impairments. The awareness of mental retardation began in primary grades, and the awareness of psychiatric impairments began in junior high school. The authors suggest that the development in awareness of different disabilities corresponds to children's cognitive development according to Piagetian theory, from concrete to abstract thought. Children first understand those disabilities that they are able to experience, namely, visual impairments (opening their eyes in a dark room); hearing impairments (putting their hands over their ears); and orthopedic impairments (having difficulty walking in the snow). In contrast, mental retardation and psychiatric impairments cannot be straightforwardly compared to personal experience; they must be inferred. Gottlieb and Switzky (1982) suggest one of the reasons attitudinal research toward people with mental retardation is contradictory is because people's attitudes toward people with disabilities are multidimensional and extremely complex. In addition, attitudes shift as children cognitively develop. Gottlieb and Switzky (1982) found developmental shifts in attitudes between the fourth and sixth grade, which correspond to cognitive changes that occur at these ages. As children become older their negative comments decrease, but their positive statements do

not necessarily increase. The authors suggest that the results may demonstrate children have learned not to express negative comments about others "less fortunate than themselves". Unfortunately, the study does not indicate whether or not these children had any contact with children who have mental retardation.

Guralnick (1976) suggests that mainstreaming should begin as early as preschool, because then children and parents would learn early on to accept individual differences. Evidence from research suggests that the earlier mainstreaming begins, the greater the gains (van de Pol, et al., 1985). Conant and Budoff (1983) suggest that contact with people with disabilities and instruction about disabilities may well alter the patterns and timing of awareness. For instance, if children are developmentally not ready to conceptualize what mental retardation is, in terms of abstract cognitive characteristics, they can be presented with characteristics that meet their level of understanding so as to avoid later misconceptions. As the founder of The Kids On the Block, Inc. notes, children are praised for noticing things in life, until they notice people with disabilities and then they receive negative responses from their parents. "Don't stare! Don't talk about it!" (Aiello, 1983). If children's accessibility to information is curtailed then their fears will probably develop into negative attitudes. Many programs exist to

assist teachers in teaching about disabilities (see "Toys For Children With Disabilities").

In addition to gaining knowledge, children without disabilities must also recognize shared similarities with children with disabilities, because research shows that perceived similarity underlies children's natural friendship choices (Bak & Siperstein, 1987; Hartup, 1983; Siperstein & Chatillon, 1982). Research shows that some of children's attitudes are negative because they see children with mental retardation as different from themselves (Bak & Siperstein, 1987). According to the cognitive consistency models of Newcomb (1943) and Heider (1958) perceived similarity can be achieved by one getting to know about another's attitudes toward a third object. For example, if one child has negative attitudes toward another's appearance and academic performance, but discovers that they both are fans of the same sports star, the child may be more inclined to respond favorably to the other child (Bak & Siperstein, 1987). The models are presuming that a balance in attitudes occurs.

Siperstein and Chatillon (1982) used perceived similarities in their research as a strategy to improve attitudes of children without disabilities toward children with mental retardation. In their study, the researchers revealed similarities that fifth and sixth grade children shared with children having mental retardation. The findings shows that the children were more willing to interact with a child with mental retardation who is

depicted as similar to them, than to one who is not. Most importantly, they found that children in the exposed condition (had contact with children with mental retardation) reacted positively to the children with mental retardation, whereas the non-exposed group did not. The authors suggest that when a child in the non-exposed group was told a child with mental retardation liked baseball also, the child may have been working from stereotypes that formed incongruences, such as "how can a clumsy child like to play baseball". These findings emphasize the importance of children without disabilities having experience with children with disabilities to avoid erroneous stereotypes being adopted.

In Bak and Siperstein's (1987) study, they filmed children with mental retardation in two situations, first reading out loud and then being interviewed about their likes and dislikes and presented the videotapes to children in the fourth through sixth grades. The findings showed that children became more positive to the target peers with mental retardation when the children viewed a target peer who expressed attitudes similar to theirs toward "third objects" such as television programs. Past research suggests that increased exposure to children with mental retardation leads children to more negative attitudes. Bak and Siperstein (1987) suggest that the content of the information about the children is what leads to positive attitudes, not just exposure to the children which may

emphasize differences, such as academic skills, instead of shared similarities.

The mainstreaming experience goes beyond the classroom as well, because parents are also positively affected by hearing their children's positive responses at home to their mainstreaming experiences. In addition, parents of children with disabilities develop a positive and optimistic outlook related to the potential acceptance of their children by the community (Vincent, Brown, & Getz-Sheftel, 1981). From these experiences the premise of mainstreaming becomes realized through society's increased knowledge and acceptance of those with disabilities.

Familiarity between the children is also important for accuracy in role taking abilities (Kitano & Chan, 1978). Lacking information about disabilities, children without disabilities may misinterpret the actions and intentions of children with disabilities, which will have an effect on the quality of their social interaction. The quality of these initial interactions is important, because the more the children play and become familiar with one another the more their social repertoires will mesh (Lewis, 1985). In their study, Kitano and Chan (1978) attempted to determine whether fourth through sixth grade children without mental retardation would be able to take the role of a child without mental retardation easier than a child with mental retardation because they are more similar. The researchers also attempted to see if there would be a difference based

on the amount of familiarity children without mental retardation had with children with mental retardation. Overall, Kitano and Chan (1978) found that children without disabilities were less accurate in their inferences about affect and motives of a child who had mental retardation than a child who did not have mental retardation. The results also indicated that children are better able to take the role of an individual whose characteristics are more similar to their own. Interestingly, significant differences in accuracy of inferring affect and motives were found between the most familiar group (children who had siblings with mental retardation) and the two less familiar groups (children in an integrated classroom and children who had no children with mental retardation in their classroom), perhaps emphasizing the importance of daily contact to better understand children with disabilities.

Variations in classroom practices and environmental settings influence the amount of success attained by mainstreaming programs (Allen, 1980; Semmel, Gottlieb, & Robinson, 1979). Research has discovered that one such practice that is crucial in promoting positive intervention is planned, structured activities between children with disabilities and children without disabilities (Allen, 1980; Bricker, 1981; Gottlieb, 1981; Guralnick, 1976; Semmel, Gottlieb, & Robinson, 1979; Vincent, et al. 1981). The importance of structured activities is especially apparent when differentiating between studies that suggest that

mainstreaming leads to more positive attitudes and better acceptance of children with disabilities and the studies that suggest mainstreaming does just the opposite.

The studies that suggested that children without disabilities were more accepting of children with disabilities included a cooperative group task in the research design in which the children with disabilities worked with children without disabilities (Ballard, Corman, Gottlieb, & Kaufman, 1977; Chennault, 1967; Johnson & Johnson, 1981; Voetz, 1980). Whereas the studies that suggested that mainstreaming did not help in leading to more positive attitudes administered only a questionnaire or sociometric survey to their participants without intervention (Bruinicks, Rynders & Gross, 1974; Bryan, 1976; Gottlieb & Budoff, 1973; Iano, Ayers, Heller, McGettigan & Walker, 1974; Siperstein, Bopp, & Bak, 1978). Voetz (1980) suggests that a longitudinal study should be done incorporating group activities with children with and without disabilities to examine the quality and length of the children's interactions and their attitudes.

Research has shown and emphasizes that simply placing children with disabilities and children without disabilities together does not guarantee interaction or positive reactions (Vincent, et al. 1981). Through structured interactions and activities, children without disabilities are able to obtain concrete knowledge about children with disabilities, so that fears and stereotypes can be discarded

for perceived similarities and positive interactions. In addition, interactions can be structured so that children with disabilities are placed into an environment that creates more demands for complex behaviors by working with children without disabilities. Ultimately, perceptions of those who have disabilities are formed by people's definitions of what is considered disabling. When Bogdon (1983) was visiting schools for his research, he mentioned a student he had seen who had a physical impairment and was wheelchair bound, the principal reported that the student was not disabled. Perhaps one day all barriers will be lifted so that each individual will be able to achieve his/her potential and "disability" will become meaningless.

Social Interaction Between Children With Mental Retardation and Children Without Mental Retardation

Preschool Findings

Many studies have observed preschools that integrate children with and without disabilities during their free play periods. Small numbers of children, three-to-five years of age, are observed and the types of disabilities are usually varied. Ispa (1981) suggests that the small numbers of children observed and the diversity of disabilities, i.e. the types and the severity of the disabilities, elicit problems with these studies.

Despite the problems, researchers have found that overall, preschool children do not exclude or reject preschool children with disabilities (Cavallaro & Porter, 1980; Gentry, 1983; Peterson & Haralick, 1977). Other research has noted however, that children with disabilities who engaged in disruptive behavior (Gottlieb & Leyser, 1981) and those children whose disabilities were more noticeable or who appeared unclean (Gentry, 1983) are more apt to be rejected. Guralnick (1986) has found that children who are labeled as mildly disabled and children without disabilities interact frequently. The children who are labeled as mildly disabled are usually one year older, so that their developmental ages are closer to the children without disabilities. Those children labeled as moderately or severely disabled, however, often receive less attention from the children without disabilities. Field (1979) has found in her observations that as children with disabilities increased in developmental age they demonstrate fewer self-directed or self-stimulating behaviors and progressively more peer-directed behaviors. Those children whose disabilities were moderate or severe, however, persist in non-directive behaviors beyond the appropriate developmental age. These behaviors, Field suggests, may be because of this group of children's less developed communication and social skills which would interfere with the children's interactions with others, thus deterring the development of other-directed interactions. Guralnick and

Weinhouse (1984) also noted, that children in their study who were developmentally delayed were unable to elaborate on two-unit initiate-response sequences. Normally at that developmental age children should be able to engage in those sequences; in addition, according to the authors the children should engage in more group play than the children with disabilities had. The authors concluded that the children's social skills were lagging behind their cognitive development. Guralnick (1986) suggests that this lag may be due to insecure parent-child attachments. Research has found that the mothers of children with developmental delays give more demands and are not as likely to reinforce cooperative behavior when it occurs. Also, Guralnick (1986) concurs with Field (1979) suggesting that the discrepancy between cognitive development and language skills makes social participation difficult for the children.

Researchers have noted that preschoolers who do not have disabilities prefer playmates with similar abilities during complex play (Cavallaro & Porter, 1980; Gentry, 1983; Ispa, 1981; Peterson, 1982; Peterson & Haralick, 1977; Stoneman et al., 1983). This may be because children without disabilities have been found to initiate and control interactions with peers with disabilities and often assume an instructional mode. Children with disabilities have also been found to talk to peers less often and spend more time watching instead of participating. Scarlett (1980) who studied socially withdrawn children without disabilities

noted that socially withdrawn children keep themselves isolated by requiring more direction from peers than peers can or wish to give and that they adopt the role of the follower. Both of those behaviors do not facilitate the give and take that produces cooperative play, thus for the child who must keep the social play going the play is probably not as enjoyable. In play activities that require less skill, however, children with disabilities are more likely to be included (Gentry, 1983). Research has found that children without disabilities are more likely to play with children with disabilities in a group, than on a one-to-one basis. And Peterson and Haralick (1977) found that when a child without disabilities chose a child with disabilities to play with, in an area with both populations of children present, the two children demonstrated as much cooperative play as two children without disabilities would have shown. Whereas if the two children were not playing in a mixed group, according to Gentry (1983), they would be engaged in solitary play.

Interestingly, findings from research demonstrate that over time children with disabilities significantly decreased their solitary play and increased their cooperative play to the same proportion as children without disabilities, suggesting that playing together has a positive effect on the social skills of children with disabilities (Dunlop et al., 1980). Dunlop, Stoneman and Cantrell (1980) further point out that results were analyzed over the full year and

if the results had been analyzed at different parts of the year the findings would have appeared to be different, since young children often change their playmate choices. By the end of the year the two groups of children interacted freely. Guralnick and Weinhouse (1984) also noted as did Dunlop et al., (1980), that as the school year progressed children with disabilities became more socially interactive with their peers.

Thus, having children whose social skills lag behind in the same classroom with children whose do not stimulates more advanced forms of cooperative play, enhancing the delayed social skills. As will be discussed later, mixing the children together on a playground can have the same effect, as well.

Promoting Social Interaction Between Preschoolers With Delayed Social Skills and Preschoolers Without Delayed Social Skills

Those doing research in this area suggest various ways of promoting social interaction between these children. One way is through positive reinforcement of cooperative play skills. Guralnick (1976) studied the interactions of children, four-to-five years of age, with and without disabilities. He observed groups of children in which there were two children without disabilities and one child with mild mental retardation, who was the target child. The target child was observed under three conditions. The first

was a baseline condition where all three children played in the same room. During this condition the target child engaged in solitary play or did not allow the other children to play with his/her toy. During the second condition, the target child was asked to watch the other two children play (they were engaged in cooperative play) for the first five minutes of each fifteen minute play period so that the target child could watch how the children played with each of the three types of toys "to ensure modeling of all toys". According to the results this condition had no effect. In the last condition, the children without disabilities were provided with a separate training session in which they were taught how to recognize the target child's appropriate behaviors and how to encourage him/her to interact with them. After the training session the three children were brought together to play using the target child's favorite toy of the toys used in the study. The results indicate that after a few play sessions with positive reinforcement, the target child's solitary play behavior was reduced and cooperative play increased. To ensure that this procedure could be generalized, another toy was used and the results remained the same. Guralnick (1976) points out that mere modeling itself was not sufficient, but rather that an informal component of interaction that reinforced appropriate play behaviors was successful.

Dunlop et al. (1980) note that by the end of the school year, the six children with disabilities and the six

children without disabilities whom they observed, interacted freely. The children in this study were enrolled in a preschool program where behavior was changed by use of positive reinforcement as well. Although the authors never directly say that reinforcement had an effect on the children's social interactions, it may have actually been an important factor in their study. Guralnick (1976) suggests that modeling alone, of children without disabilities, may not be effective because it is too unsystematic. Devoney, Guralnick and Rubin (1974) found that when a group of children without disabilities was introduced to a group of children with disabilities in a free play situation, the social play of the group of children with disabilities improved a little. But when the teacher systematically structured the situation, within a sociodramatic context, using the children without disabilities to promote various interactions, a marked increase in the quality of play occurred. Gresham (1982) suggests that peers can be used as models successfully, if interactions are carefully planned and sequenced. Cooke, Ruskus, Apolloni and Peck (1981) note that when using other children to help promote social skills, the teacher should determine whether the child without disabilities has the propensity to be a "teacher" or "helper". Gottlieb and Leyser (1981) note that evidence seems to suggest that modeling can be effective for children with mental retardation. (See Mercer & Snell, 1977 for a review of modeling and children with mental retardation.)

Some researchers suggest that children with disabilities who lack social skills should receive social skills training (Cooke, Ruskus, Apolloni & Peck, 1981). Greshem (1982) maintains that without interaction, mainstreaming does not necessarily result in increased social acceptance of children with disabilities, because children lacking appropriate social skills are not accepted. To avoid rejection, Greshem (1982) suggests that children with disabilities be taught some effective social skills before they are mainstreamed. Then once in the classroom teachers should praise the target child when the child plays with other children while exhibiting appropriate skills.

Guinagh (1980) states that a major problem with promoting social interactions in the classroom is that teachers do not have the proper training. And especially for older children, social interaction is usually not as central to a teacher's goals as are academic skills. Poresky and Hooper (1984) studied the effectiveness of a teacher-mediated program developed to increase the social interaction between children with disabilities and children without disabilities. In their study, teachers received in-service training which was combined with classroom programs that involved prompting, contingent reinforcement, environmental structure, social toys and a cooperative task performed by the children. The research design was as follows: the children were first observed before any intervention occurred; next "social" toys were added to

examine the effect that they had on the children's social interactions; the next step was the comprehensive phase which involved prompting, reinforcement contingent on appropriate social interaction, environmental structure and a cooperative lesson plan designed to increase social interaction (the children worked on and completed a task together); the next phase was just the "social" toys and last, there was another comprehensive phase. The results demonstrated that the social toys somewhat increased social play for all children. During the first comprehensive phase the social play increased more, but during the second "social" toy condition the social play decreased. During the second comprehensive phase, after the teachers had received feedback from the first comprehensive phase, social play increased to the highest level during the entire study. According to Poresky and Hooper (1984), once the teachers realized the effect that their behavior had on the children's level of social play the teachers increased their prompts and reinforcements. Van den Pol, Crow, Rider and Offner (1985) also found that when teacher's aides are provided with data-based feedback concerning the effects of their efforts on children's performance they are able to increase social interaction between children with and without disabilities. But in addition to receiving feedback, Mueller and Bergstrom (1982) note that it is important for teachers to sit back and observe their children's behaviors, because adult-child and child-child

interactions can compete. Therefore the best of circumstances would be observation and adult silence mixed with needed guidance. Reinforcing positive social interaction, such as cooperative play, providing awareness to teachers and peers not having disabilities, having children engage in cooperative tasks and providing "social" toys appear to have a significant effect on increasing the social interaction between children with disabilities and children without disabilities.

Environmental factors have influence on children's social interactions as well. Common interest in an object, such as a toy, can bring children together. Once together physically, the children then have to accommodate one another socially (Mueller and Bergstrom, 1982). In her study, Ispa (1981) noted that a child with mental retardation frequented the house area, and because of close proximity to the area, the child was drawn into the dramatic play of children without mental retardation that commonly occurred in the area, even though she did not initiate the play. Thus, although children with disabilities and children without disabilities have often been found not to interact spontaneously, certain toys and objects may help in bringing the children together (Beckman & Kohl, 1984).

Bricker and Bricker (Guralnick, 1976) suggest that when children with disabilities observe the ways children without disabilities play with toys and objects they learn a greater number of ways to play with toys and objects than if a

teacher were to demonstrate the same activity directly. The children without disabilities become teachers of those children with disabilities. The children engage as collaborators in the zone of proximal development (Vygotsky, 1978), whereby through their interactions with children without disabilities, the children with disabilities are able to begin to cross the distance of actual development to their potential development. In order for children to observe one another, however, it helps if both groups of children are interested in the same toys. According to Stoneman, et al. (1983) interactions between children with disabilities and children without disabilities occurred most frequently with blocks, vehicles and water play than any other type of play materials. These authors suggest however that teachers may need to teach children with disabilities how to use the materials if their social interactions are to increase. At first this may appear to counter Bricker and Bricker, but the children may need time to first explore the toy, before being able to grasp other ways in which to use the materials. Beckman and Kohl (1984) also found that children engaged in more interactions when playing with blocks, toy vehicles and puppets as compared with books, play dough and puzzles.

The location makes a difference in children's interactions as well. In her study, Peterson (1982) observed social interaction and playmate preferences in two different free play environments: the classroom and the

playground. Four children with disabilities and four children without disabilities were observed as a subset of a larger group of seventeen children. Teachers were asked not to intervene. Results indicated that the higher rates of interaction among both children with disabilities and children without disabilities occurred on the playground as opposed to the classroom. Jambor and Gargiulo (1987) note that on a playground a natural mainstreaming experience can take place in that children with and without disabilities find that they have common interests. In a classroom, the dissimilarities are usually more apt to surface. On a playground the children can take part in mutual tasks, such as building a tunnel in the sand, playing train on the slides, or building a building from blocks that do not require the same kinds of abilities as tasks that exist in the classroom.

Most studies that explore older children's interactions do so by using sociometric interviews or questionnaires in which children have never met someone having disabilities; or it is unclear as to the kinds of activities, if any, that the teachers have incorporated into the classroom (Goodman, Gottlieb, & Harrison, 1972; Gottlieb & Budoff, 1973; Gottlieb, Semmel, & Veldman, 1978; Iano, Ayers, Heller, McGettigan & Walker, 1974). The results from these studies are not very promising with regard to social interaction between children with and without disabilities. Even when children without disabilities have contact with children

with disabilities, the behavior of the children with disabilities often is unpredictable or disruptive, their appearances are stigmatized, or they display low levels of competence. And when children have not met children having disabilities they are faced with an unknown. Perhaps when children without disabilities are made aware of the types of behaviors that children with disabilities may exhibit or are placed in a situation in which children with disabilities are able to demonstrate their capabilities, understanding and acceptance will occur. Bak and Siperstein (1987) had fourth-through-sixth grade children with mental retardation and children without mental retardation participate together in a bean bag toss game where the researchers were able to manipulate the scores. The markers showing how far the bag had been tossed were obscured from the children. Some children became "best" players while others were "average" players. The results demonstrated that children without mental retardation were willing to choose children with mental retardation as partners only when they performed better than average. If a child without mental retardation had the choice of choosing an "average" partner with mental retardation or without mental retardation, the child would choose a partner without mental retardation. The authors suggest that the children might be viewing the "best" player's efforts as ability and the "average" player's efforts as luck, based on perceived competencies from other past activities with children with mental retardation. By

seeing the "best" player's success first hand in live interaction, they were more likely to attribute the success to ability. Furthermore if a child without mental retardation chose a child with mental retardation as a partner that did not necessarily extend to situations other than the game. Bak and Siperstein (1987) note that this is an important consideration for all studies, that already existing social structures in the classroom predict future attitudes. Results also suggest that children without mental retardation were willing to choose children with mental retardation as partners when they performed better than average. It therefore appears that if teachers could structure class activities that encourage success by children with mental retardation (or any disability), at the beginning of both children's relationships, children without disabilities may be more willing to accept them as peers (Bak & Siperstein, 1987).

Being able to see other children succeed frequently of course is the ideal. Meece and Wang (1982) studied 24 first through third grade children with disabilities who were placed in one of two programs, a traditional resource room or an adaptive education program. The adaptive program was full-time and learning assignments were based on ability levels. Because the program was full-time the opportunity for social interaction was frequent. Results showed that the students with disabilities had higher self-ratings of competence and receive higher peer acceptance ratings than

children in the resource room. Perhaps the results can be explained by the fact that the children with disabilities in the adaptive program were working at their own level and not being unsuccessful at other children's levels. Also since they were not being sent away to another classroom to work at their level where they could not be seen succeeding, these children were seen as competent students and they received higher peer ratings.

In addition to observing the successes of children with disabilities, research has shown that engaging in cooperative tasks is helpful as well. In a study administered over a six-week period by Johnson, Rynders, Johnson, Schmidt and Haider (1979), junior high school students with and without mental retardation were placed onto one of three bowling groups: cooperative (in which the teams were instructed to maximize group scores), individualistic (in which the students were instructed to maximize individual scores), and laissez-faire (in which no instructions were given). The results show that the cooperative group promoted more "support, praise, encouragement, concern and acceptance" from teenagers without mental retardation than either of the other conditions. The authors suggest that these findings provide further support, that cooperative goal structures are a useful means for encouraging positive social interaction. Researchers question however the length of time that these positive attitudes remain.

As mentioned earlier, existing social structures may influence future attitudes. An important aspect of this dissertation research is that the children with and without mental retardation being observed are meeting for the first time, therefore they do not have past structure with which to contend. Ballard, Corman, Gottlieb and Kaufman (1977) randomly assigned thirty-seven children labeled educable mentally retarded into a control group or an experimental treatment group with other children in the third-through-sixth grade without mental retardation. Each child with mental retardation who was in the experimental group worked with four to six other children without mental retardation on a highly structured, manipulative task designed to maximize the extent of cooperative and constructive interchange among students. The groups met in two three-week cycles with a three-week interval separating cycles. The teachers of the experimental groups received a two day in-service workshop in which the project was explained and ways in which to enhance the students positive social interaction among group members were described. Both before and after the study all students were given sociometric tests. The results indicated that the acceptance of the children with mental retardation increased and rejection decreased after cycle 1 of the task, but the changes were significant after cycle 2. The results also revealed that the acceptance lasted at least two to four weeks after the treatment ended. The authors conclude that

the attitudes of children without mental retardation toward children with mental retardation can be improved by ongoing activity within the regular classroom. Another aspect of this dissertation research that differs with research studying older children is that older children as well as younger children are being observed in free play situations.

Spontaneous interactions occur between children with and without disability when physically integrated. In order to increase the amount of social interaction so that it reaches the level of children without disabilities, research evidence suggests that interventions must be introduced.

Summary

Many factors influence the success or failure of mainstreaming. Factors include; teacher/child ratio, ratio of children with disabilities to children without disabilities, types and severity of disabilities, level of teacher training, teaching styles, environmental factors, curriculum of program, chronological and developmental ages of children and how the children are matched, preparation of children for mainstreaming, individual personalities of children and parental attitudes (Guralnick, 1981; Ispa, 1981). To mainstream does not mean merely dumping children with disabilities into the "mainstream of society". Rather, integrating children with disabilities with children without disabilities requires careful and systematic planning.

History of Playgrounds and Supervision

Providing a playground with a staff is not a new idea for playgrounds in the United States. In the early 1900's when the concept of playgrounds was introduced, play supervision was an integral part of the concept. The purpose of playgrounds was to take children off the streets and supervise their play. The children being taken off the streets were primarily children of immigrants. By controlling the children's play, the reformers hoped to teach these children American values.

In 1906, Henry Curtis founded the Playground Association of America. And By 1910, thousands of city playgrounds planned play activities for urban children (Dargan & Zeitlin, 1990). Curtis, himself, developed a curriculum of activities for play leaders to follow. Unfortunately, as the economy worsened, reformers felt they could not tax people for public school education and playground supervisors (Cavallo, 1981). Staffing on playgrounds thus lapsed.

For two major reasons it is time again to staff playgrounds in the United States: The declining safety of public space (Hart, 1986) and the national mandate to provide integrated opportunities for children with special needs. This latter purpose is reminiscent of the earlier goals of playleaders to inculcate particular values in children.

The Importance Of Loose Parts On Playgrounds

Definition of Loose Parts

In the static environment of stationary playground equipment, toys and loose parts provide an unstructured play experience in which children are able to discover and manipulate their environment. According to Piaget and Inhelder (1969) children's active interaction with their environment is an important component of their development. And Leland Shaw (1982) states that "loose parts are a must for any successful play place. Without them no playground will reach its potential" (p. 10). But how does one define the loose parts and toys that make up the unstructured aspect of the playground. The term "loose parts" apparently originated with an article written by Simon Nicholson in 1971, "How Not to Cheat Children: The Theory of Loose Parts". Nicholson wrote:

There is evidence that all children love to interact with variables, such as materials and shapes; physical phenomena such as electricity, magnetism, and gravity; media such as gases and fluids; sounds, music, and motion; chemical interactions, cooking and fire; and other people, animals, plants...With all these things all children love to play, experiment, discover and invent and have fun...(Nicholson, 1971. p. 33).

The term loose parts has come to take on the meaning of anything that is not bolted down onto the playground (Shaw, 1982). Thus the term "loose parts" includes natural objects such as sand and water, manufactured objects from toy and

novelty companies, and discarded objects such as tires, cardboard boxes, pots, pans and containers.

A Special Kind of Playground Made-Up of Loose Parts

Joseph Lee, A pioneer in the American parks and recreation movement stated (Vance, 1982):

How in blazes, with the natural tendency of human nature to slick everything up and be orderly, can we have on small children's playgrounds sufficient mess to make the place habitable for children? The ordinary junk pile is better than a too orderly playground. And as for packing cases and what might be called wooden rubbish (also miscellaneous sand piles and bits of lead and iron and half bricks), what could be nearer Paradise than these? (p. 67)

What Lee describes is the concept behind a very special kind of playground that is based upon loose parts, the adventure playground. The adventure playground is an adult-supervised space that offers a large selection of raw materials which children can use to construct and then take apart (Vance, 1982). Adult supervision is intended to allow children to take risks and learn their own limits. The lack of supervision and safe "risk-taking" on conventional playgrounds mean children seek out truly dangerous risks outside of adult's observation. The children design and build whatever they want. And in England, there are adventure playgrounds that are accessible for children with disabilities. The adventure playground is an environment where children can experiment and create. The manipulation of elements provides the adventure (Shaw, 1982).

Vance (1982) notes that when older and middle generation Americans are asked about their play experiences during their youth they talk about their rope swing, experimenting with fire or building a structure. Vance, thus, suggests that today's playgrounds are designed to please adults' aesthetics rather than enhance children's enjoyment.

Friedberg noted that one of the playgrounds he designed was most successful when children broke into its construction site and played there (personal communication, 1988).

In a study done by Hayward, Rothenberg, and Beasley (1974) three types of playgrounds were observed: traditional, contemporary and adventure. At the traditional and contemporary playgrounds, conversations focused primarily on equipment use and mutual play activities. Whereas, at the adventure playground, children's conversations went beyond the immediate setting, dealing with topics beyond the playground. Also, children stayed the longest at the adventure playground and shortest on the traditional playground. The authors note, "The ambiguity of the adventure playground offered the children a potential setting in which to define self as well as space...it offered a selection of loose parts (e.g., tires, woods, tools, paints, plants, and seeds) which supplied part of the potential for children to define their own activities" (Hayward, Rothenberg, and Beasley, 1974, p. 166). Adventure playgrounds allow children the opportunity to produce their

own play environment, under a playleader's non-intrusive guidance, while mastering their surroundings.

Studies Stressing The Importance of Loose Parts On Playgrounds

Whether planning an adventure playground or another type of playground, loose parts should be considered as a part of the design in order for a child to have a well-rounded play experience. From observing 138 kindergarten, first, and second grade children on a "creative playground" (an inexpensive mix of hand-built equipment and loose parts) and two types of commercially equipped playgrounds (one a massive unit structure and the other an array of wooden play equipment), Frost and Strickland (1978) found that equipment that only provides for exercise play is not sufficient to provide for the wide range of children's developmental needs. The authors also found that children prefer equipment that can be added to their play schemes. In addition, among the equipment tested only loose parts had equal appeal across all age and grade levels.

Brown and Burger (1984) investigated whether or not children would exhibit differences in their social, language and motor functions as a function of the design of their play environment. The investigators studied social, language and motor behavior of 3-1/2 to 4-1/2 year old children on six playgrounds, three rated more contemporary and three rated less contemporary. The researchers found

more social, motor and language behaviors on the playground rated less contemporary, contrary to what they thought they would find. The reason, the authors conclude, that this finding occurred was that the less contemporary playground had an abundance of vehicles (tricycles, "big wheels", and wagons). These findings concur with Hulson (1939), Van Alstyne (1932) and Parten (1932) whose studies demonstrated that these vehicles are a popular activity and promote social interaction. Brown and Burger (1984) further suggest that "the challenge to the designers of playgrounds seems to be in the provision of environments that offer real rather than cosmetic design differences" (p. 600), introducing materials such as dramatic props and manipulative objects.

Frost and Campbell (1977) also studied two different types of playgrounds. One playground was a traditional playground with a seesaw, merry-go-round, swings, slide and climbing bars. The other playground had a playhouse, wheel vehicle area, sand and water areas, storage for movable parts and swinging structures. The researchers observed fifty second-grade children during free play for thirty minutes a day for ten weeks, alternating between the two playgrounds every other day. From their results, Frost and Campbell noted that in the traditional playground gross motor play occurred 3% of the time, and children were engaged in solitary or parallel play over 35% of the time. In the other playground dramatic play increased to 40% and gross motor play increased to 43%, and the time children

spent in solitary or parallel play decreased to less than 25% of the time. The authors conclude that in order to allow children a full repertoire of play a sufficient range of materials and equipment must be provided. These results concur with Vandenberg's (1981) study in which he also found that the nature of the play environment has a significant impact on children's play. In his results he found that the play materials he presented to the children he observed promoted big muscle exercise as opposed to cooperative play; cooperative play did not exist (see page 43).

These studies stress the importance of loose parts being made available to children on playgrounds. Loose parts allow children to participate in a wider range of play activities than stationary playground equipment by itself. The addition of loose parts into a playground can even be integrated with the stationary equipment, for example by a child rolling a truck down a slide, thereby allowing a child to make a greater impact on his/her environment.

The Logistics of Loose Parts

Placing loose parts on a playground, however, requires planning in order for the loose parts to be a successful endeavor. One consideration is to decide what loose parts should be added to the playground. When supplying a playground with loose parts, a wide variety should be made available allowing for the differing abilities of all

children. Leland Shaw (1987) lists the following categories of loose parts as a guideline of what kinds can be considered:

*Non-objective loose parts such as: cardboard boxes, blankets, tools. Not specific toys in themselves but they can be used in conjunction with the stationary equipment.

*Toys that are purchased. There is an endless variety. It is a good idea to have a wide range of toys but not too many.

*Containers such as pots, pans, cups. These are good for sand and water areas.

*Game equipment such as jump ropes, checkers, masks, and bean bag toss.

*Plants and animals. Shaw notes these are not common in the United States.

*Ride on toys. Extensive observations suggest that these are quite popular.

Moore, Cohen, et al. (1979) in their design guide, Designing Environments for Handicapped Children, suggest the following three types of loose parts: Manufactured objects in which the child realizes an invariable finished form (e.g., puzzles), a manufactured kit of parts in which the finished form is variable (e.g., tinker toys), and discarded natural and found objects (e.g., tires).

Frost and Klein (1983) in their book, Children's Play and Playgrounds, note a sample list of what kinds of loose parts may be used.

*Wheeled vehicles (e.g.: tricycles, wagons, road signs)

*Sand and Water Play (e.g.: shovels, funnels, soap bubbles)

*Construction (e.g.: blocks, lumber, tires)

*Assorted Toys (e.g.: Hula hoops)

*Dramatic (e.g.: Chairs, puppets, folding screens)

*Nature (e.g.: animal feeders, binoculars, gardening equipment)

*Creative Arts (e.g.: clay, art supplies, rhythm band instruments)

*Carpentry (e.g.: wood, tools)

Robin Moore (1984) observed the extensive use of "plant parts as play props" in the natural resource area of the Environmental Yard, a redeveloped schoolyard in Berkeley, California. One of the many examples Moore describes is how one boy twirled a bright orange California poppy and called it an airplane flower. A larger scale example is when the children used the shrubs to construct a shelter. Shaw (1984) notes that the upkeep of animals and plants is difficult and thus perhaps it would be best to keep them nearby instead of within most playgrounds.

Just as with anything, there is always an optimal amount. M.W. Johnson's 1935 study, suggests that there is an optimal amount of toys for children's environments. Johnson compared the activities of the same children (three-to-five year olds) on the same playground before and after a change occurred in the play equipment. Three different playgrounds and sets of children were observed. On one playground the children were accustomed to a lot of playground equipment. On the other two playgrounds the children were accustomed to much less equipment. The

children were observed by using a time sampling technique. In the first study, after all the loose parts were removed and only the stationary equipment and sand pit remained, the following was observed: less bodily exercise, more play with sand and dirt, more games, more undesirable behavior, and a greater number of social contacts. In the second study, after new building materials were added, the following was observed: bodily exercise decreased, play with materials increased (especially with the new materials), undesirable behavior decreased, and games decreased.

In summary, the author concludes that extensive amounts of equipment discourage social conflict, but also decrease social contacts. Johnson, therefore, suggests that the amounts and type of play equipment need to be further investigated. Shaw (1982) from his observations, agrees that too many loose parts are as bad as too few; too many loose parts give children too many choices and frustrates them. They also can act to separate children as each one selects a loose part and goes off on his/her own.

Shaw (1978) suggests that play leaders can take an active part in the creative use of loose parts. A good play leader will know how to use the loose parts to keep a fresh and unique outlook to the playground. One way is to know what and how many loose parts are optimal. Another way is for the play leader to "seed" the playground with loose parts, which means putting the loose parts in unexpected

places to promote spontaneous use (Shaw, 1984). In addition, play leaders can develop activities that will encourage the children to put away the loose parts either when they are finished with the loose part or an activity at the end of the day to put away all the loose parts at the same time. Of course the play leader's role goes beyond choosing and placing the loose parts. The play leader should be there, for example, to mediate in an unobtrusive way when one loose part is wanted by more than one child, or to encourage children to play with others by establishing a supportive attitude for the children to emulate (Frost and Klein, 1983).

The novelty of loose parts is that they move, but because of just that storage becomes an important issue to consider. At least two different schools of thought exist concerning the storage of loose parts. According to Frost and Klein (1983), it is best to store the different loose parts close to where they will be used. For example, the sand toys would be kept near the sand areas. They feel it is easier to organize them in this way rather than in a big container. In addition, they feel that children are able to help clean up more successfully. In Shaw's experience (1987), the aforementioned idea is better in theory than in practice. He has found that a central storeroom that is compartmentalized is better. Either way, because of the outdoor elements and unfortunately theft, storage is a must (Shaw, 1987).

One last, but very important consideration is design.

For instance, designers must include storage spaces. Also, if ride-on-toys are to be included, hard surfaces must be incorporated into the design. And ideally if a playground has been designed to be accessible, as all playgrounds should be, then not only should hard surfaces be included, but the steepness of ramps should be carefully designed. According to the London Handicapped Playground Association (Shaw, 1982) all children enjoy wheeled vehicles, but they are especially important to children who have physical impairments because they can use the vehicles to negotiate the playground independently. If hard surfaces, and negotiable ramps are not included, then these children could be excluded from a very exciting part of the playground. As a general rule, it is not good to have designs that separate children who have disabilities from children who do not have disabilities (Jambor and Gargiulo, 1987). When designing a playground, a designer should consider how loose parts interact with one another, such as placing sand and water near one another because they work well together, and most successfully with the inclusion of loose parts, for instance to take the water to the sand. A designer should also consider how children interact with loose parts. For example, Shaw (1984), notes that

use of a specific loose part will often increase suddenly because one child has one and the others want to mimic. This is reinforced on a play yard that has a significant amount of unity and three-dimensionality so that many activities are centered around the major

gathering plaza. Visual contact between peers will cause the mimic effect and often times the result is that a solitary behavior is changed into a group activity (p. 22).

Thus, when designing a playground, considering only the stationary equipment and landscaping is not enough.

Loose parts are an important part of a playground setting. The loose parts add a variety of experiences for children. Research done up until now has shown the importance of loose parts on playgrounds catering to either children with and without disabilities. This study examines how loose parts on a playground affect the play and social behaviors of children with and without disabilities.

CHAPTER III

AIMS

The overall purpose of this dissertation research is to examine the values, problems and possibilities of using toys on a public playground designed to integrate children with and without disabilities. Included in this larger question, is a specific empirical investigation of the effect toys have on the social interaction between children with mental retardation and children without mental retardation.

Specifically, the research questions are:

- (1) What does existing theory and research conclude regarding the value of toys for children's play?
- (2) What do Playground For All Children directors, from 1985-1987, think are the values and problems of including toys on the playground?
- (3) What toys do children who visit the Playground For All Children think are valuable to include on the playground?
- (4) What types of toys do children on the Playground For All Children use and how does this vary according to age, gender and type of impairment?
- (5) Where on the playground are toys used and how does this vary according to children's age, gender and type of impairment?
- (6) What kinds of play are associated with different toys?

(7) What kinds of social play are associated with different toys and how does this vary according to children's age, gender and type of impairment?

(8) Are there any specific qualities of toys which support children's social interactions?

(9) What role should the staff play in influencing children's interactions?

CHAPTER IV

RESEARCH DESIGN

Setting: The Playground For All Children

The following study was conducted on the Playground For All Children (PAC) located in New York. PAC is a unique, public playground with a full-time professional staff. The playground, built by the federal government, was intended to serve as a prototype in design as well as being public and staffed. Since PAC is a prototype, it was important to evaluate its design and programming in order to learn from it and to pass on details of its successful attributes as well as its problems to planners of future accessible staffed public playgrounds. The playground was built to be accessible for all children with special needs. In reality, however, it was designed with particular attention to physical disabilities. Although, because it has a support staff it has been possible to be appropriate for all children except those with visual impairments.

This study is a part of a larger study evaluating issues such as: the stationary playground equipment, caretaker-child interaction, safety issues, and design issues. In the first year of operation, a few toys were informally placed out by the PAC staff while our research team piloted methods. Early observations on PAC led to the conclusion that strategies need to be developed to improve opportunities for social interaction. This led to the

design of this study: a systematic attempt to introduce toys and loose parts on to PAC and to evaluate their utility. The evaluation data was collected during 1985 and 1986.

The playground lies on 3.5 acres of Flushing Meadow-Corona Park in Queens, New York. Designed through a competition, the goals of the playground were twofold: (1) To create a public playground that meets the needs of children with and without disabilities, and (2) To provide a place where children with and without disabilities can play together and engage in social interaction.

The playground contains an administration building with offices, accessible bathrooms and changing rooms, a trailer for storage, and outdoor play areas which include the following:

--An apparatus area, containing hand-operated swings and seesaws, accessible climbing bars that have platforms, accessible slides with stairs in front and a ladder in back, a rocking bridge, a suspended bridge and a soft play area.

--Sand platforms that are accessible to wheelchairs. And a wooden castle placed in a low sand area beneath one of the slides.

--A sports area for baseball and basketball (the hoops can be raised or lowered, making them accessible).

--A waterwheel area that serves as a huge sprinkler that children can walk, run or wheel under.

--An amphitheater with an accessible seating arrangement and a volleyball net.

--A meadow play area which is a large grassy area.

--A race track area.

--An interpretive trail, with natural items marked with explanatory plaques in English text and Braille, for example, roots of a tree. This trail surrounds a picnic area.

Population

The playground is open seven days a week from April through November. During the week, the morning hours (10 a.m. - 1 p.m.) at the playground are reserved for groups of children with and without disabilities. Reservations must be made by the camps, schools or institutions in advance for that specific day. These groups will be referred to as "groups" or "institutions" in the text. The majority of groups were not from the community and arrived by their own transportation. Colored ribbons were given to the children as they entered, to indicate to which group they belonged. Each day is reserved for different age groups, 3-5, 6-8, and 9-12. The disabilities of the children have been labelled: cerebral palsy, cognitive impairments, emotional disabilities, hearing impairments, physical impairments, or visual impairments. The largest single group of users with special needs at PAC were those with cognitive impairments. The largest sub-group of these, those with mild and mental retardation, were chosen for this study along with children with no special needs. Various methodologies were used in this study; for this reason the individual populations will be discussed in each section separately.

Methods

Since this study was conducted in a field setting, it was necessary to collect both individual and group data. The methods used in this research were: behavioral mapping, tracking, focused tracking, interviews and personal observations. After three years of experiencing the Playground For All Children environment, my personal observations will guide my interpretation of the results from the other research methods and will focus my attention on issues that these research methods may not explicitly touch upon. The primary purpose of this study was to introduce toys onto the playground and examine their effects on children's play.

Selection And Placement Of Toys On PAC

In 1985, the toys were selected and placed on the playground by the PAC staff. For both summers the toys were either donated by various toy manufacturers or were purchased. The toys used were: Large wheeled vehicles, wagons, sand toys, sports equipment, board games, miniature wooden farm animals, sit-and-spin, wooden blocks, Lincoln Logs(R), wooden trucks, dolls with mirrored faces, and bean bag throws. All toys, except the sand toys, large wheeled vehicles, wagons, and sports equipment were placed in the soft play area. The large wheeled vehicles and wagons were placed at the entrance to the playground, the sand toys in

the sand platforms, and the sports equipment in the sports area.

In 1986, the toys offered were chosen by this researcher, because they were noted in the literature to encourage either parallel or cooperative play. (See Literature Review, "Toys That Encourage Social Interaction.") The toys that were used were: Big plastic blocks, wooden blocks, Lincoln Logs(R), musical instruments (tambourines, xylophones, shakers), water toys (cups, beach balls, inflatable toys), costume hats, sand toys (shovels, buckets), dump trucks, and other trucks. The large wheeled vehicles had unfortunately not lasted through the previous summer, and because of budget constraints could not be repurchased and set out for the 1986 summer.

The toys were placed onto the playground by this research investigator and research interns. Each day the blocks, musical instruments, and costume hats were placed in the soft play area. The sand toys and trucks were placed on the sand platforms, the sand areas surrounding the slides, and the wooden castle in the sand. The water toys were placed in the wading area of the waterwheel (see Appendix A). By placing the toys in the same areas each day we could note their migration as well as any physical integration occurring possibly as a result of their location.

Behavior Maps

Purpose

The method of behavioral mapping was employed to discover how toys are used on PAC and to discover how physical integration was associated with toys.

Behavioral mapping is a method for studying the relationships between behavior and the physical space in which it occurs (Ittelson, Rivlin, & Proshansky, 1976).

Data Collection

For observation purposes the playground was divided into fifteen regions (see Appendix B for map of the regions), because of the large area PAC covers. Two research interns, one taking seven regions and the other eight, mapped their respective regions hourly, between 10:00 a.m. and 3:00 p.m. In order to map the regions in a random order, each intern chose a region and a direction from an envelope and began with that region and direction for the mapping.

Once in an area, the interns stood facing the chosen direction. The interns mapped as if they were standing in the middle of a bicycle wheel. As they turned they would record information about every third person along a "spoke" of the wheel, when they reached the border of the region they would turn in order to go down the next "spoke" recording information about every third person along that line. The interns would continue this process while turning

in a circle until they reached the direction in which they began. They would then move on to the next region. The interns mapped quickly, but at their own pace. It was necessary to map each third person, because of the density and the fast pace of the playground.

To map an individual, the intern would place an identifying number on the map of the given region (see Appendix C for the instrument used). That same number would also be written on a grid which would correspond with the following information that the intern would complete: sex, age, color of ribbon (indicating group membership), wheelchair if any, whether playing with another child, programmed activity, loose materials they were playing with: balls, blocks, replicas (trucks), tools (sand toys), wheeled toys. The toy had to be in the person's possession in order for this characteristic to be noted.

More detailed information about behaviors could not be recorded because of the fast pace at which the children moved. In order to capture that information, children were tracked by video cameras, a procedure that will be described later.

Population

Over the summers of 1985 and 1986, a team of research assistants were responsible for hourly mapping of the playground. A total of 144 maps were produced from these mappings. Non-disabled children were recorded on 90 of the

maps. Children with mental retardation were recorded on 56 of the maps. Children with physical handicaps were recorded on 41 of the maps. Children with emotional impairments were recorded on 55 of the maps. Children with hearing impairments were recorded on 24 of the maps. Children with visual impairments were recorded on 2 of the maps. For the breakdown of the populations mapped, see Table 1.

Data Analysis

In order to enter each behavior map into the computer, a base map was created and placed into the computer's memory. Two different types of data from each map were then entered into the computer. The first type of data were each person's location on the map. In order to record each map separately the plotter on the digitizer was used by noting each person's location in numerical order on the base map, with each map receiving its own number. The characteristics of each person recorded corresponded to the number that person was given on the behavior map. Maps were generated to display specific characteristics of the population from all maps or at specified times. The total number of observations for each map was also generated. Each dot on a map represents a child. In some cases the dots overlap.

Table 1
Behavioral Maps Sample Population:
Gender, Age and Disability

<u>GENDER</u>				
<u>Boys</u>		<u>Girls</u>		<u>Total</u>
6852		8880		15,732

<u>AGE</u>			
<u>3-5 yr olds</u>	<u>6-8 yr olds</u>	<u>9-12 yr olds</u>	<u>Total</u>
4523	3539	1247	9,309

<u>DISABILITY</u>				
<u>ND^a</u>	<u>MR^b</u>	<u>PH^c</u>	<u>ED^d</u>	<u>LD^e</u>
4956	847	597	869	829

Children with: ^aNo disabilities. ^bMental retardation.
^cPhysical handicaps. ^dEmotional disabilities. ^eLearning disabilities.

The types of maps included in this research are as follows:

*Each type of toy (balls, blocks, replicas, tools and wheeled toys) X Whole sample

*Each type of toy X Age groups (3-5; 6-8; 9-12)

*Each type of toy X Gender

*Each type of toy X Disability (ND, MR, PH, ED, LD)

*Selected maps comparing locations of groups of children with mental retardation and groups of children without mental retardation on the same day and same time.

Reliability

Inter-coder reliability was assessed after the research interns doing the behavioral mapping were trained. The interns individually mapped a predetermined individual at the same time. Those results were then compared to determine the rate of agreement within each mapping category. The reliability rates for each category are: Behavior #1 (.85), Behavior #2 (.83), body position (.87), adult observation (.96), adult interaction (.96), child interaction (.98), child (.98), equipment (1.00), sex (1.00), age (.85), disability (1.00), verbalization (.98), objects (.84), limb limitation (1.00), and appliances (.94). These rates were considered adequate to continue mapping.

Tracking

Purpose

Tracking was used to discover how toys were used on PAC. The observer noted the kinds of play associated with toys and how social interaction was associated with toys.

The tracking methodology records a subject's movement through space, in this case children's movement through the Playground For All Children (Winkel & Sasanoff, 1976).

Data Collection

Upon entering PAC, the children and caretakers, received a colored plastic ribbon that identified them as a member of

a particular group. Schools had been sent packets of information from PAC, a photo release was also included with an explanation of the research. Ribbon colors were assigned to all visiting groups before they arrived. Each group then received a short lecture on the rules of the playground by a PAC staff member. Next a research staff member, after being introduced by the PAC staff member, gave a short explanation about the research (see Appendix D for the explanation).

Most importantly, it was the perfect opportunity to introduce the children to the video equipment so that they would be less attracted by it while they were being filmed.

After the lecture, each of the two or three video crews tracked the target child, who had been randomly chosen, for ten minutes. The video cameras have an internal timer that allowed the crew to know when the ten minute period had concluded. While one research intern filmed, the other intern "voiced over" the name, age, color of ribbon, name of institution and distinguishing clothing characteristics of the child onto the tape. Voicing over onto the tape also acted as a safeguard against obtaining insufficient information while filming. For example, if someone out of camera view spoke to the target child, the voice over would then give the information about who was speaking to the child. After the video crew finished filming, the research coordinator informed them of the next child to film.

In an effort to supplement our knowledge of each child who was tracked as a target child, a "child profile" (see

Appendix E for child profile form) was completed with the help of the target child's caretaker. The child profile provided information about any cognitive, learning, communicative, emotional, hearing, visual, physical or health impairments that the child might have. Information on fine motor and gross motor abilities, communication abilities, and play history was recorded as well. A checkoff list of indoor and outdoor play resources at the facility of origin was also done.

Since personal records kept about the children are confidential and unavailable to the research project, we had to rely on the caretaker's immediate knowledge of the child. The age, therefore, refers to the chronological age as opposed to developmental age in this research report. Since all children are tested and labelled before entering a classroom, the label of the type of cognitive impairment the child has, was based on the American Association on Mental Deficiency's Classification in Mental Retardation (AAMD, 1983), which is a widely used classification by special educators.

Population

The children tracked were children with mild or moderate mental retardation and children without mental retardation, ranging in age from three to nine years. This is a different breakdown of ages than was done in the behavioral mapping methodology. The sizes of the different populations

are uneven because there was no control over (1) the groups that came to the playground and (2) whether the children who were present had been given permission to be filmed by their guardians (see Table 2).

In order to choose target children randomly, a random number chart was used daily to generate random numbers. As children from a group that was to be tracked entered the playground, they were counted until the random number was reached. After the children were chosen, their caretakers were then consulted to verify that they had permission to be filmed. The research field coordinator kept a list of the names of the children who were to be filmed for the day.

Data Analysis

Each ten minute video tape of a child was coded by one of the three pairs of coders who were research interns. The coders were given extensive training for six weeks, 12 hours a week, in order to learn how to apply the codes from the coding manual to the actual video tapes. Each tape was coded in two ways: social interaction coding and play repertoire coding. Training was done by this research investigator.

Social interaction coding is a procedure that codes each child at 10-second intervals. Smith and Connolly (1972) point out that coding at 10-second intervals is a small enough interval to get at most behaviors occurring. The coders were instructed to write down the codes that best

Table 2
Tracking Population: Gender, Age, Disability and Year

1985				
ND		MR		
	Male	Female	Male	Female
3-5	14	19	6	2
6-9	12	14	7	3

1986				
ND		MR		
	Male	Female	Male	Female
3-5	12	20	11	6
6-9	6	6	16	10

described the behavior at that instant, but were to keep in mind the context of the situation. There was a remote control device that enabled the coders to pause the tape at the 00:X0:00 mark, which is superimposed onto the tape. The pause function, because of the advanced type of VCR used, gave a clear picture. If the child was in momentary transition from one activity to another activity, the coders coded the behavior as belonging to the subsequent activity. The coders were free to review any segment of the tape as often as was needed. One coder operated the remote control and the other, after discussion, wrote the agreed upon codes

onto a computer-ready coding sheet (see Appendix F for coding sheet).

Suggestions for types of codes were taken from previous studies of children's play, and supplemented with codes relevant to the populations of children with special needs and caretakers trained to work with them (Parten, 1933; Smith and Connolly, 1972; Rubin et al., 1978; Blurton Jones, 1972; Strain et al., 1976). These were generated with the team of researchers from developmental and environmental psychology (see Appendix G).

The coders coded the following information at each 10-second interval:

(1) The child's main activity "Focus" for which there were 36 possibilities.

(2) Child's "social participation at play," if a play code were used in column 1. The child's "social participation at play" codes were derived from Parten's (1932) social participation categories,

- (a) solitary
- (b) parallel
- (c) group

(3) Who the child was playing with (the coders could put up to 5 codes), "participation with," if parallel or group were coded in column 3. These codes were:

- (a) PAC staff
- (b) other child(ren)

- (c) other disabled child(ren) from other institution
- (d) other non-disabled child(ren) from other institution
- (e) caretaker(s) from same institution
- (f) caretaker(s) from other institution
- (g) indistinguishable
- (h) someone from the community

(4) "Equipment" on which child was playing, if applicable. Codes were taken from a map of the playground including all equipment.

(5) "Region" in which child was playing. Codes were taken from a map of the playground divided into regions distinguished by different activities.

(6) "Objects" with which target child was playing, if applicable. Objects were toys and loose parts.

If the coders encountered instances in which the camera view was blocked, they would code "view blocked by camera." Or if there were a behavior that they felt could not be categorized by a code there was a comment book in which they would enter the child's name, identification number, tape number and time of occurrence in order to note this information.

After the six coders were trained for approximately 12 hours per week for six weeks, inter-coder reliability was assessed. One-thousand and eighty observations (60 observations for each of 18 children) were double coded by

two pairs of coders for reliability. Inter-coder reliability was calculated as the rate of agreement within each coding category. The following rates for each of the given categories are: "focus" (.80), "social participation at play" (.88), "participation with" (.85), "equipment" (.94), "region" (.99), "object" (.96).

A time-sampling methodology was felt to be appropriate for the analysis of social interaction categories because these change so frequently thereby enabling the investigator to assume that each 10 second time interval can be considered to be an independent observation, not linked to the prior or subsequent 10 second observation. Such an assumption cannot be made with regard to the type of children's play because this does not change as frequently. Consequently, a continuous coding procedure rather than a time sampling procedure was used to code children's play behaviors.

Play repertoire coding was a continuous coding procedure. Each tape was watched until a different play behavior, as defined in the "Focus" section of the coding manual, was observed. Only play behaviors were coded. Therefore if a child was in transition from one activity to another or was not engaged in a play behavior, this transition or behavior was not coded. If the child engaged in other activities for less than five seconds and returned to the same activity, no change in behavior was recorded.

The coders recorded the beginning and end time of the play behavior from the time that was superimposed on the video. The play behavior and the location were recorded on the coding sheet along with the beginning and ending time (see Appendix H for coding form). "Equipment" and "Objects" were also recorded if the child used them. After coding the tapes, the information, including the information from the child profiles, were entered into the computer.

After the coders were trained, inter-coder reliability was assessed. Videotapes of children that were coded by one pair of coders were coded by another pair. Reliability was based on a percentage calculated for each category for ten children with mental retardation and ten children without mental retardation. Inter-coder reliability was calculated as the rate of agreement within each coding category. The following are the reliability rates for each category: "focus" (.91), "objects" (.97), "equipment" (.98), "region" (.98), and time intervals (.87). These rates were considered sufficient to continue coding.

Frequencies describing the types of toys used and who used them were calculated. These frequencies were broken down by gender, age, and disability. In addition, frequencies were calculated for the different play behaviors that occurred while children played with the toys.

Focused Tracking

Purpose

Focused tracking examines a toy's influence on the social interaction occurring between a target child possessing a toy and a child from a different institution.

Data Collection

One research assistant filmed the child, while the other voiced over the name, age, gender, disability, institution, ribbon color and distinguishing clothing characteristics. In addition, if the target child spoke or someone spoke to the target child, the research assistant repeated the remarks to insure that the words were heard.

In an effort to supplement our knowledge of each child who was tracked, a "child profile" was completed, as is explained previously in the Tracking section.

Population

A target child was chosen to be filmed if in possession of a toy and within a 5-feet of any other children. The child was either filmed for ten minutes or until he/she ceased to play with toys.

Eighty-seven children were filmed. However, not all of them were selected for the final sample. The 27 children chosen were only those who interacted with a child from a group other than their own.

Data Analysis

The instances that include the target child possessing a toy and interacting with an unfamiliar child were transcribed for the duration of the interaction.

Children's Interviews

Purpose

Children were interviewed to discover what kinds of toys are their favorite and what toys they think should be added to PAC.

Data Collection

Research assistants asked for the caretaker's permission to interview their children about toys. The interviewers explained that the interview was a part of the research being done on PAC. Once the caretaker's permission was received, the interview was done individually. The interviewer explained to the child that these questions were being asked because the researchers were trying to make PAC the best playground. The child was then asked his/her age. Gender and institution were also noted.

The children were asked the following questions:

1. What is your favorite toy?
2. If I told you that I could buy any toys that you want to buy for the playground, what would they be?

Population

After the interviewer received permission from the caretaker, children were approached and asked if they would like to be interviewed (see Table 3).

Data Analysis

The interviews were content analyzed. Frequencies were calculated in order to determine the similarities and differences in the responses of the children interviewed with respect to disability, sex and age.

PAC Director Interviews

Purpose

PAC directors were interviewed to discover what they thought were the problems and possibilities of toys on playgrounds.

Data Collection

Each director was interviewed individually. The interview questions discussed the value of toys on a playground, the successful and unsuccessful toys for each type of disability and the non-disabled. Management problems that are created by having toys on a playground were also discussed (see Appendix I for interview).

Table 3
Children's Interviews Population Table:
Gender, Age and Disability

	WITHOUT DISABILITY		WITH DISABILITY		
	(N=168)		(N=54)		
	<u>Boys</u>	<u>Girls</u>	<u>Boys</u>	<u>Girls</u>	<u>Total</u>
<u>Age</u>					
3-5	17	13	5	4	39
6-8	35	56	15	5	111
9-12	21	26	20	5	72
Total	73	95	40	14	222

Population

The three different directors of PAC, one from each of the years (1985, 1986, and 1987), were interviewed.

Data Analysis

The responses of each director were compared with one another in order to identify important themes.

Critique Of Methodology

The execution of this study required balancing the advantages of being a part of a rich and broad based data collection effort with the drawbacks of "inheriting" data collection instruments and coding schemes that were not

specifically tailored to the needs of the present study, and could not be changed midway. The compilation of these methods confirmed that children with varying abilities did not often physically integrate, and that toys enhanced the range of children's play repertoires. In retrospect, however, it would have strengthened the data to include more specific toy behaviors in the coding scheme. Had it been possible, it would have also been helpful to change the object categories on the behavior map instrument to better capture each type of toy. Were this study to be designed again, it might have been more beneficial to have tracked the toys instead of the children in order to have insured a more adequate representation of all toys in the data set.

CHAPTER V

RESULTS AND DISCUSSION

Behavior Maps

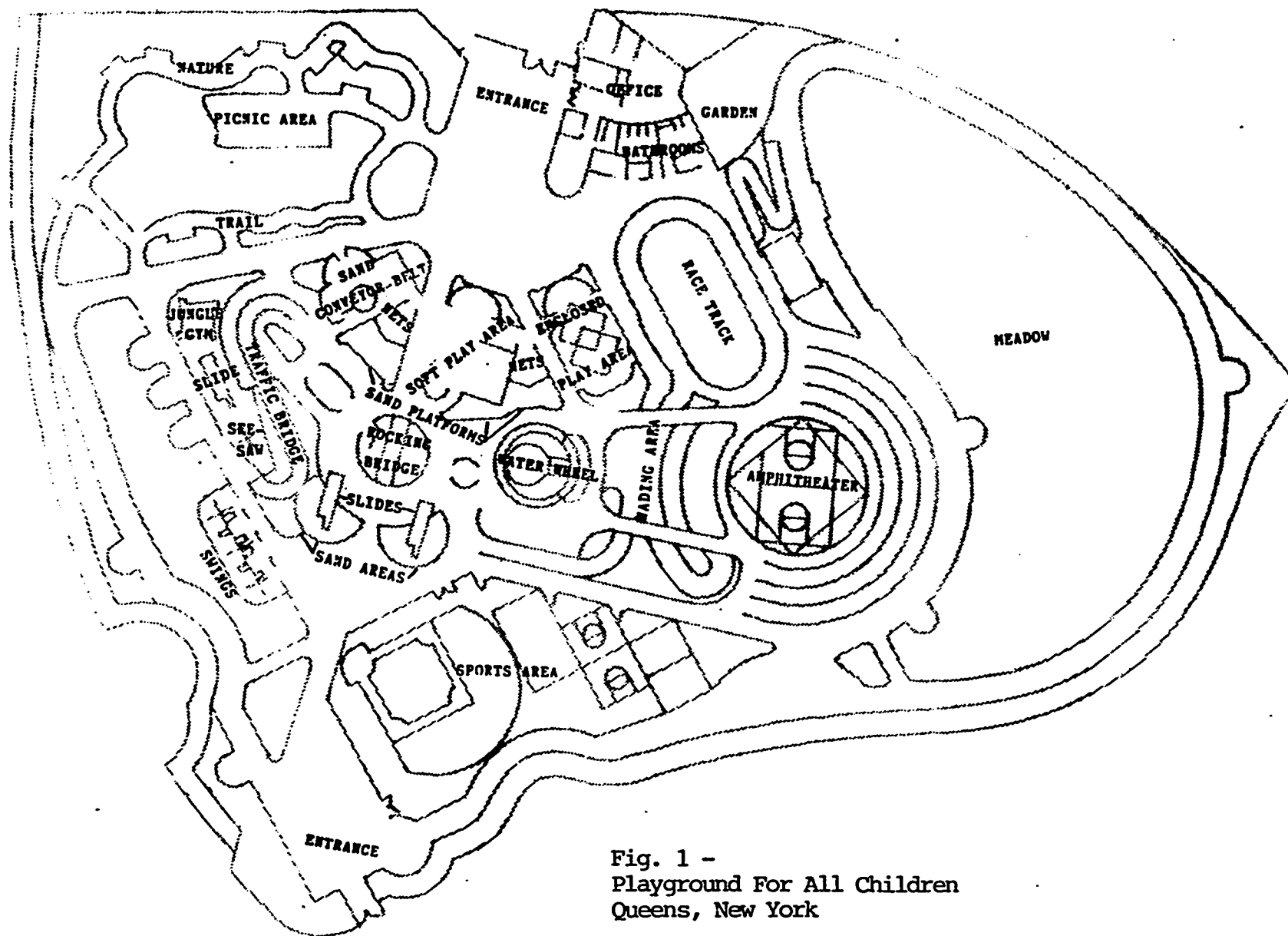
The behavior maps present a spatial display of children's use of the playground at one moment in time; like a snapshot. A labelled map of PAC is provided as a key to the different regions of the playground (Figure 1).

Unfortunately, because the behavioral mapping was part of the larger evaluation, the instrument was unable to be changed between the summer of 1985 and the summer of 1986. Therefore, some of the toys added in the summer of 1986 were coded under obscure categories, such as musical instruments and costume hats being coded under "replicas" and water toys being coded under "miscellaneous". Also, small trucks were coded as replicas and occasionally as sand tools.

Nevertheless, analyzed along with the other methodologies, and personal observations made while on the playground, these maps still provide an important source of information.

Locations Where Toys Were Observed

The toys were brought out onto the playground every weekday morning to the same locations. The sand tools and miniature vehicles were put into the sand platforms and sand areas under the slider. The big wheeled toys were placed at the entrance of the playground. The "replicas" were placed



in the soft-play area, the water wheel wading area and sand areas.

The results obtained from the behavioral maps suggest no real surprises as to where the children played with the different toys (for location of toys see "Selection and Placement of Toys" section). The sand tools were primarily observed in the sand platforms, the conveyor belt/sand area, the lower sand areas, and the garden area (see Figure 2). A few of the sand tools were taken to areas near the different sand areas, such as the slides, swings, and soft-play area. Sand tools were observed 47% of the time that children being observed were using toys (see Table 4). It is important to note that there were five sand areas on PAC, each containing sand toys. More sand tools were offered to the children than any other type of toy. The continual use of the sand tools by the children, however, suggests that they have an important place on the playground.

Perhaps because mobility is a main characteristic of the big wheeled toys, they appear throughout the playground. This kind of toy is an important addition to a playground because the "wheel" allows the children to explore their surroundings. The big wheeled toys worked especially well for this setting as there was a traffic bridge and a rocking bridge over which children could ride. When children rode on the traffic bridge they would run up one side and ride down the other, repeating this activity again and again. There was also a race track, but it was rarely used. It had

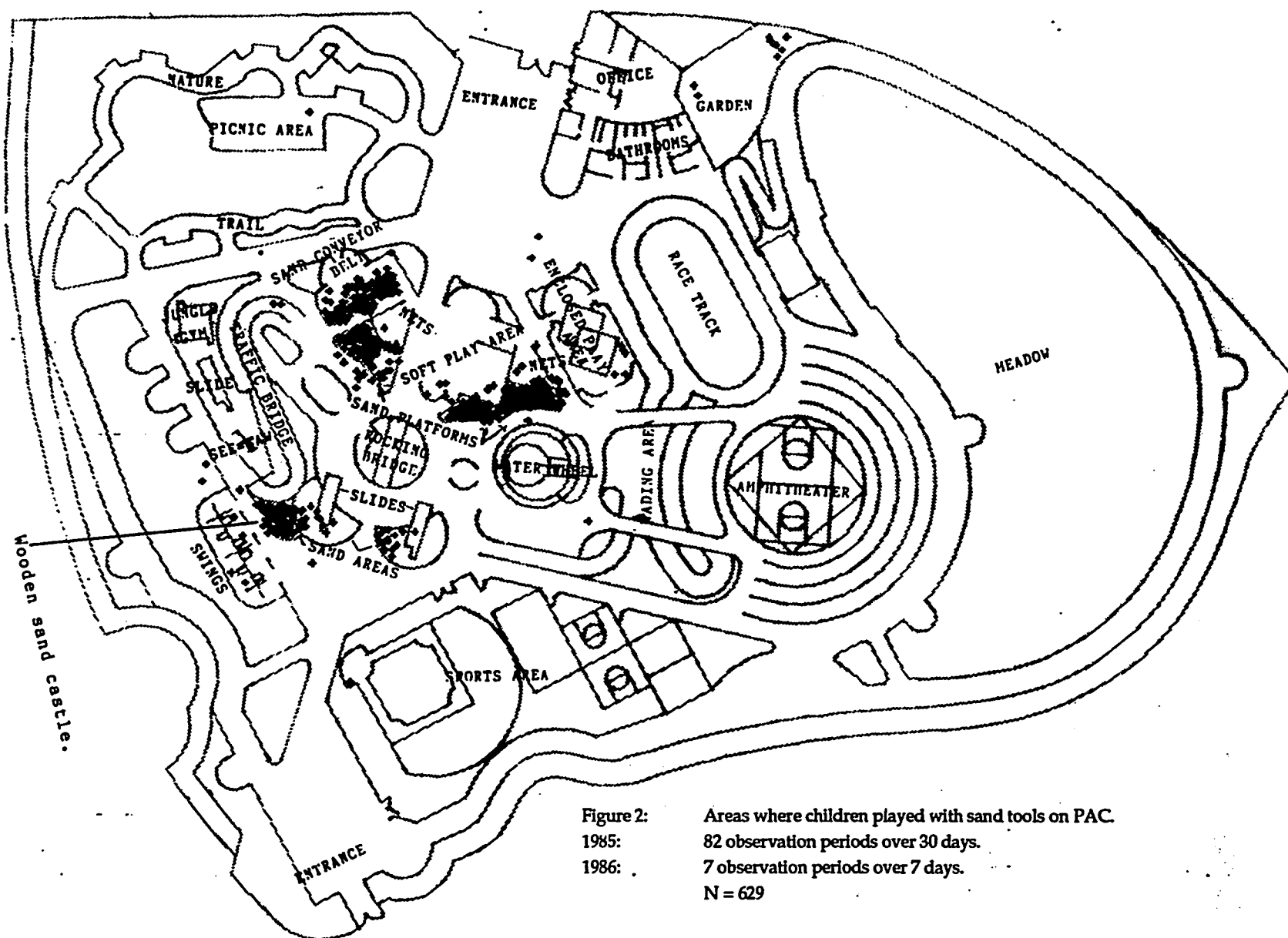


Figure 2: Areas where children played with sand tools on PAC.
 1985: 82 observation periods over 30 days.
 1986: 7 observation periods over 7 days.
 N = 629

Table 4
Number and Percent of Times Children Observed
With Each Toy: Behavioral Mapping Data

<u>Toy</u>	<u>N^a</u>	<u>%</u>
Sand Tools	629	47%
Wheeled Toys ^b	238	18%
Balls ^c	227	17%
Replicas ^d	168	13%
Blocks	66	5%
Total	1328	100%

^aN=Number of Observations. ^bWheeled toys are large wheeled toys. ^cBalls represent all sports equipment. ^dReplicas can represent small wheeled vehicles, miniature farm animals, and musical instruments (see text).

a flat surface and no inclines, thus making it an uninteresting place to ride. Another important aspect of the large wheeled toys is that they enabled the children to participate in a relatively safe challenging activities on the playground when they had mastered the activities that were presented to them. During the summer of 1985, New York City faced a serious water shortage. The waterwheel, therefore, was not operating. At least not with water--the children brought scooters and rode down the hill of the

waterwheel's wading area. As can be seen in Figure 3, the densest area on the map (the most observations) is on the hill of the wading area. The children were definitely using this area much differently than had been intended.

The "balls", an all inclusive term for sports equipment, were observed in organized sports areas: the baseball diamond, the accessible basketball court, the volleyball court and the meadow area (see Figure 4). In 1985, the sports director constructed some bean bag game frames out of wood for the children. As can be seen on Figure 4, the children played with the bean bag games in the soft-play area where the games had been placed. Children were also observed playing with beach balls in the waterwheel area. In addition few observations of balls were seen on the swings, the slides, the nets and on the pathways. The main concentration was in the sports areas.

The "toy replicas" seen in the sand area were the trucks that the children were observed using (see Figure 5). In the soft-play area, the "replicas" were the miniature farm animals, musical instruments and costume hats. However, at times musical instruments and costume hats could be found in the sand platforms. Also, because trucks were greatly coveted by the children and they would not part with them, the observations of "replicas" seen on the jungle gym, the nets, the swings, the seesaw and the slide were most likely the trucks. In addition, children enjoyed pushing trucks over the rocking bridge, which would explain the

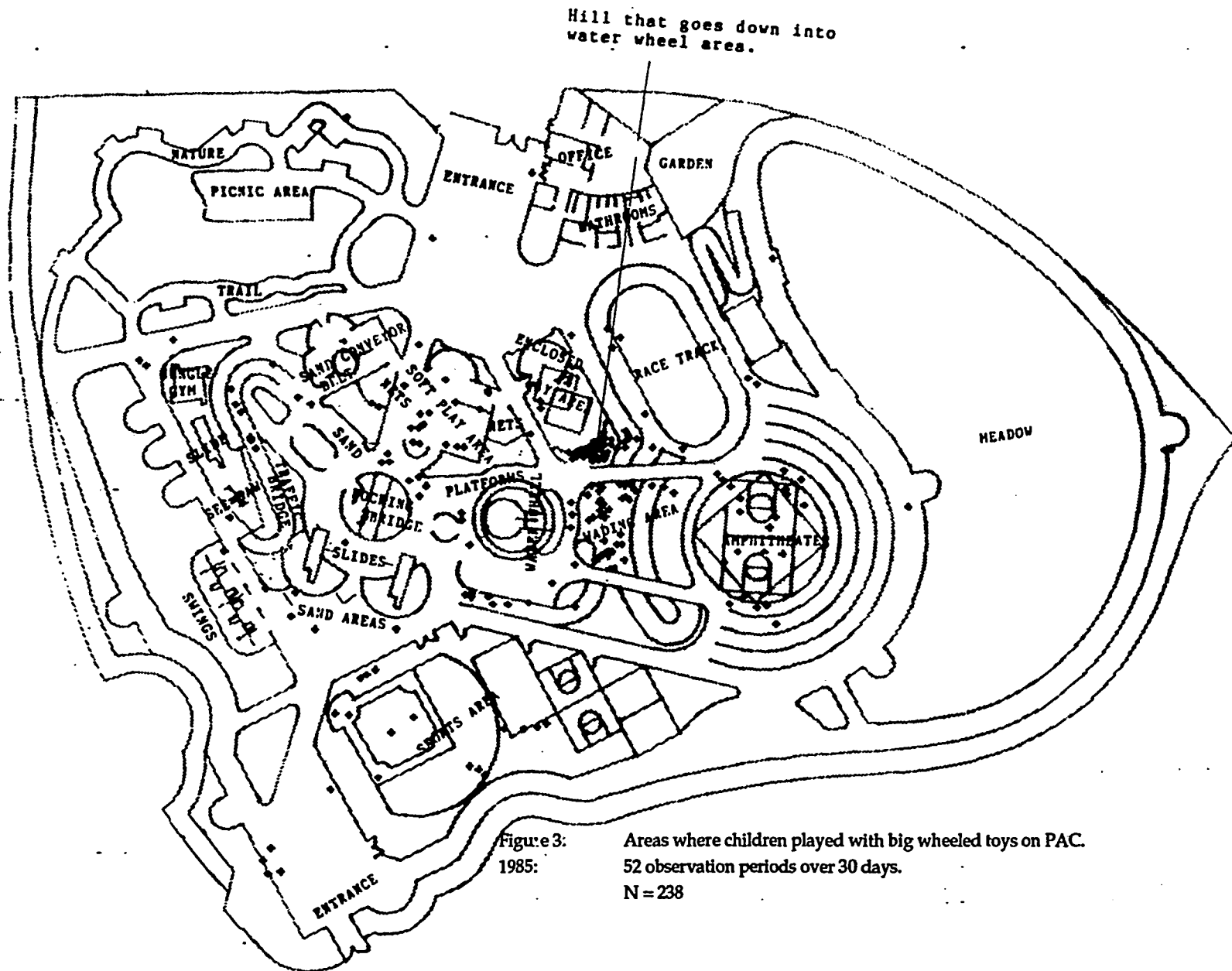


Figure 3:
1985:

Areas where children played with big wheeled toys on PAC.
52 observation periods over 30 days.
N = 238

+

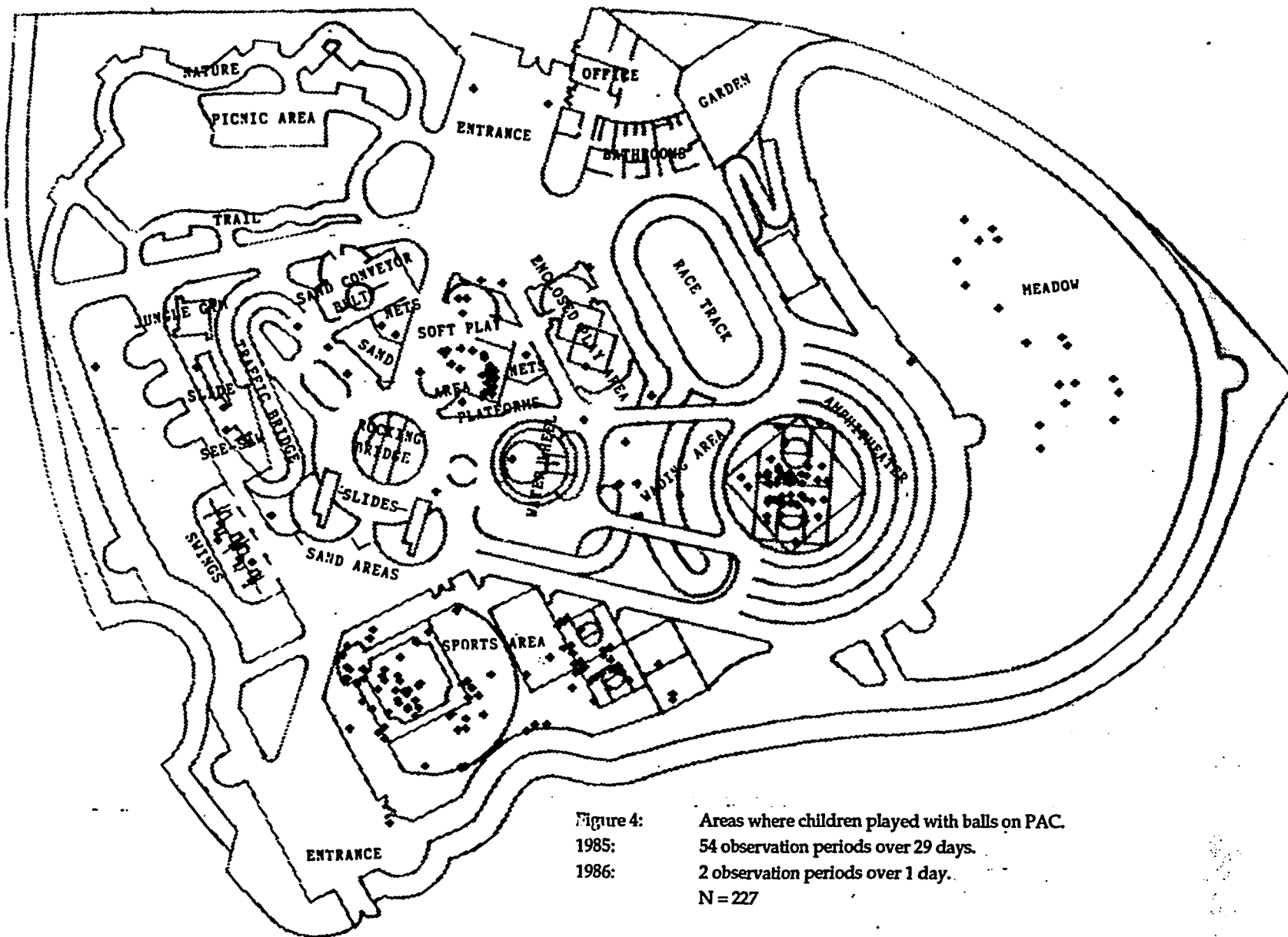


Figure 4:

1985:

Areas where children played with balls on PAC.

54 observation periods over 29 days.

1986:

2 observation periods over 1 day.

N = 227

+

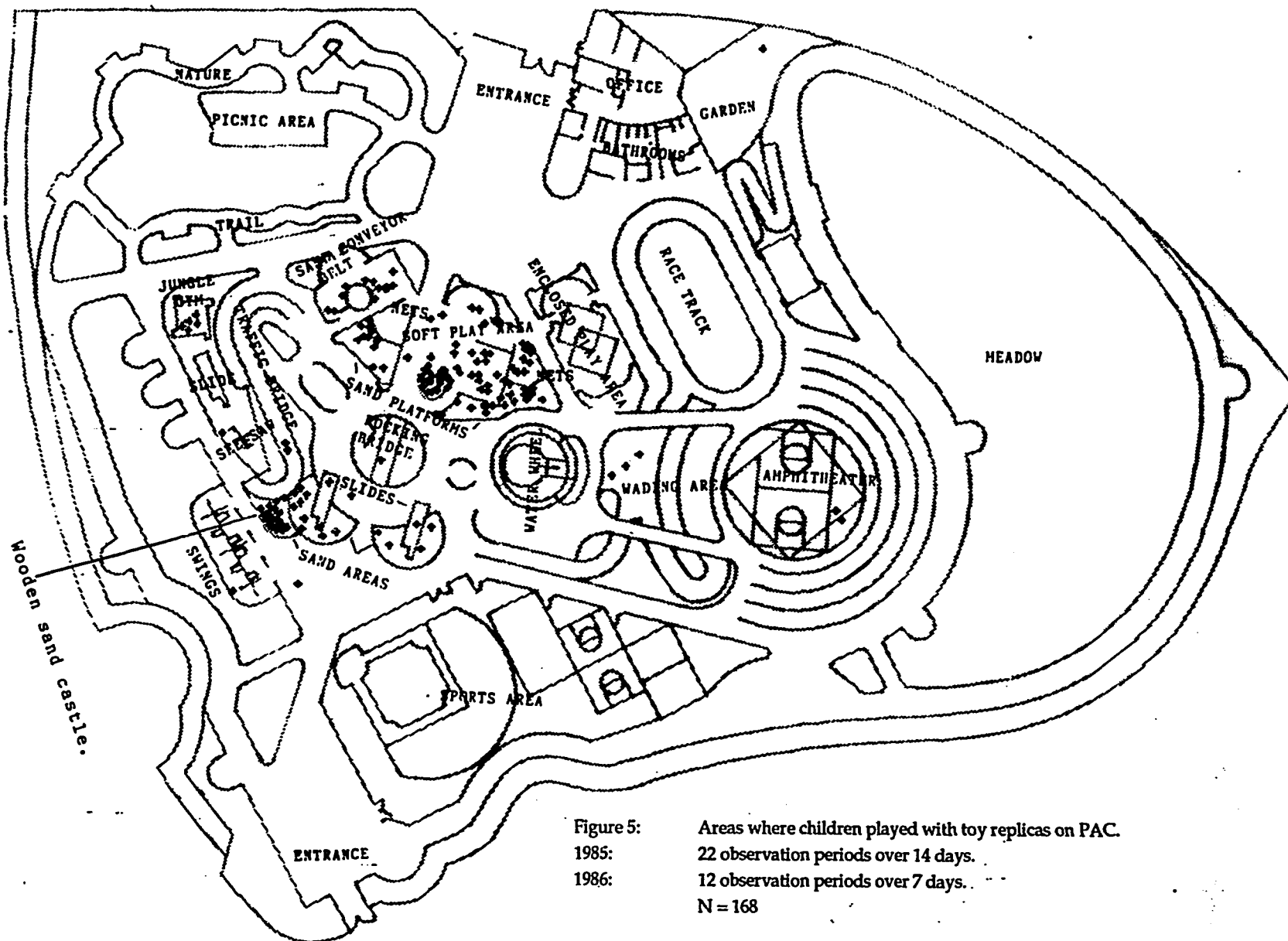


Figure 5: Areas where children played with toy replicas on PAC.
 1985: 22 observation periods over 14 days.
 1986: 12 observation periods over 7 days.
 N = 168

observations in that location (see Figure 5). The toys seen in the waterwheel area were plastic boats.

It is unfortunate that the "replica" category was not more finely categorized for the second summer, but one still does get a flavor for where the children were seen playing with the various toys.

The majority of children playing with blocks were observed in the soft-play area, where the blocks had been placed (see Figure 6). Some children with blocks were found in the nets nearest the soft-play area. Children were also observed with blocks in the basketball courts. On one occasion the toys were placed in the amphitheater area. The blocks probably were taken across to the sports area because there was more shade. Toys were never again placed in the amphitheater because there was no shade from the sun. One of the highlights of successful playgrounds according to the literature of play research, is that children are able to construct structures. It was therefore somewhat surprising to find that the blocks were observed being used so few times, their small size must have been inappropriate. Instead the very large sized Lego(R)-type blocks or big pieces of Styrofoam would probably be more suitable for an outdoor play setting.

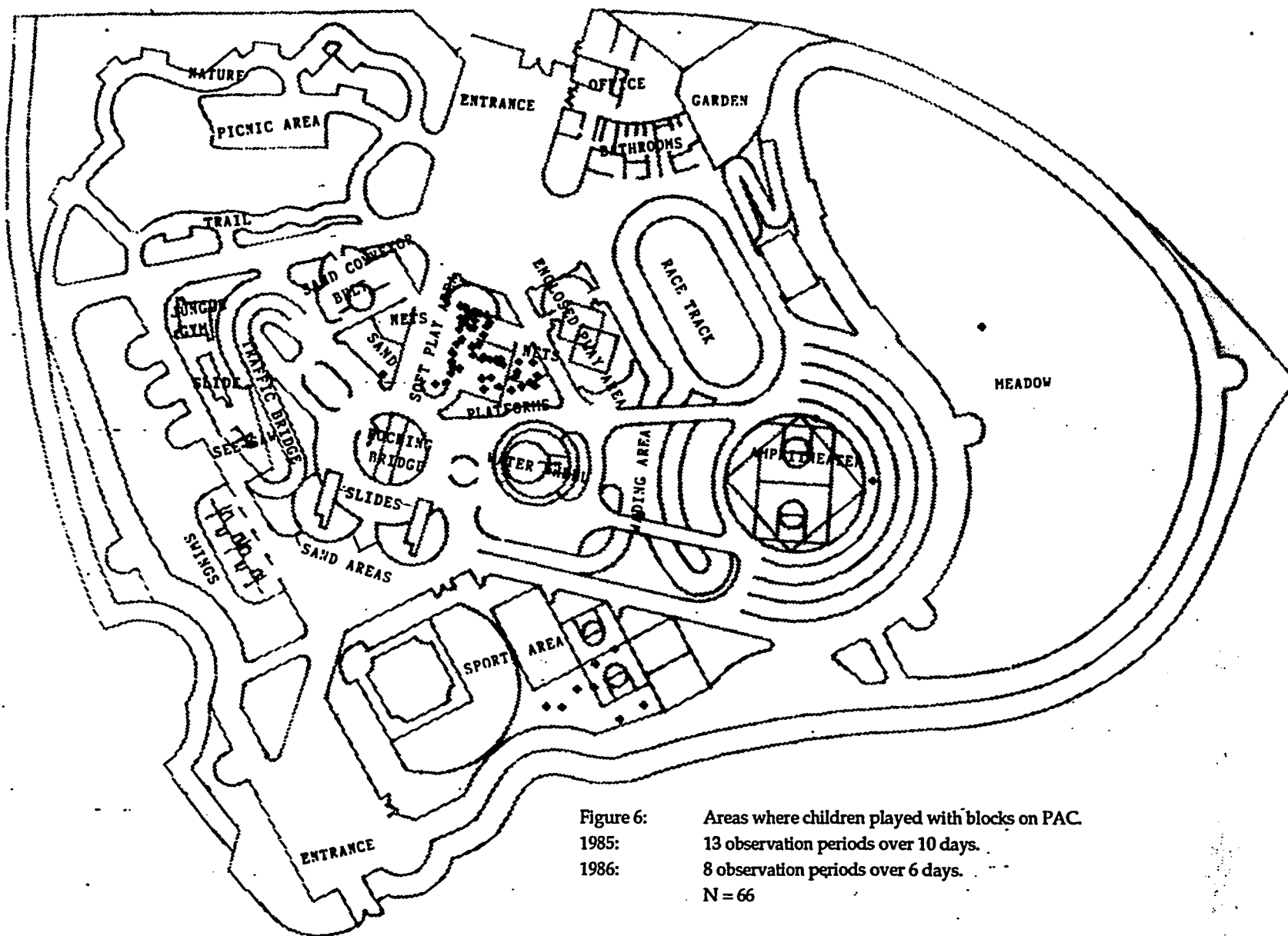


Figure 6: Areas where children played with blocks on PAC.
 1985: 13 observation periods over 10 days.
 1986: 8 observation periods over 6 days.
 N = 66

Locations Where Boys and Girls Were Observed

Using Toys

According to the behavioral map findings, the boys were observed in possession of toys significantly more often than the girls ($\chi^2 = 202.1$, with 1 d.f., $p < .01$). (See Table 5).

There are at least two possible explanations for this finding. One explanation is that the toys provided on the playground were not the kinds of toys which most of the girls preferred or to which they were accustomed. Another explanation from research findings suggests that play on playgrounds is influenced by sex differences. Studies suggest that boys engage in richer forms of dramatic play and games with rules during outdoor play than do girls. In 1977, Lever observed 181, 10- and 11-year old children. The results indicated that girls tended to play indoors, limit their vocal expression, their body movement and their play areas. Boys, on the other hand, preferred outdoor play, especially team sports and fantasy play. In their study, Frost and Campbell (1977) found similar results from their observations of second-grade boys and girls on a playground. They found that boys engaged in more dramatic play and games, whereas girls engaged in more parallel and functional play. Henniger (1977) noted that while observing nursery school children indoors, girls engaged in more dramatic play, while boys engaged in more constructive play. When outdoors, however, boys engaged in more dramatic play.

Table 5
Number and Percent of Times Boys and Girls Observed
With Each Toy: Behavioral Mapping Data

<u>Toy</u>	<u>Boys^a</u>		<u>Girls^b</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Sand Tools	332	40%	297	59% ^c
Wheeled Toys	179	22%	49	10% ^d
Balls	165	20%	62	12% ^e
Replicas	100	12%	68	14%
Blocks	44	5%	24	5%
Total	820	100%	500	100% ^f

^aTotal sample of boys = 6852. ^bTotal sample of girls = 8880. ^c $\chi^2 = 44.5$, with 1 d.f., $p < .01$. ^d $\chi^2 = 31.6$, with 1 d.f., $p < .01$. ^e $\chi^2 = 13.1$, with 1 d.f., $p < .01$. ^f $\chi^2 = 202.1$, with 1 d.f., $p < .01$.

A debate exists as to whether these differences are due to cultural or biological reasons. In 1972, Lewis reported sex differences in the play of one-year old infants. The girls were more apt to stay in reach of their mothers than were the boys. In Hart's (1979) study of elementary grade children's experience of place, he found that boys' parentally defined ranges were larger than their female peers. He notes that girls are expected to remain near home, because they are expected to help around the house.

Lewis believes there are three possible factors that explain these differences: One is biological, in that male primates show more exploratory behavior than females. The second is cultural: parents teach children sex role behavior by reward and punishment. And third, an indirect cultural factor, is that children appear to learn rules which guide their sex role behavior, as is evidenced in Hart's study.

As can be seen in Figure 7 and Figure 8, the sand tools primarily stayed in the sand areas and garden. The boys brought a few sand tools to the swings, and the girls took some sand tools to the enclosed soft-play area. For both groups, the sand tools were the most popular toys. The girls, however, were observed significantly more with the sand tools than boys ($\chi^2=44.5$, with 1 d.f., $p < .01$). This may be because the sand tools were in enclosed areas on the playground where according to past research girls prefer to play, or that there was less of a choice of toys for the girls.

According to Figure 9 and Figure 10, both the boys and the girls were dispersed throughout the playground on the big wheeled toys. The boys went a bit farther than the girls, going as far as the closed entrance at the far end of the playground. What is interesting, however, is that there were girls interested in exploring their outdoor environment. The boys however, were observed significantly more with the big wheeled toys than the girls ($\chi^2=111.4$, with 1 d.f., $p < .01$).

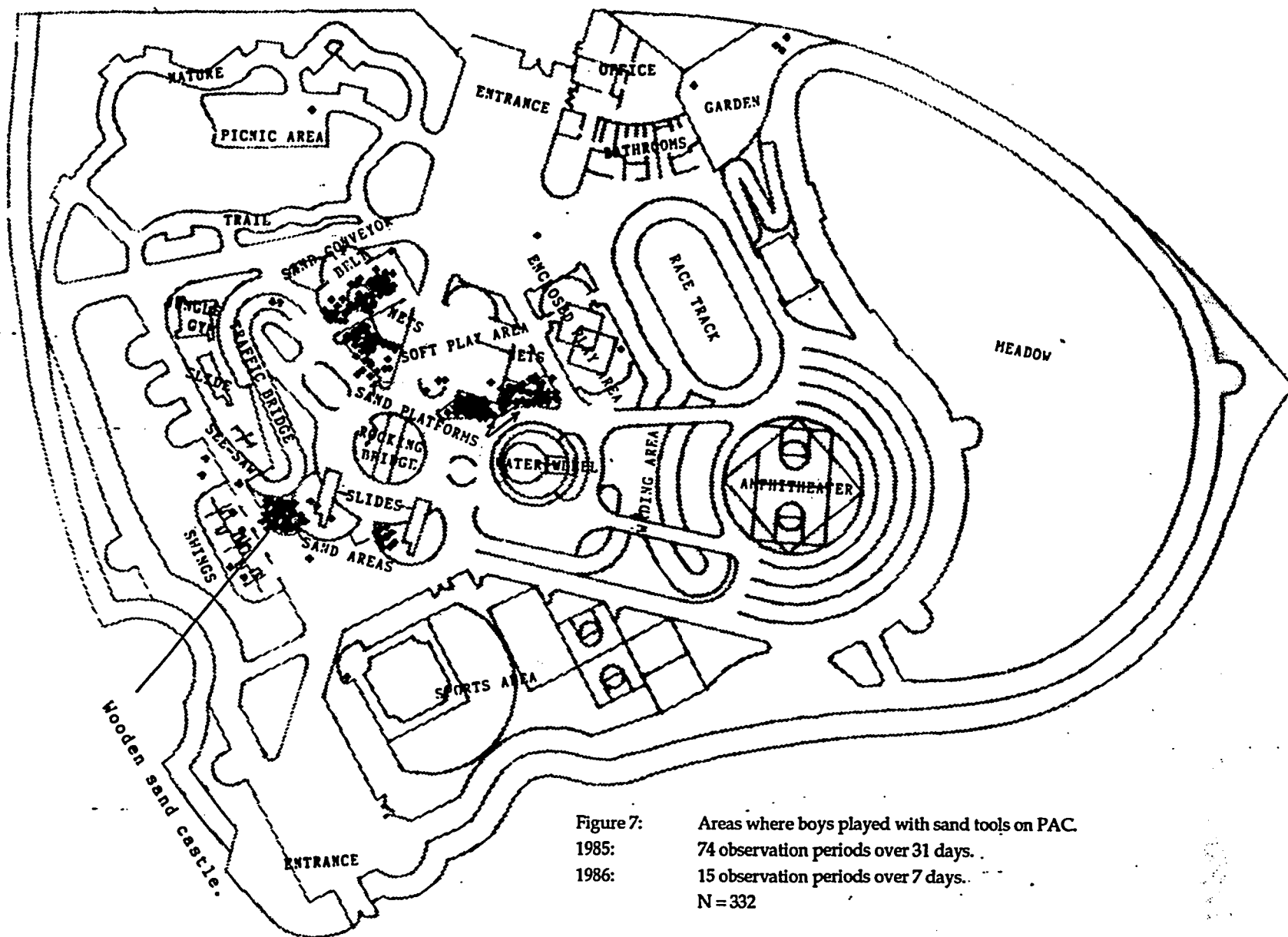
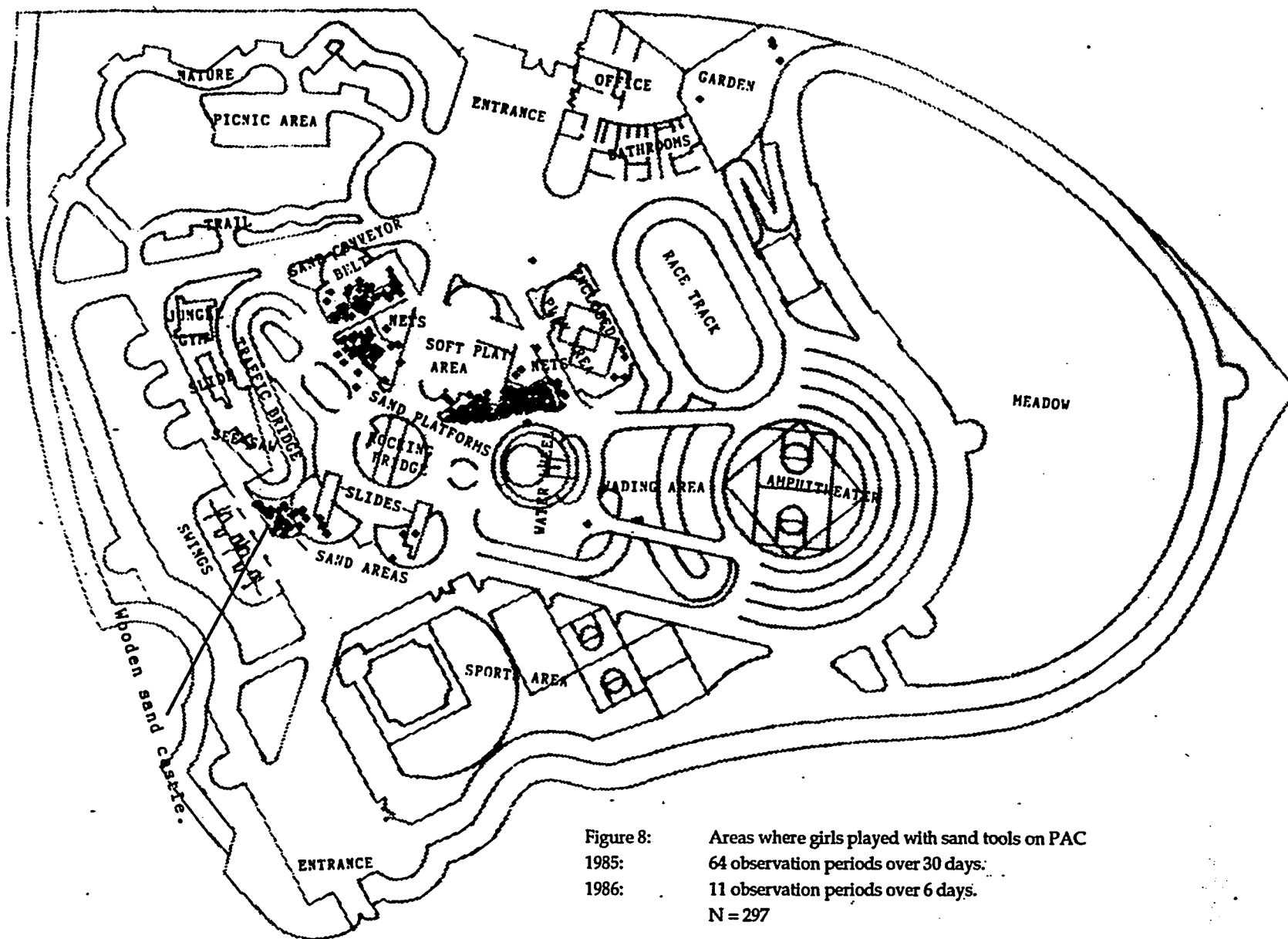


Figure 7: Areas where boys played with sand tools on PAC.
 1985: 74 observation periods over 31 days.
 1986: 15 observation periods over 7 days.
 N = 332



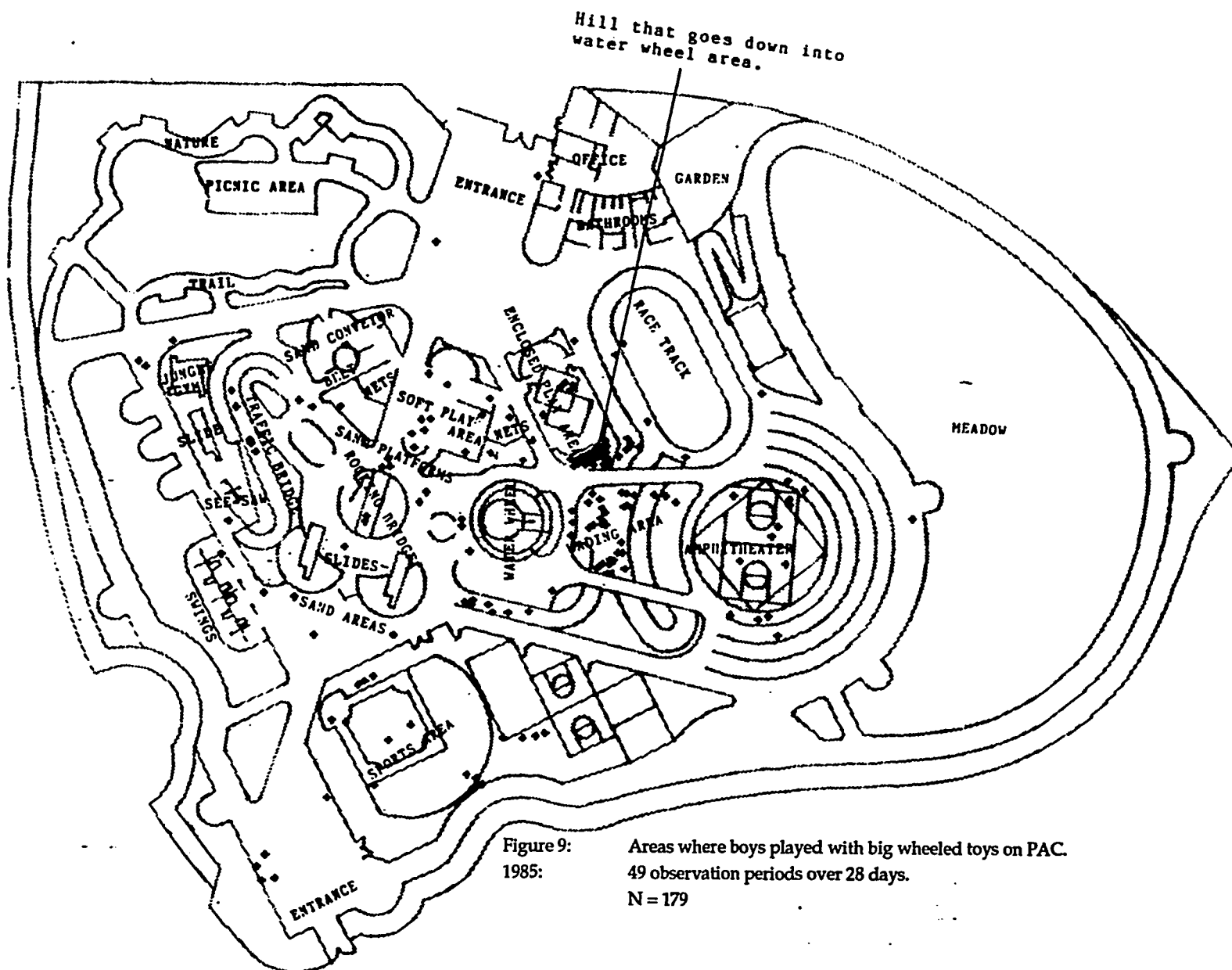


Figure 9:
1985:

Areas where boys played with big wheeled toys on PAC.
49 observation periods over 28 days.
N = 179

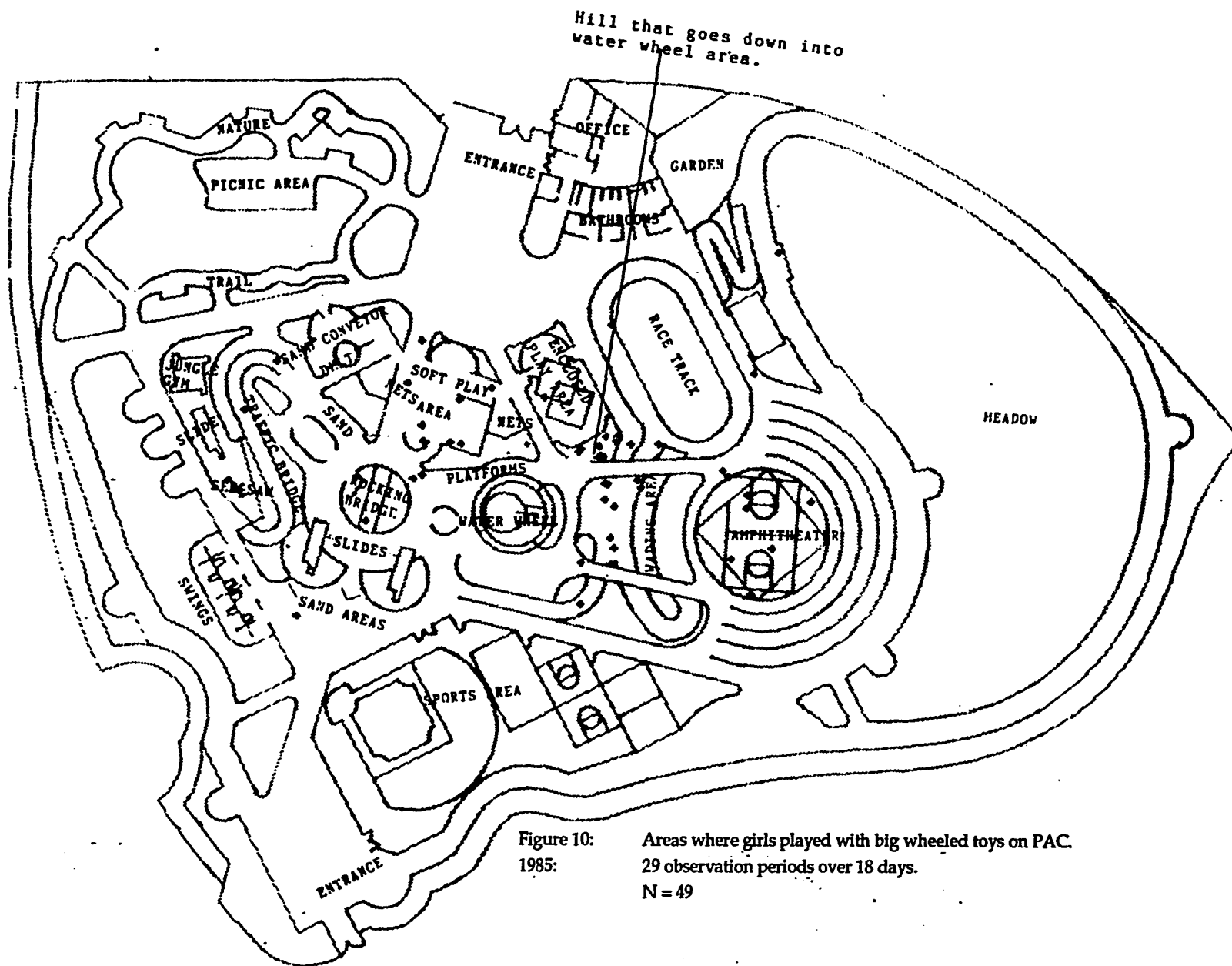


Figure 10: Areas where girls played with big wheeled toys on PAC.
1985: 29 observation periods over 18 days.
N = 49

The boys used the balls significantly more often than the girls ($\chi^2=13.1$, with 1 d.f., $p < .01$). (See Figure 11 and Figure 12). The observations of boys using the balls are densest in areas involving games, namely, the meadow (children rarely used this area on their own), the baseball diamond, the basketball court and the volleyball/basketball court. Observations of ball use are also noted in the waterwheel area where there were beach balls. A few boys using balls were also noted on playground equipment and on pathways. Girls seen using balls were observed mainly on the volleyball/basketball court and the beanbag area. Some girls were noted using balls in the meadow and the baseball diamond, but not nearly as often as the boys.

The percentage of time the girls (14%) were observed playing with the toy replicas was similar to the boys (12%). As noted previously this category is somewhat of a potpourri. However, since the toys were placed in the same areas each day, one can somewhat safely assume which toys were observed. In the sand areas, both boys and girls were playing with trucks (see Figure 13 and Figure 14). These areas on the boys' map look denser than on the girls' map. These findings are similar to the play repertoire findings, in which boys were observed playing with the miniature vehicles more than the girls (see Play Repertoire section). The children played with the musical instruments and costume hats in the area nearest the bench in the soft-play area. Both maps look as though similar numbers of boys and girls

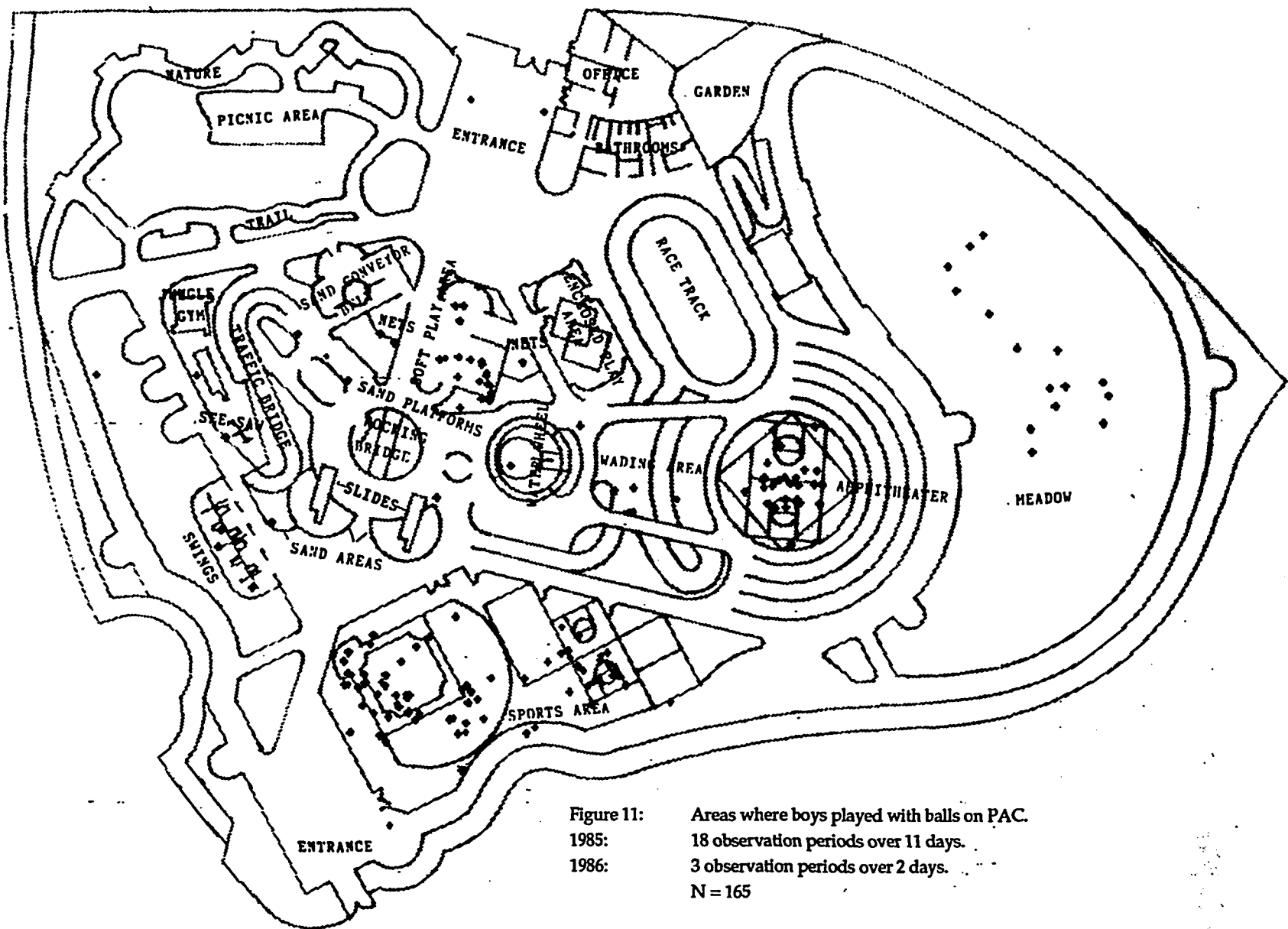


Figure 11: Areas where boys played with balls on PAC.
 1985: 18 observation periods over 11 days.
 1986: 3 observation periods over 2 days.
 N = 165

+

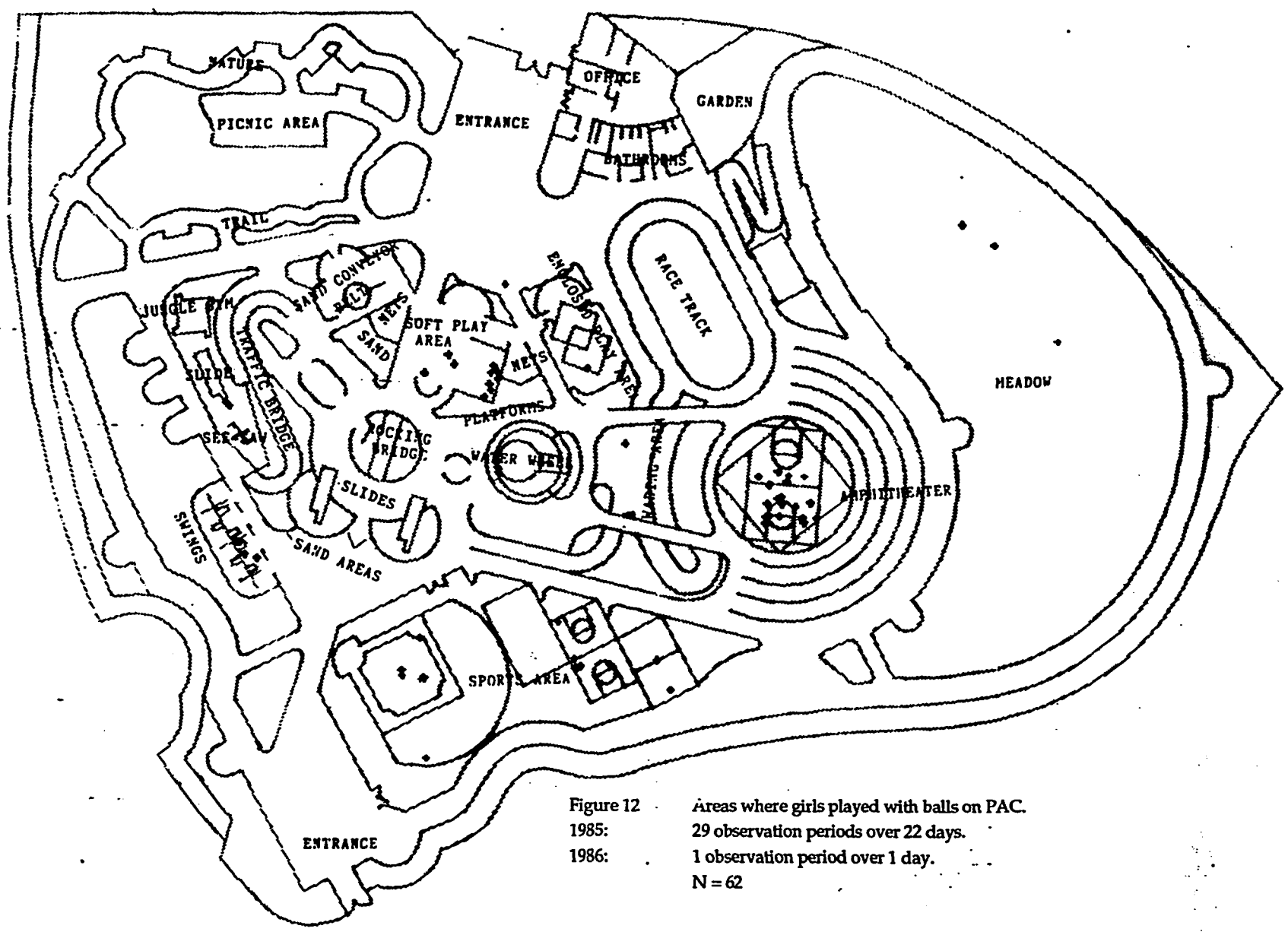


Figure 12 Areas where girls played with balls on PAC.
 1985: 29 observation periods over 22 days.
 1986: 1 observation period over 1 day.
 N = 62

+

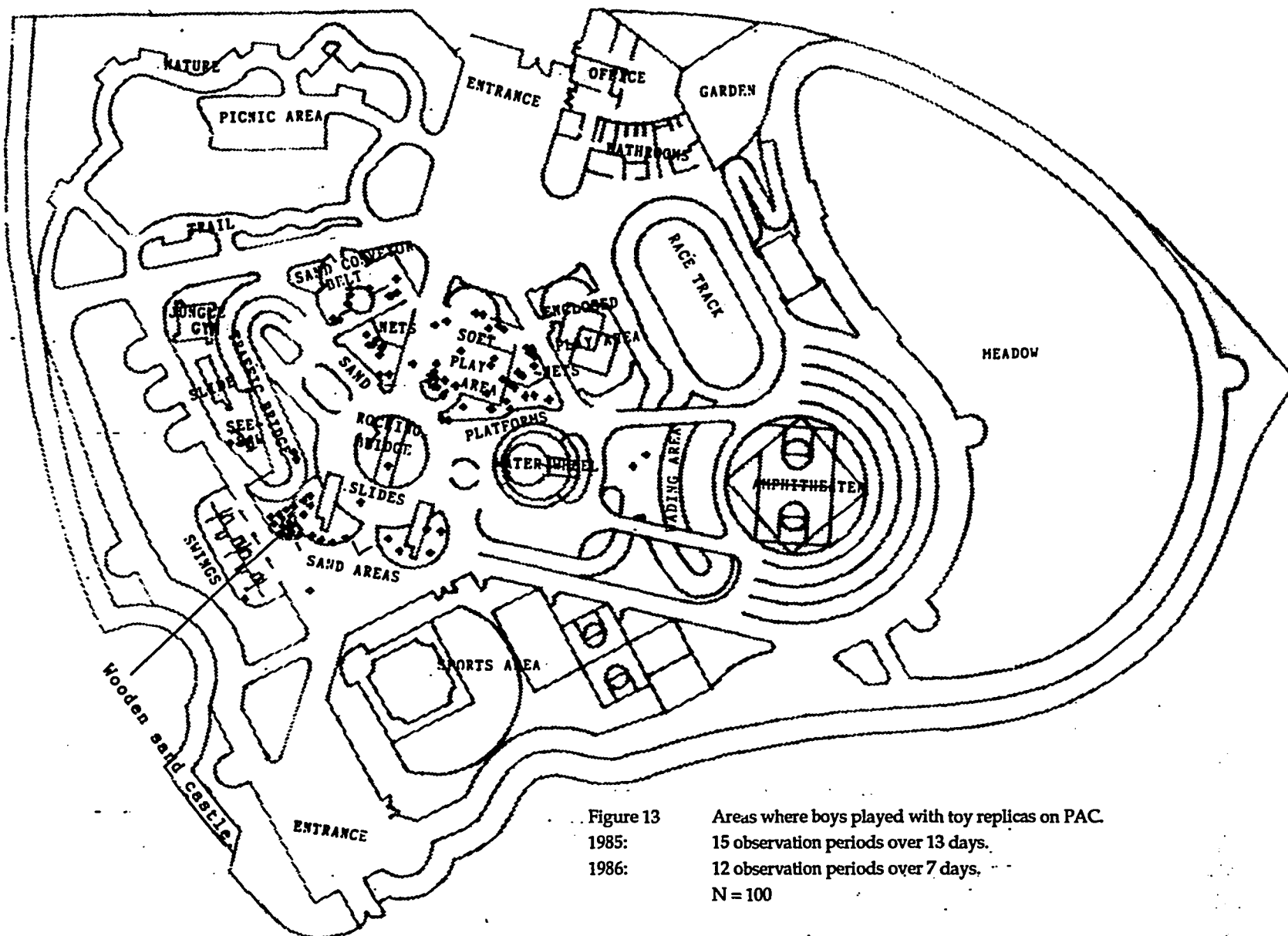


Figure 13
1985:
1986:

Areas where boys played with toy replicas on PAC.
15 observation periods over 13 days.
12 observation periods over 7 days.
N = 100

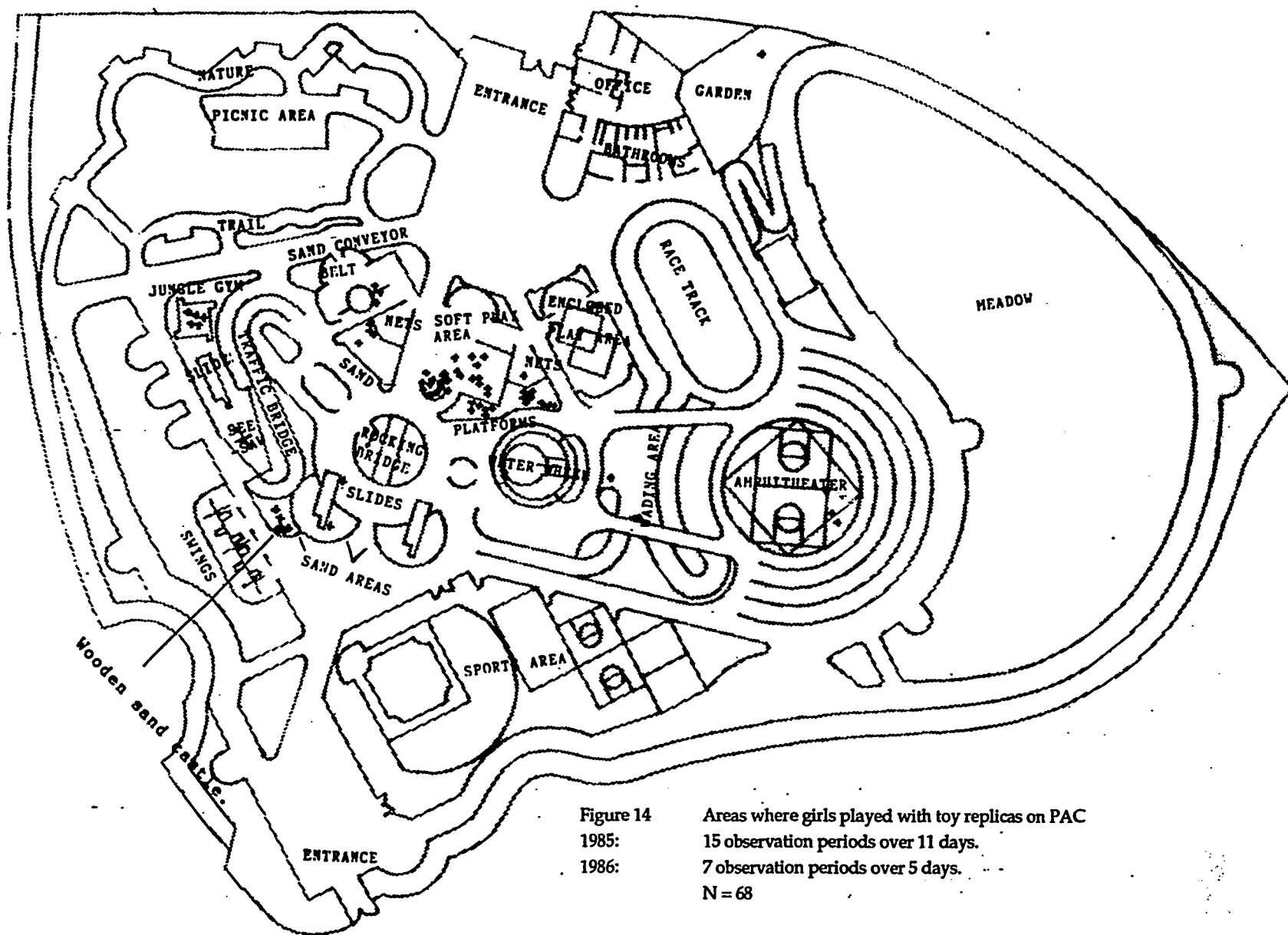


Figure 14

1985:

1986:

Areas where girls played with toy replicas on PAC

15 observation periods over 11 days.

7 observation periods over 5 days.

N = 68

were observed. In the center of the area were wooden miniature farm animals with a wooden farm; more girls seemed to be observed in this area than boys. The boys were also observed with toy replicas in the nets. Unfortunately, it is unclear as to what specific toys these actually were. The same is true for the girls observed with toy replicas on the jungle gym.

Both groups of children were least observed using the blocks (see Figure 15 and Figure 16). Both the boys and the girls were observed playing with them in the soft-play area where the blocks had been placed. Both the boys' and girls' maps show blocks in the net area that is adjacent to the soft-play area. Interestingly, both groups of children also took blocks to the basketball court in the sports area once again probably to be in the shade. As previously mentioned, it is possible that if larger building materials were provided, the children would have used them more.

Locations Where Children of Different Ages Were Observed With Toys

The observations recorded for children in all three age groups, 3- to 5-year olds, 6- to 8-year olds, and 9- to 12-year olds were not significantly different (see Table 6). For all three age groups the children observed with the sand tools were in the sand areas and the garden area with few

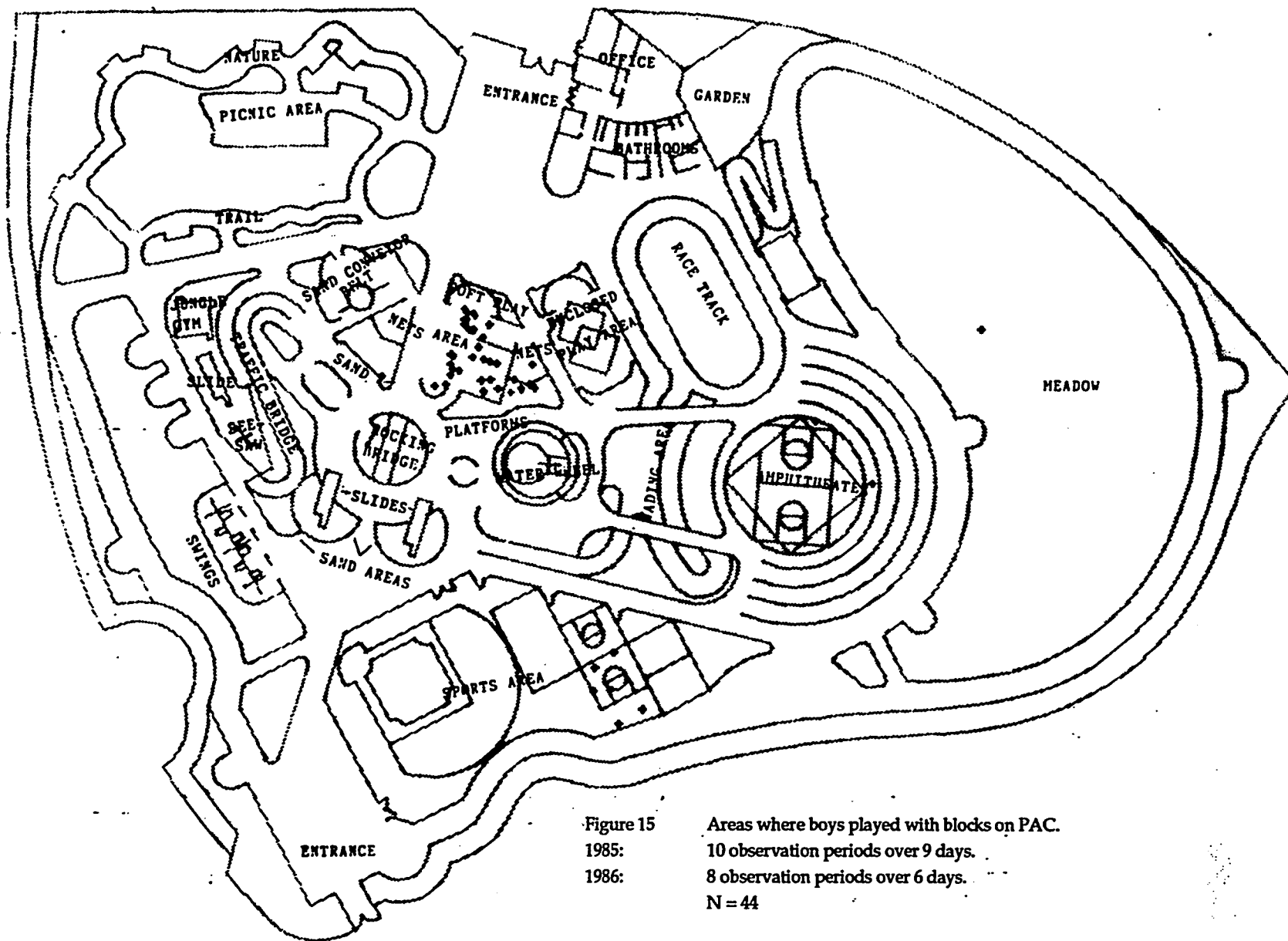


Figure 15
1985:
1986:

Areas where boys played with blocks on PAC.
10 observation periods over 9 days.
8 observation periods over 6 days.
N = 44

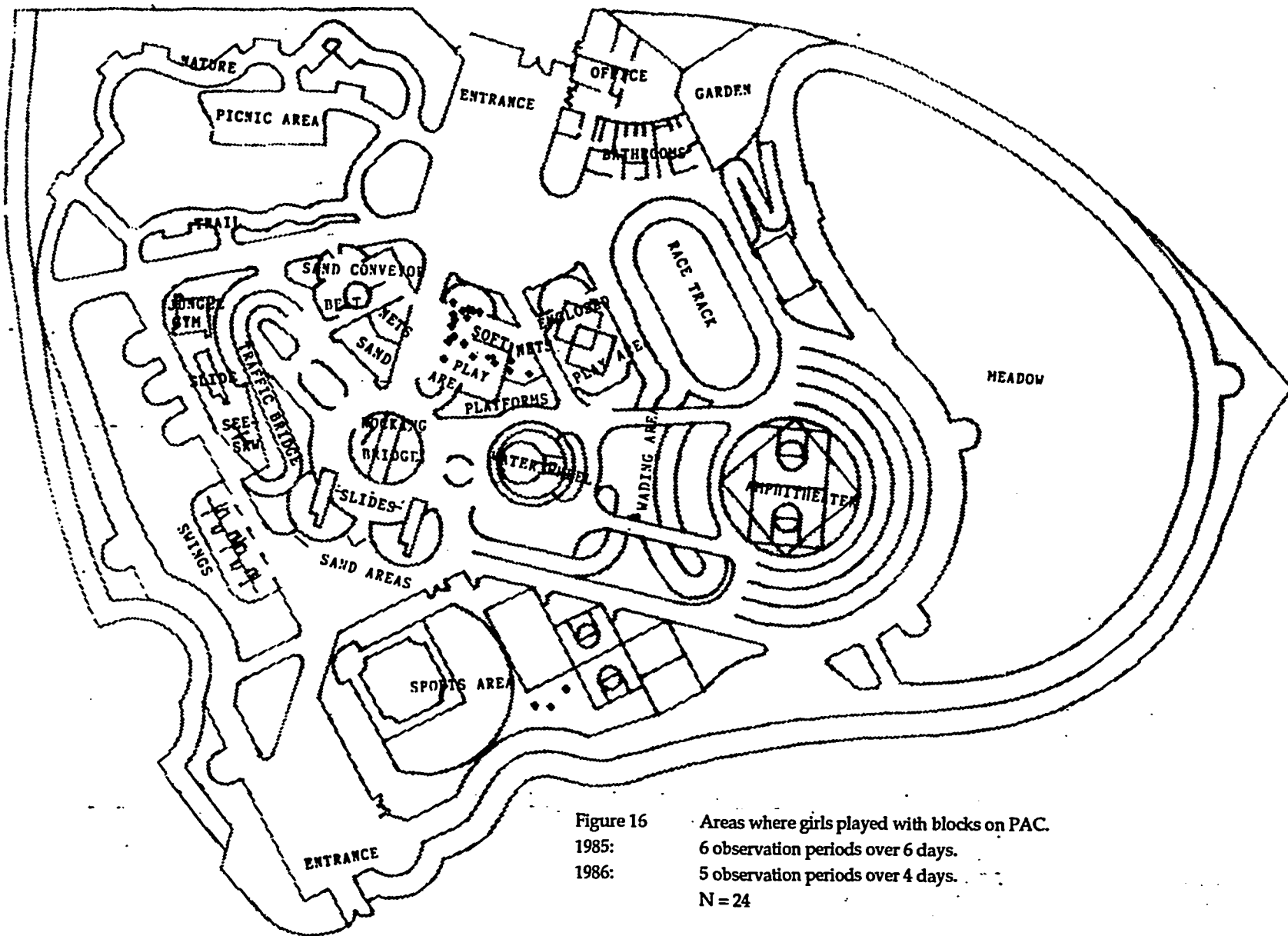


Figure 16
1985:
1986:

Areas where girls played with blocks on PAC.
6 observation periods over 6 days.
5 observation periods over 4 days.
N = 24

Table 6

Number and Percent of Times Children Ages 3-5, 6-8 and
9-12 Observed With Each Toy: Behavioral Mapping Data

<u>Age</u>	<u>3-5^a</u>		<u>6-8^b</u>		<u>9-12^c</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Sand Tools	316	55%	172	42%	38	29%
Wheeled Toys	72	13%	98	24%	41	31%
Balls	48	8%	78	19%	28	21%
Replicas	107	19%	42	10%	8	6%
Blocks	30	5%	17	4%	16	12%
Total ^d	573	100%	407	100%	131	100%

^aTotal sample of 3-5 year olds=4523. ^bTotal sample of 6-8 year olds =3539. ^cTotal sample of 9-12 year olds=1247.

^d $\chi^2=5.3$, with 4 d.f., n.s.

exceptions (see Figures 17-19). A few 3- to 5-year olds were observed with sand tools in the enclosed soft-play area. A few 6- to 8-year olds were observed with sand tools on the swings and the traffic bridge. This finding may be because there were insufficient swings for the demand (only six). Children who may not have finished playing in the sand area, but who did not want to miss the opportunity of an empty swing, took their sand tools, most likely trucks, with them to the swings. Children observed on the bridge were probably "riding" small trucks. The 3- to 5-year olds (55%)

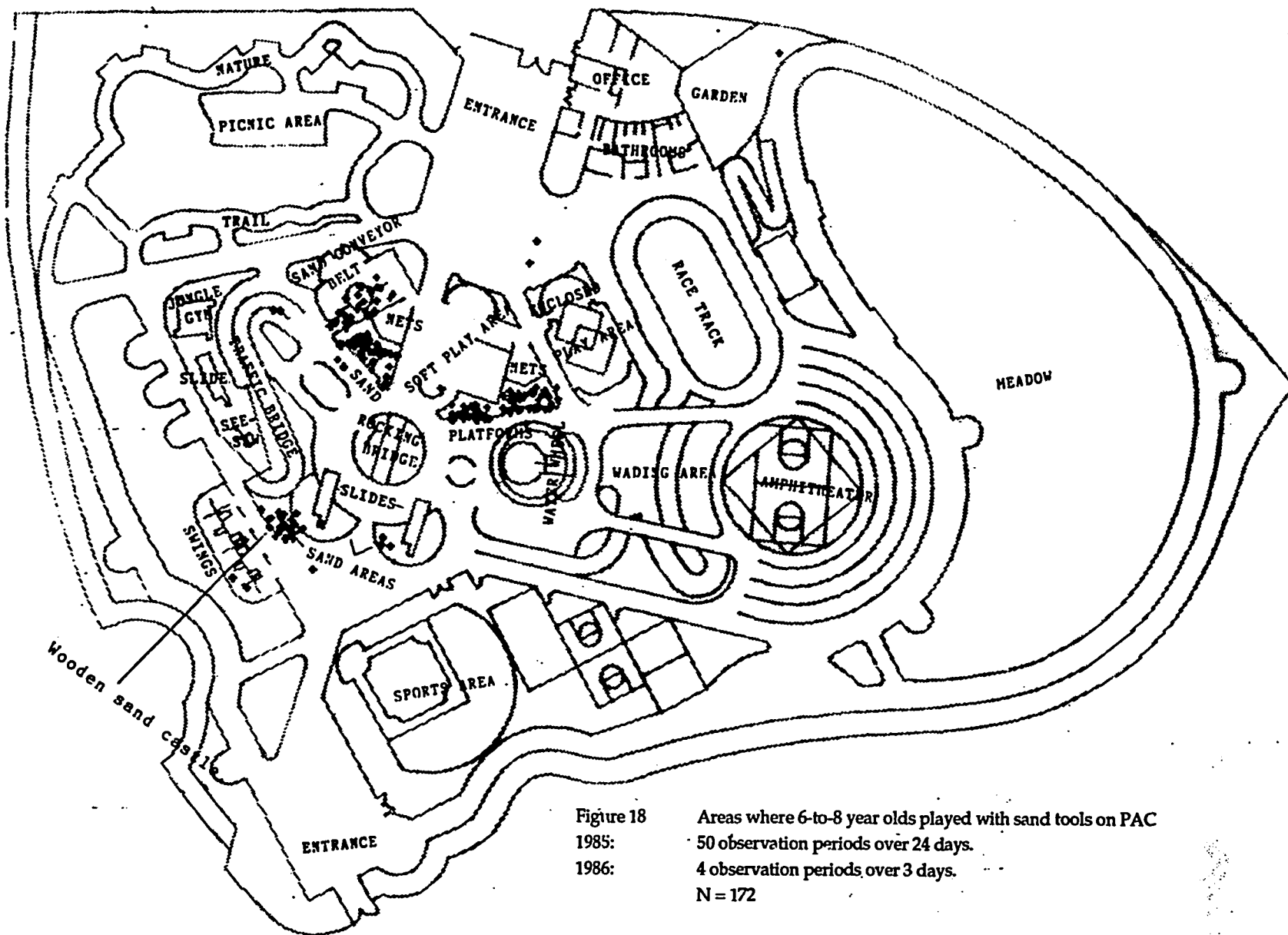


Figure 18
1985:
1986:

Areas where 6-to-8 year olds played with sand tools on PAC
50 observation periods over 24 days.
4 observation periods over 3 days.
N = 172

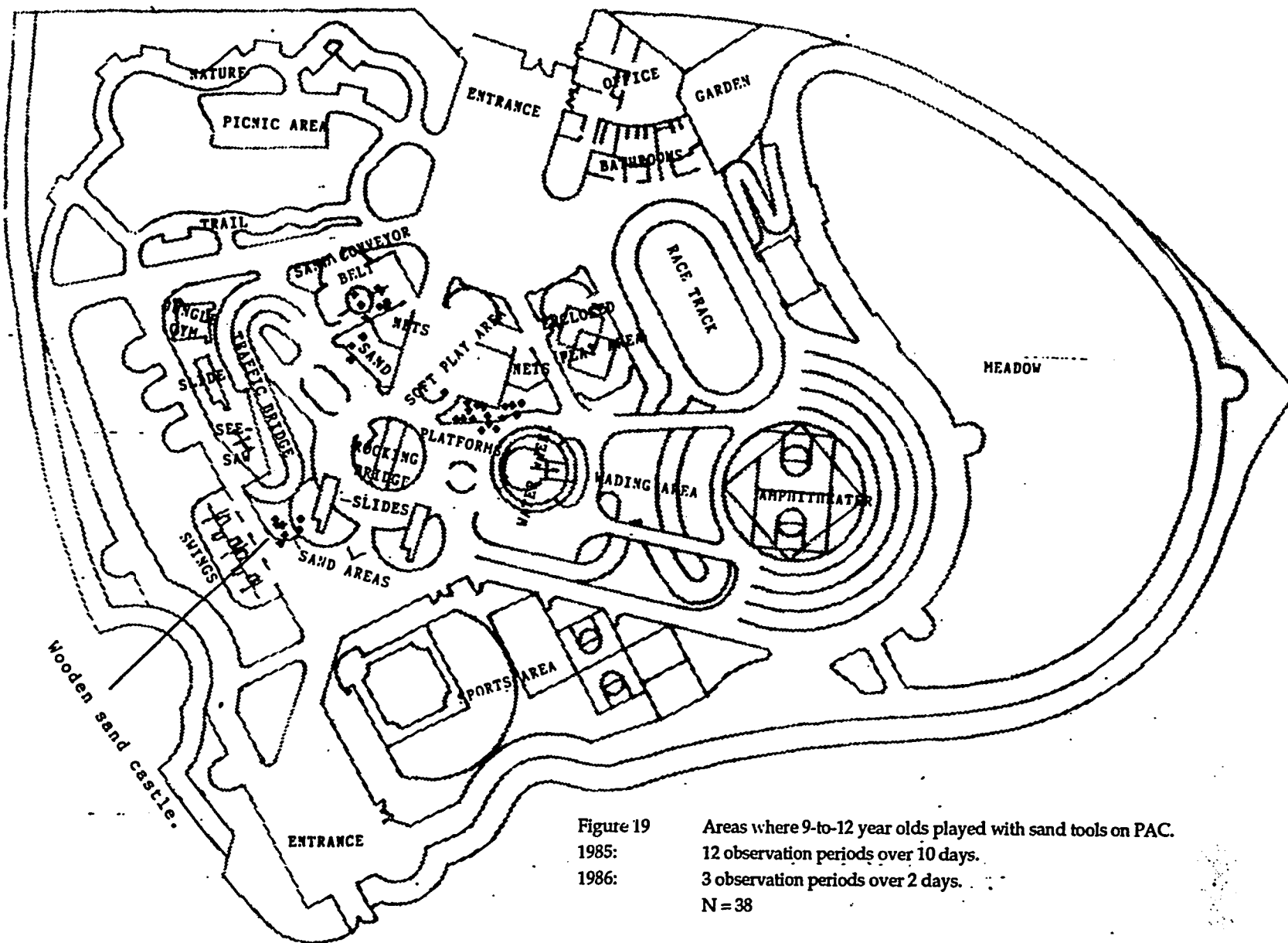


Figure 19
1985:
1986:

Areas where 9-to-12 year olds played with sand tools on PAC.
12 observation periods over 10 days.
3 observation periods over 2 days.
N = 38

and the 6- to 8-year olds (42%) were observed with the sand tools approximately half the time that they were observed with toys. The 9- to 12-year olds were recorded with the sand tools for approximately a third of the time (29%) that they were observed in possession of toys. All the children, however, were observed with sand tools more than with any other toy.

The 3- to 5-year olds (19%) also were observed with the toy replicas more than children in the other age groups (see Figure 20). The toy replicas basically stayed in the areas where they were originally placed, namely, the sand areas, waterwheel and soft-play areas. The only exceptions for the 3- to 5-year olds were the swings, rocking bridge, traffic bridge and nets. These were most likely observations of children playing with the trucks because children were observed pushing trucks along the bridges. The 6- to 8-year olds were observed playing with the toy replicas 10% of the time when observed with toys (see Figure 21). The most unusual location where they were observed playing with the toy replicas was the jungle gym. The 6- to 8-year olds were also observed with the toy replicas on the slide, see-saw and nets. The 9- to 12-year olds were observed with the toy replicas 6% of the time when observed with toys (see Figure 22). They were observed with toys only in the sand areas and garden area.

The 9- to 12-year olds were observed on big wheeled toys proportionately more than the other age groups (31%) in

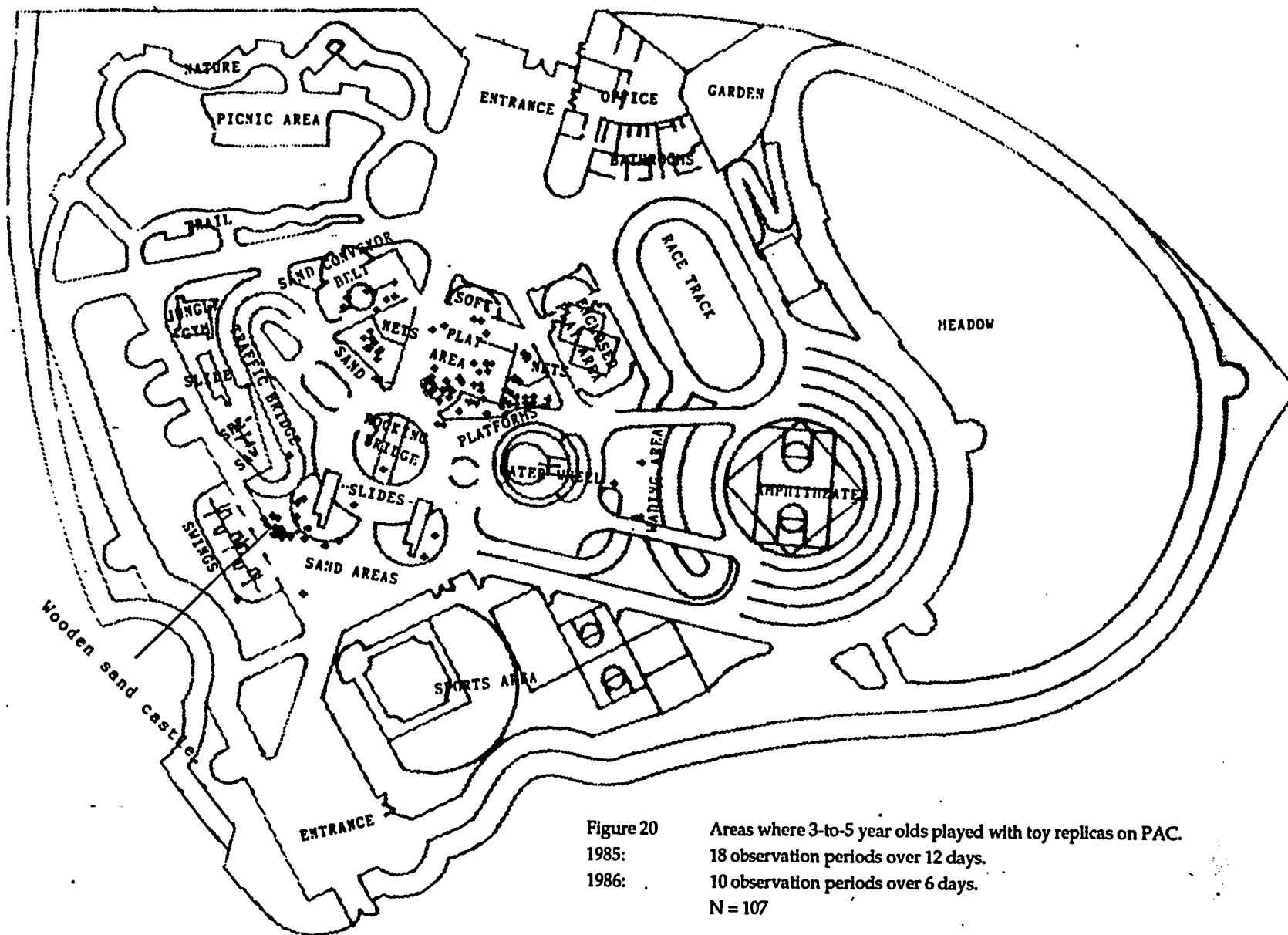


Figure 20

1985:

1986:

Areas where 3-to-5 year olds played with toy replicas on PAC.

18 observation periods over 12 days.

10 observation periods over 6 days.

N = 107



Areas where 6-to-8 year olds played with toy replicas on PAC.
6 observation periods over 6 days.
5 observation periods over 3 days.
N = 42

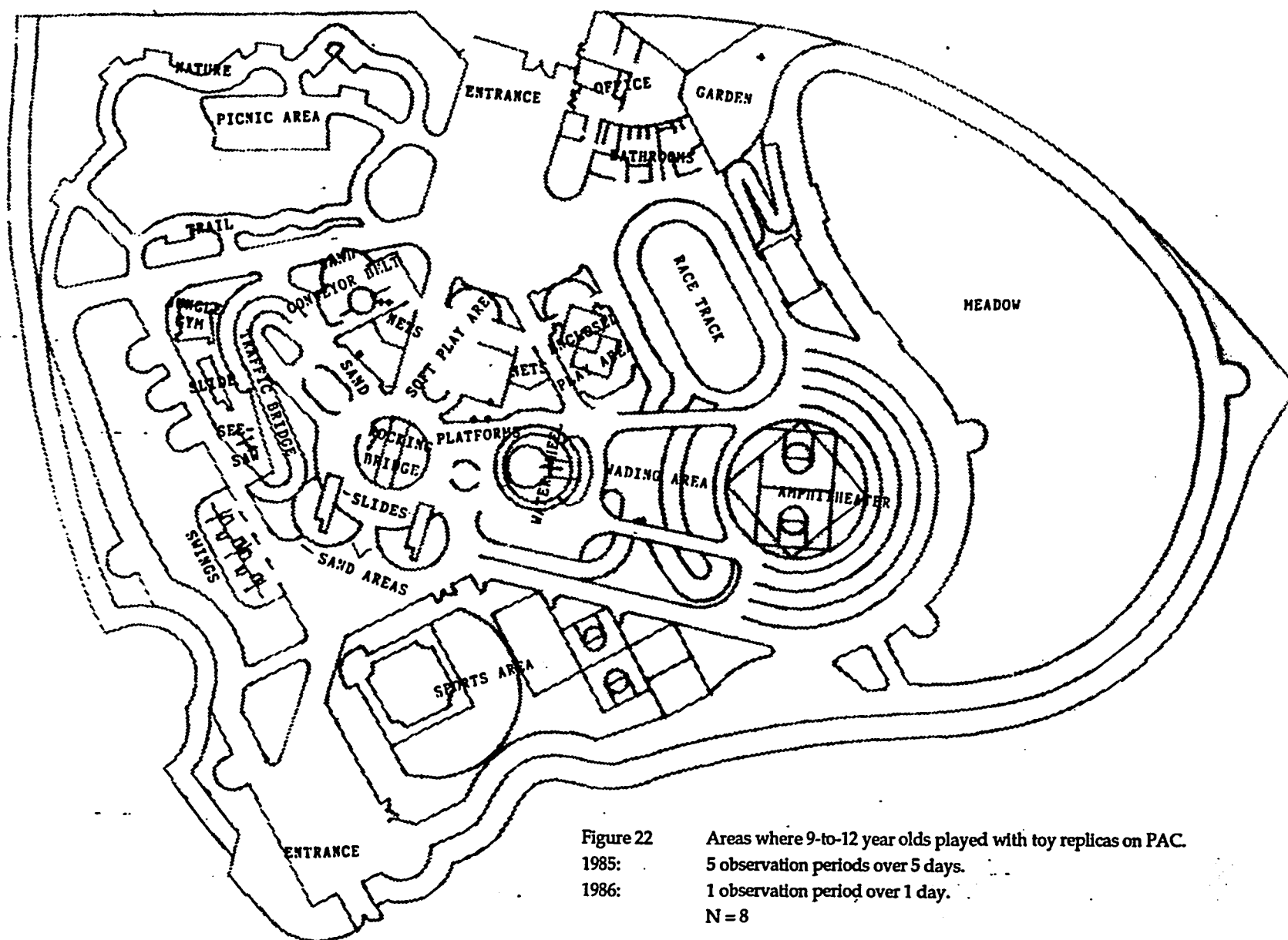


Figure 22

1985:

1986:

Areas where 9-to-12 year olds played with toy replicas on PAC.

5 observation periods over 5 days.

1 observation period over 1 day.

N = 8

their toy play (see Figure 25). The next group observed most on the big wheeled toys were the 6- to 8-year olds (24%) and then 3- to 5-year olds (13%) (see Figures 23 and 24). These findings are not surprising, especially when looking at the maps, because the primary location that the 9- to 12- year olds were observed using the big wheeled toys on was the hill in the wading area of the waterwheel. These children were probably looking for more of a challenge than the playground was intended to offer. Garvey (1977) notes that "upsetting an expectation" (p. 106) is also a type of play. So the challenge for the children may be twofold. One aspect of the challenge is using a partially hidden area in a way it is not supposed to be used.

The children were using the hill leading down to the waterwheel wading area in a way that the playground staff felt was dangerous. The second aspect is the thrill of going down a somewhat steep hill with a scooter. The 6- to 8-year olds were observed using the big wheeled toys in more places, but they appear to be observed using them mainly in the waterwheel area as well. The other location where they were observed while riding on the big wheeled toys was the amphitheater area, perhaps because it is a large open space with a hard surface (see Figure 24).

Observations of the 3- to 5-year olds seem to be more evenly distributed throughout the playground (see Figure 23). The playground itself must offer enough of a challenge for the 3- to 5-year olds, that most of the children did not

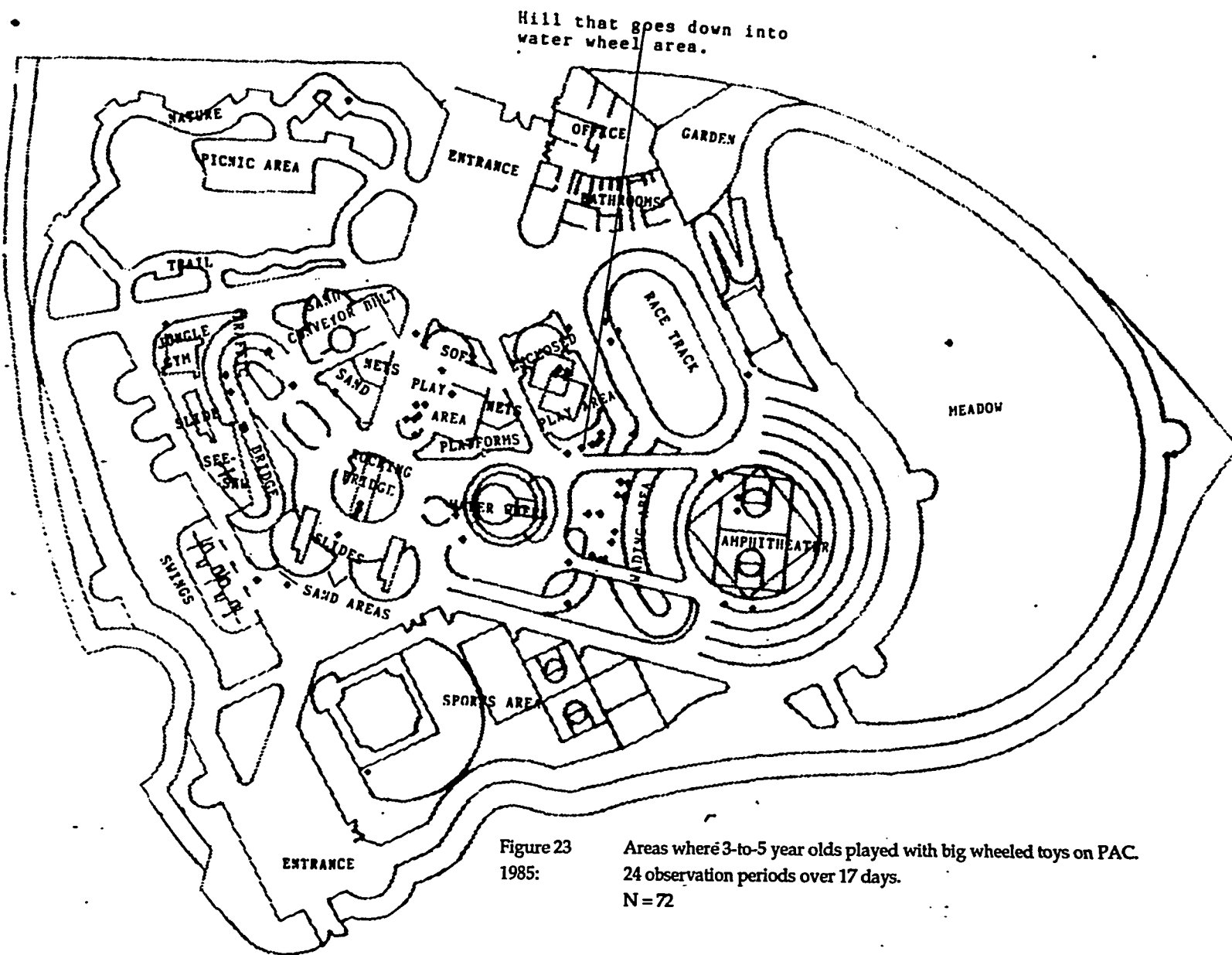


Figure 23
1985:

Areas where 3-to-5 year olds played with big wheeled toys on PAC.
24 observation periods over 17 days.
N = 72

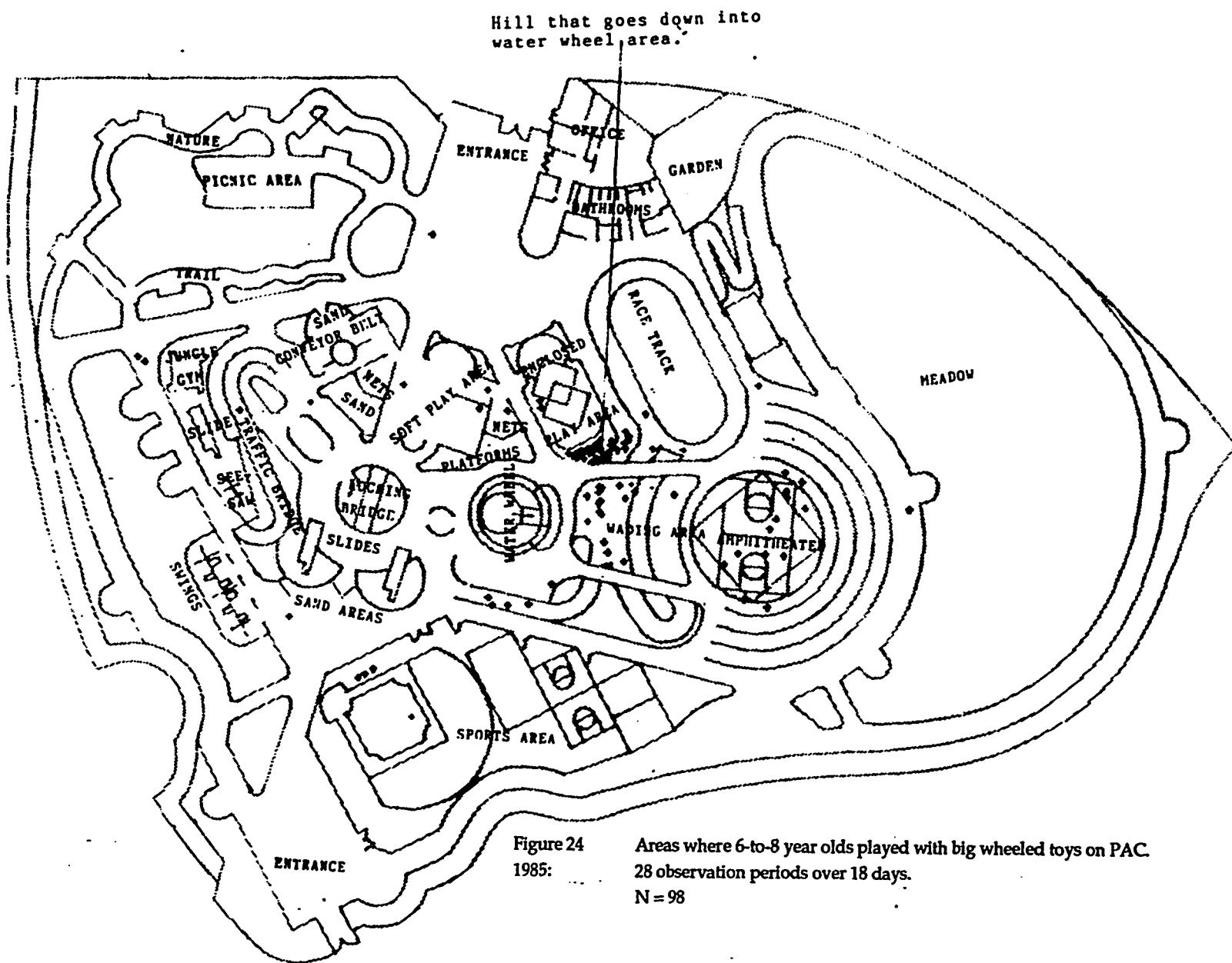


Figure 24
1985:

Areas where 6-to-8 year olds played with big wheeled toys on PAC.
28 observation periods over 18 days.
N = 98

Hill that goes down into
water wheel area.

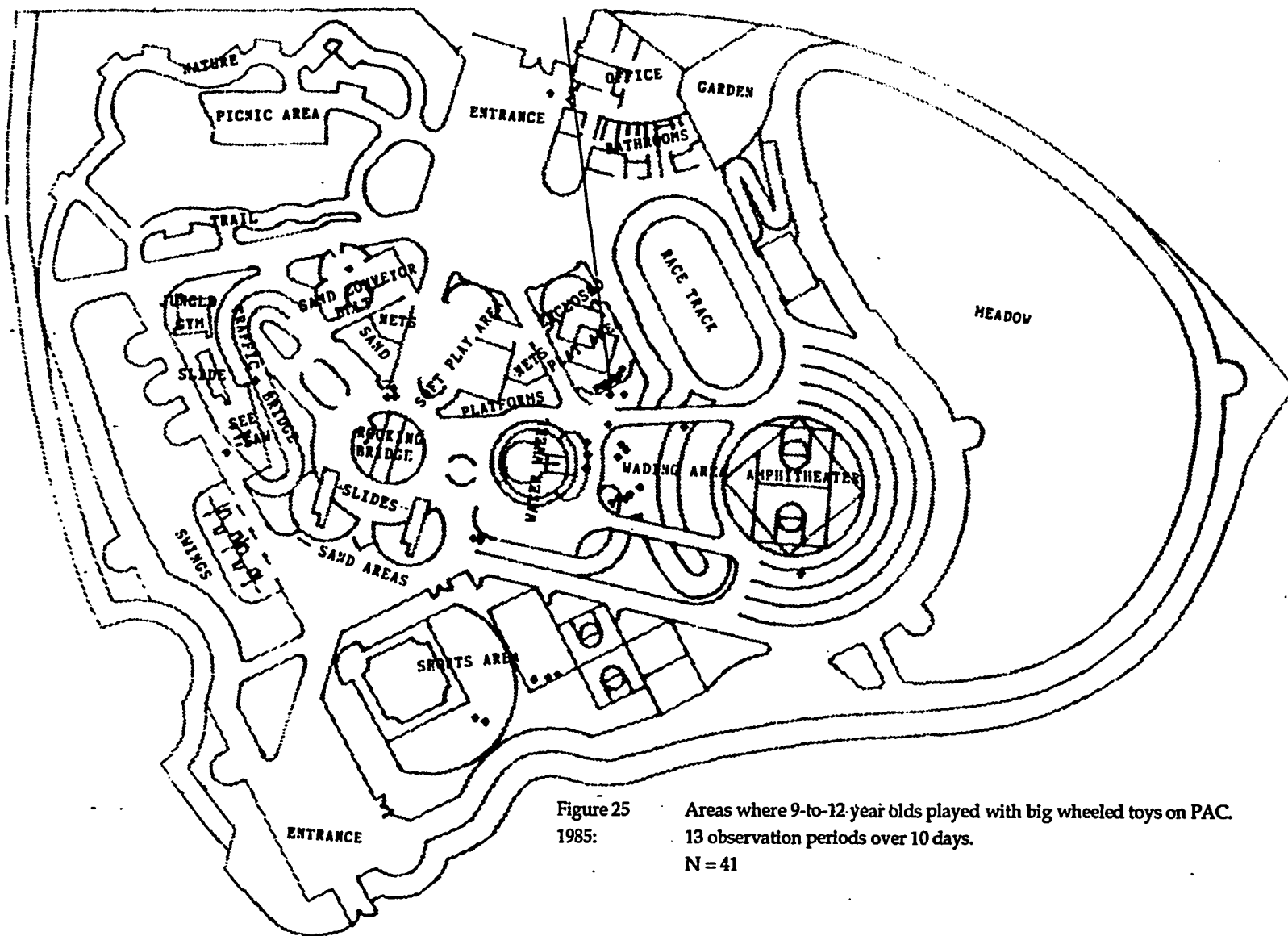


Figure 25
1985:

Areas where 9-to-12 year blds played with big wheeled toys on PAC.
13 observation periods over 10 days.
N = 41

need to produce any additional challenge for themselves. Their caretakers may have also exerted greater control over them than did the older children's caretakers.

The 9- to 12-year olds (21%) and 6- to 8-year olds (19%) were observed playing with sports equipment proportionately more in their toy play than the 3- to 5-year olds. This progression is understandable when considering Piaget's stages of games (Frost & Klein, 1983). At about seven years of age, children are entering into the latter part of concrete operations, and are becoming more social beings. This development enables them to participate in games bound by a prearranged set of rules which can be precisely communicated. According to Piaget, games with rules are the most mature form of play. These games are often of the competitive type such as sports games. It must be noted however that the concept of competition is laden with distinctive cultural characteristics (Laosa, 1989). Thus, competitive games should not be considered synonymous with games with rules because the concept of competition varies among different cultural groups, and even in sub-populations within these groups (e.g. gender differences, see Gilligan, et al., 1988). For instance, Kagan and Madgen (1971) found Mexican-American children to be more cooperative than Anglo-American children while Anglo-American children were found to be more competitive than Mexican-American children, suggesting a difference in cultural values. Also, Laosa (1989) notes that competition and cooperation are not

necessarily bi-polar. Some tasks are better solved cooperatively, while others are better performed competitively. Researchers must be careful not to judge others' competence based on their own cultural standards, but rather to recognize as well as consider these differences, so as not to mistake cultural difference as deficiency (Laosa, 1989).

The 9- to 12-year olds were observed with sports equipment (21%) primarily on the baseball diamond, volleyball/basketball court, and basketball court (see Figure 26). All three of these locations represent areas where competitive sports games usually occur. A couple of children were observed in the bean bag area, and one child was observed with a ball on a slide. (The latter is another example of using equipment in an unconventional manner.)

The 6- to 8-year olds were observed (see Figure 27) with sports equipment (19%), primarily on the baseball diamond, volleyball/basketball court, basketball court, meadow and bean bag areas. The baseball diamond, volleyball court and basketball court represent sports games areas. The children did not usually use the meadow on their own, so it is fairly safe to assume that an adult-organized game was occurring in the meadow area. The bean bag game can either be played individually or in groups. Children on their own can try to throw the bean bags into the holes of the frame, or the children can organize the game competitively seeing who can throw the most bean bags through the holes. Basketball

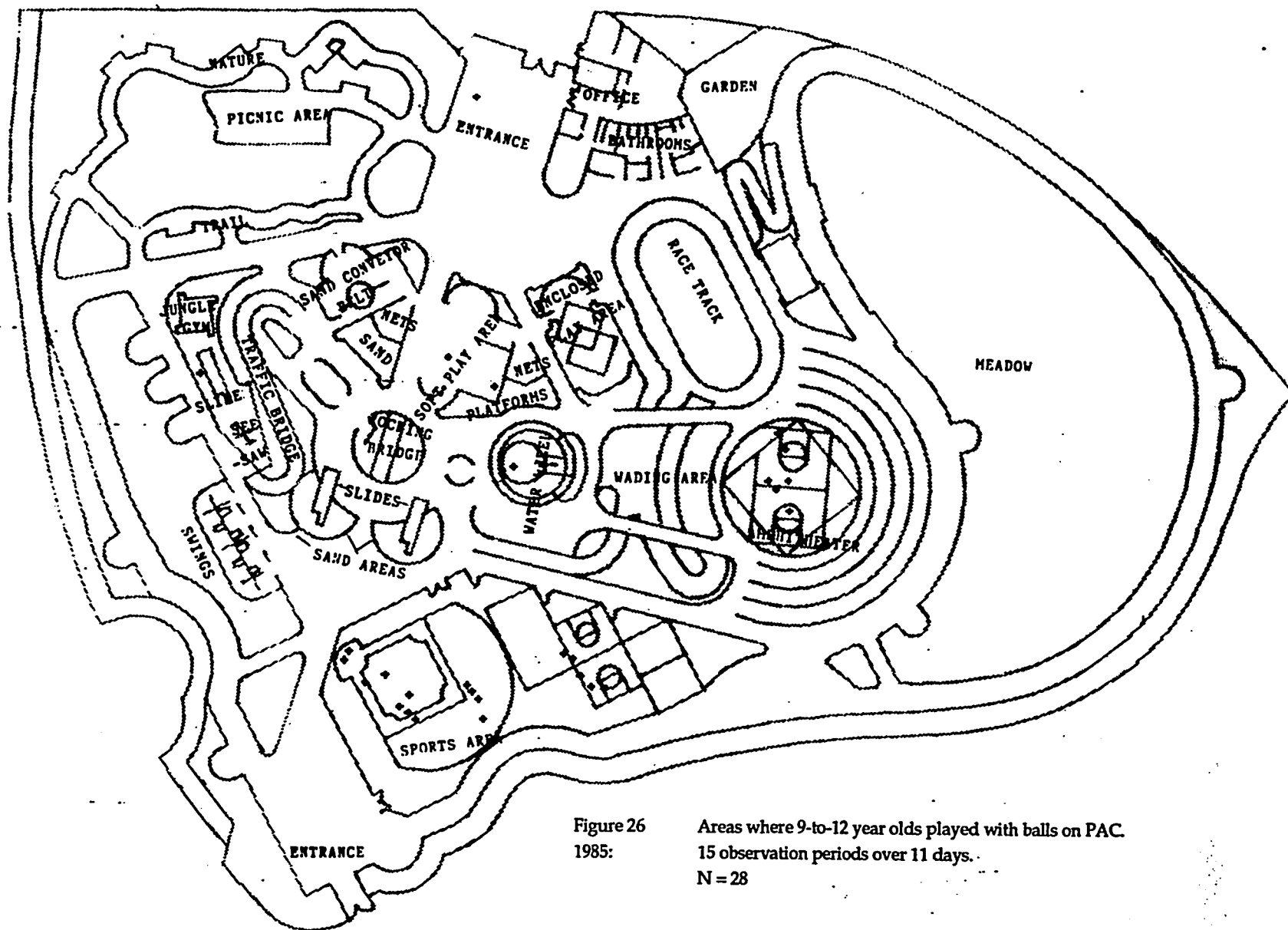


Figure 26
1985:

Areas where 9-to-12 year olds played with balls on PAC.
15 observation periods over 11 days.
N = 28

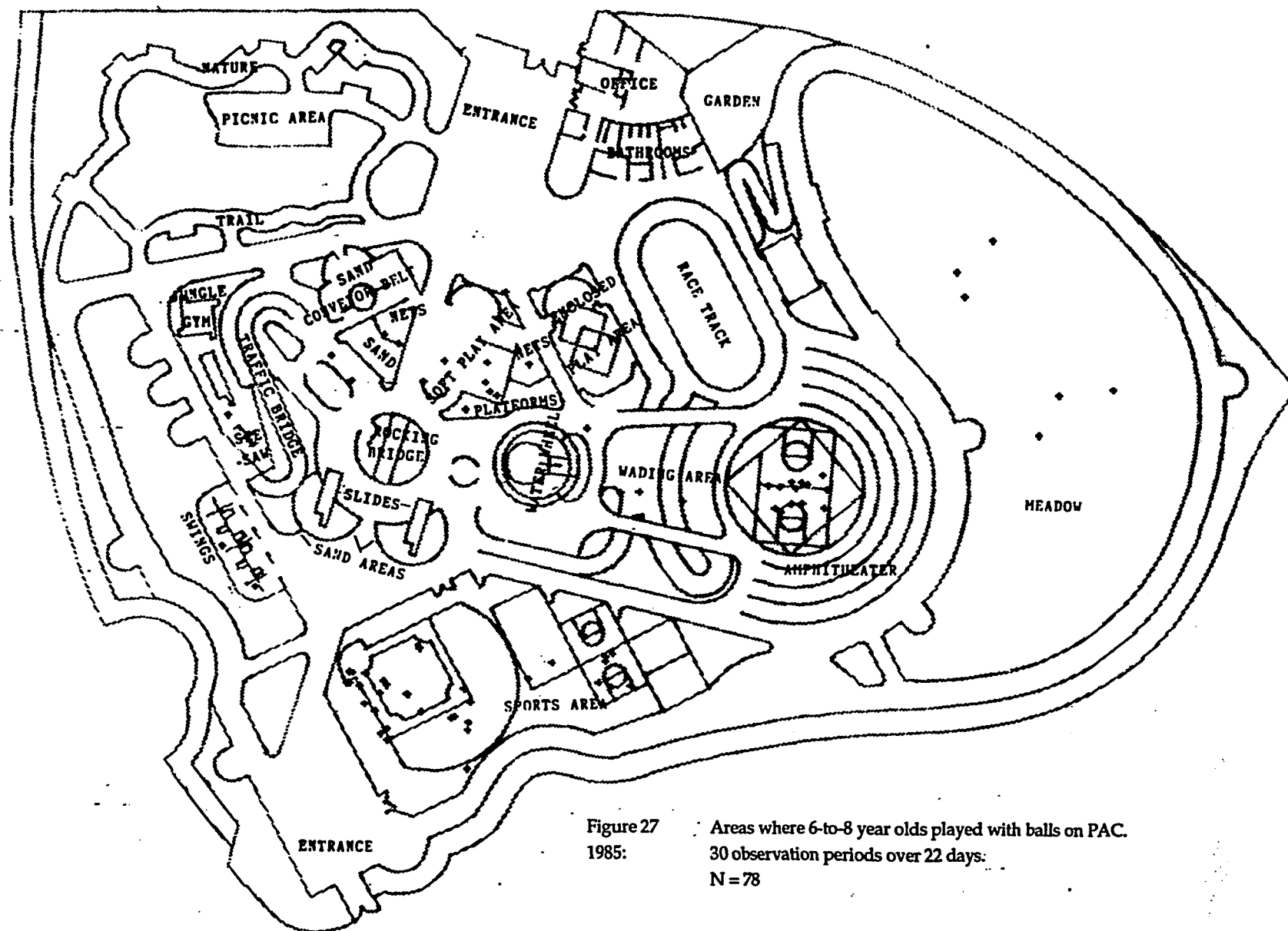


Figure 27
1985:

Areas where 6-to-8 year olds played with balls on PAC.
30 observation periods over 22 days:
N = 78

hoops can also be used this way. When looking at where the 3- to 5-year olds (8%) were observed playing with the sports equipment (see Figure 28), the children are in the bean bag area or around basketball hoops. Just a few are in the baseball diamond. Overall, the 3- to 5-year olds and the 6- to 8-year olds, respectively, seem to have distributed the sports equipment over more of the playground than the 9- to 12-year olds. These findings may be because they were more apt to play alone or to play less conventional games. The 3- to 5-year olds were observed playing with the sports equipment less than the 9- to 12-year olds. Studies by Garvey (1977) suggest that children's ability to participate in complex games develops from their first peek-a-boo games. Therefore, more age-appropriate sports equipment, not emphasizing competition, should be included on the playground for 3- to 5-year olds to assist them in developing the rudiments of games with rules. An example of a noncompetitive game is "parachute", where children standing in a circle all hold on to a parachute. One child at a time runs under the parachute, with everyone else holding it above their heads; or while holding the parachute, everyone meets in the center and falls down.

The 9- to 12-year olds (12%) were observed playing with blocks proportionately more in their toy play than other children (see Figure 31). They were observed playing with the blocks in the soft-play area where the blocks had been

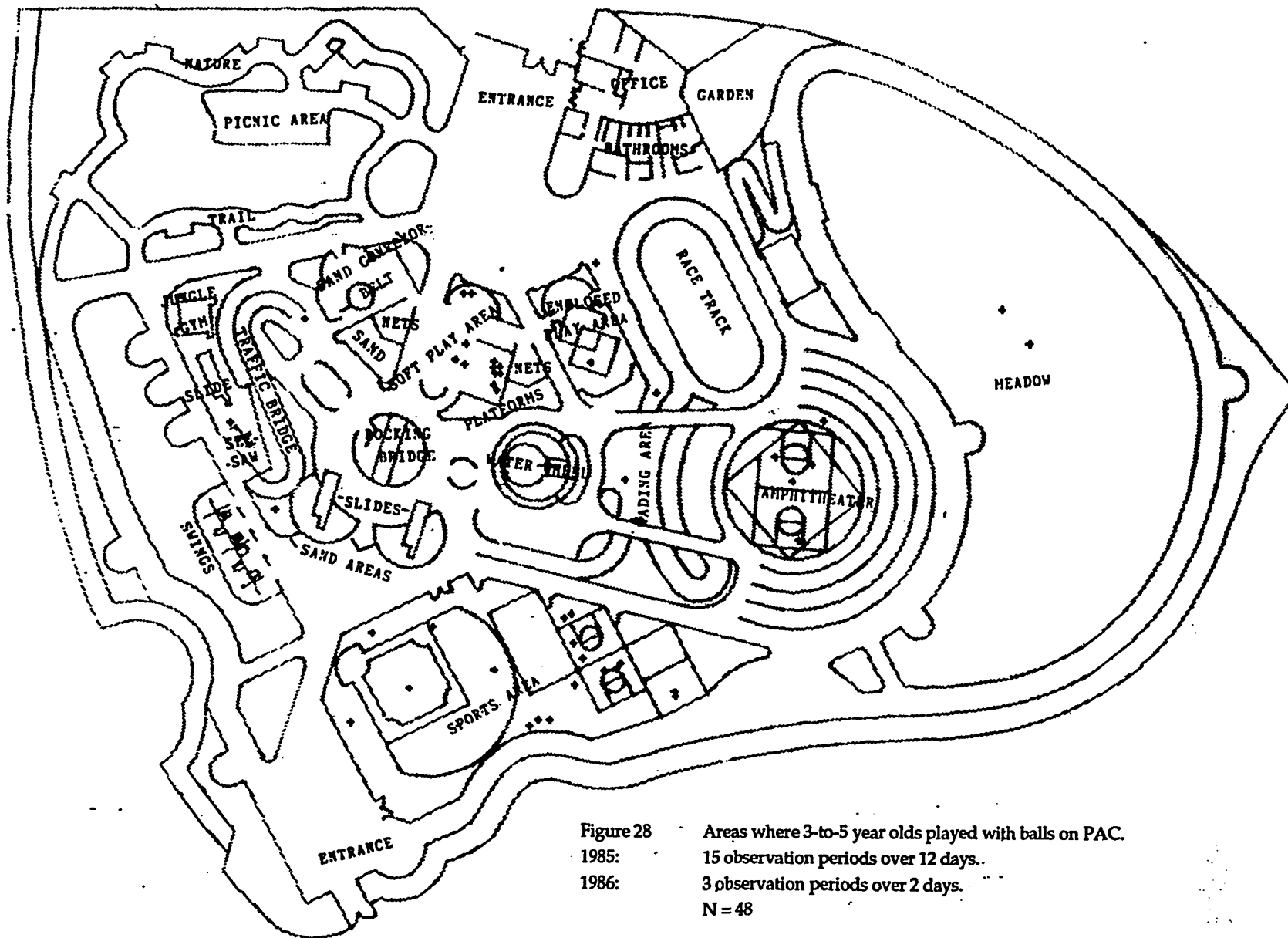


Figure 28

1985:

1986:

Areas where 3-to-5 year olds played with balls on PAC.

15 observation periods over 12 days.

3 observation periods over 2 days.

N = 48

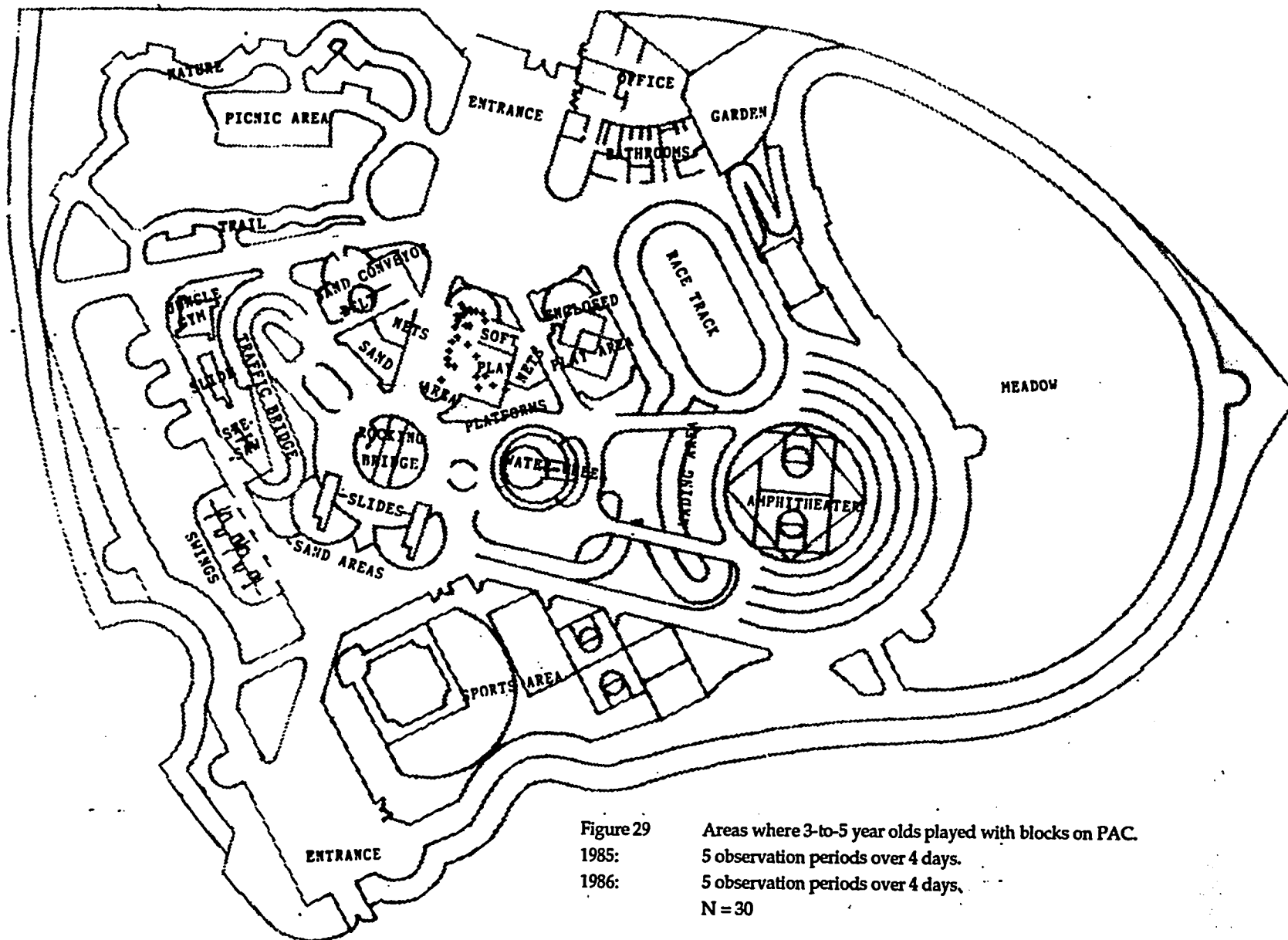


Figure 29
1985:
1986:

Areas where 3-to-5 year olds played with blocks on PAC.
5 observation periods over 4 days.
5 observation periods over 4 days.
N = 30

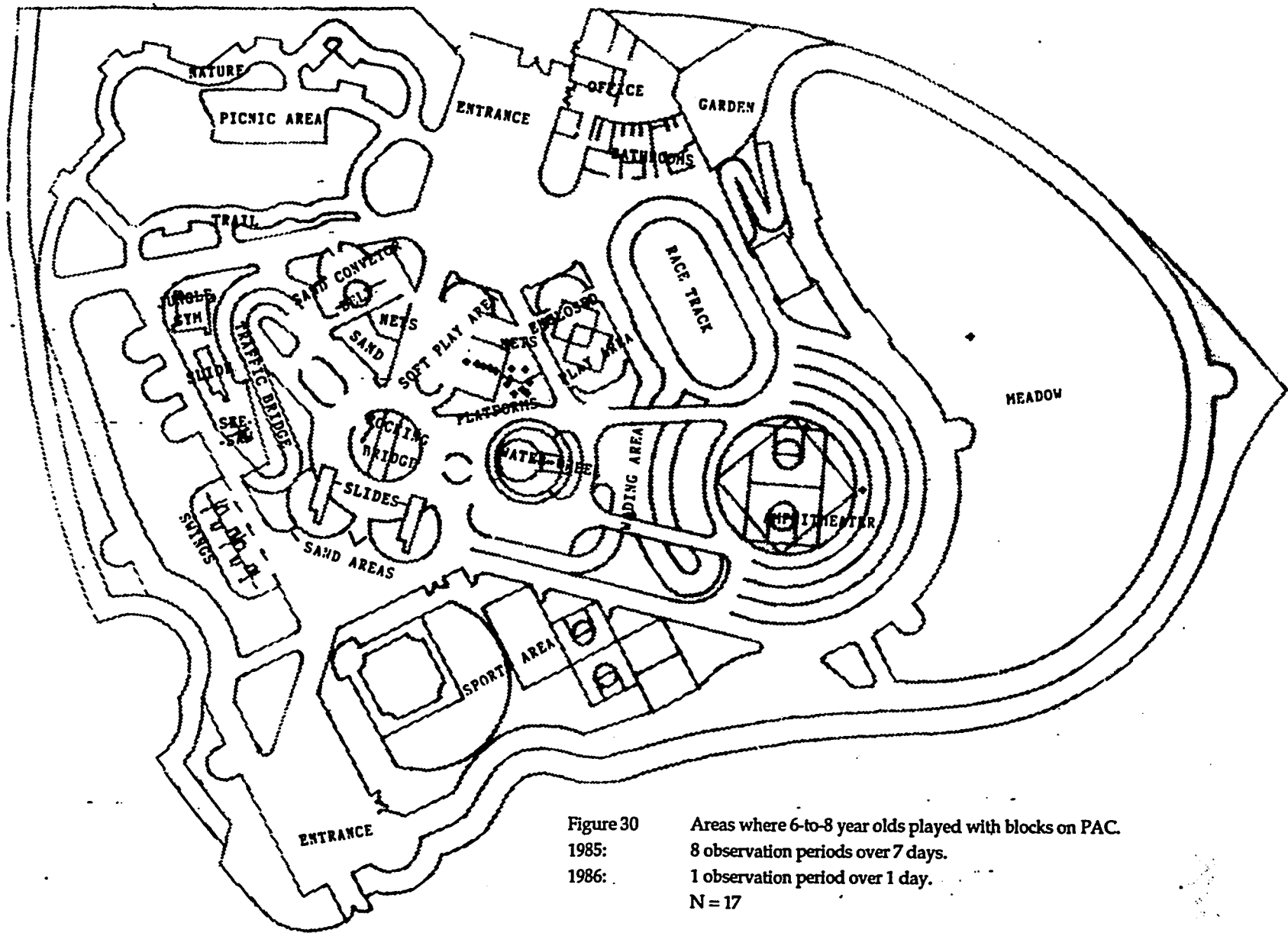


Figure 30

1985:

1986:

Areas where 6-to-8 year olds played with blocks on PAC.

8 observation periods over 7 days.

1 observation period over 1 day.

N = 17

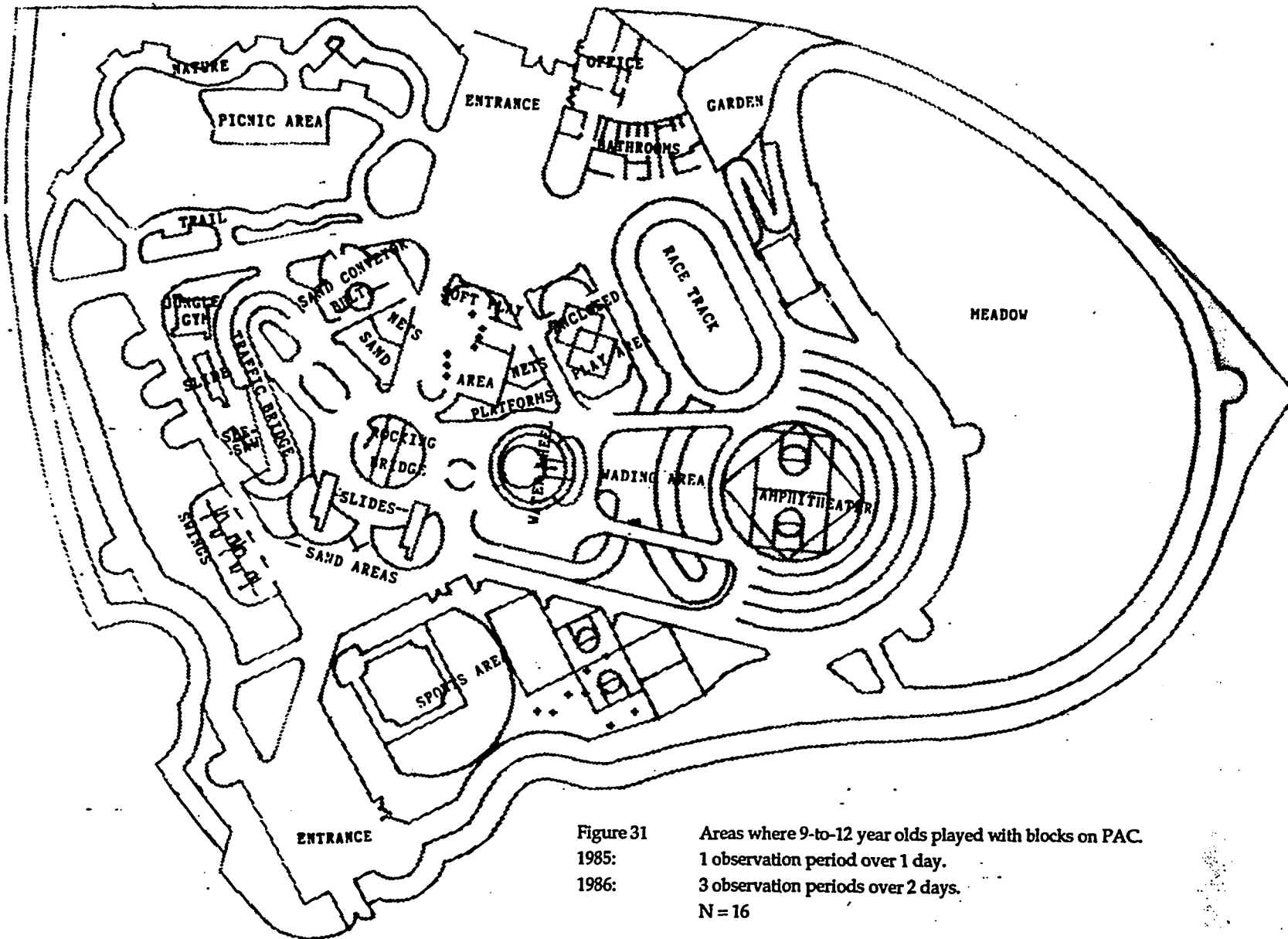


Figure 31

1985:

1986:

Areas where 9-to-12 year olds played with blocks on PAC.

1 observation period over 1 day.

3 observation periods over 2 days.

N = 16

placed, as well as near the basketball hoops. The 6- to 8-year olds (5%) were observed with blocks in the soft-play area, and the adjacent net area and sand platform (see Figure 30). A few of the 6- to 8-year olds were also seen with blocks in the amphitheater and meadow. The 3- to 5-year olds (4%) were observed with blocks in the soft-play area (see Figure 29). Except for the 9- to 12-year olds and the few instances of the 6- to 8-year olds, the blocks remained where they had been originally placed.

Locations Where Children With Different Disabilities Were Observed

According to the behavioral map findings, 16% of the observations made of children with emotional disabilities recorded them as having toys. Thirteen percent of the observations made of children without disabilities recorded them as having toys. Nine percent of the observations made of children with learning disabilities, children with physical disabilities, and children with mental retardation recorded them as having toys.

The differences may be explained by the fact that children with emotional disabilities for the most part were said to have attention deficit disorder. Thus, having a short attention span, they would not be expected to stay with one activity for a long period of time. The differences between children without disabilities and children with varying abilities is due to their supervision.

Caretakers of groups of children with disabilities were more apt to control their children's activities, not allowing them to search out the toys and loose parts as often.

Each of these special groupings of children was observed with sand tools more than any other kind of toy (see Table 7). With few exceptions, all the children that were observed playing with the sand tools were in the same areas (see Figures 32-36). Therefore, since all groups of children were observed playing with sand tools, these toys could be used as a bridge between children with and without disabilities when they are physically integrated. As mentioned previously, common interest in a toy can bring children to play together (Beckman & Kohl, 1984).

Another popular type of toy for children with emotional disabilities (31%), children with mental retardation (20%) and children without disabilities (21%) was the big wheeled toys. As can be seen in Figures 37-39, all three groups of children rode the big wheeled toys on the bridges, the waterwheel area and the soft-play area. Noting that children with and without disabilities were observed with scooters on the hill of the waterwheel area suggests that all children search for challenges on a playground. Therefore, when designing playgrounds that are accessible for all children, challenges for all children should be incorporated into the design. Also, because children with and without disabilities were observed riding big wheeled

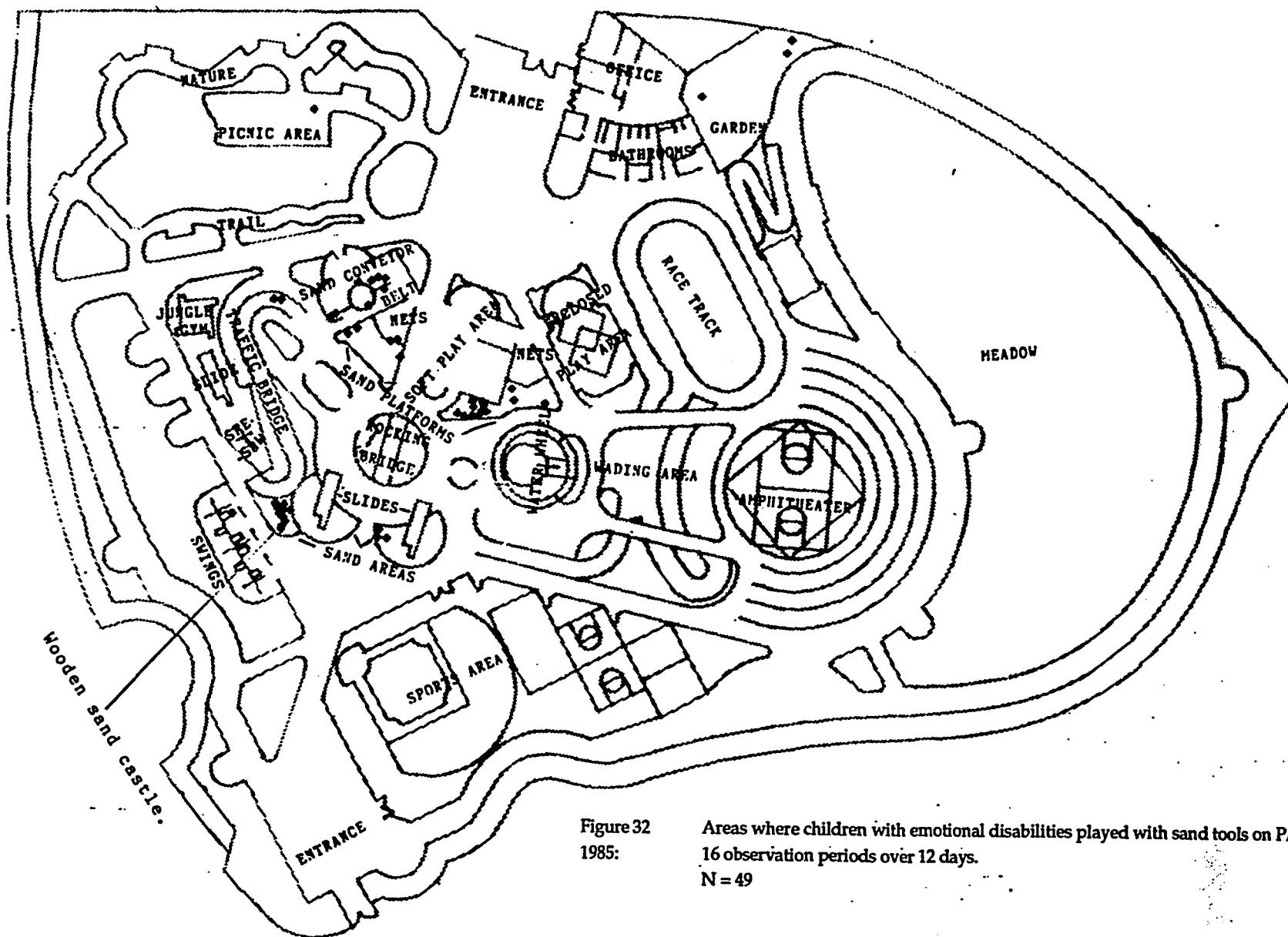


Figure 32
1985:

Areas where children with emotional disabilities played with sand tools on PAC.
16 observation periods over 12 days.
N = 49

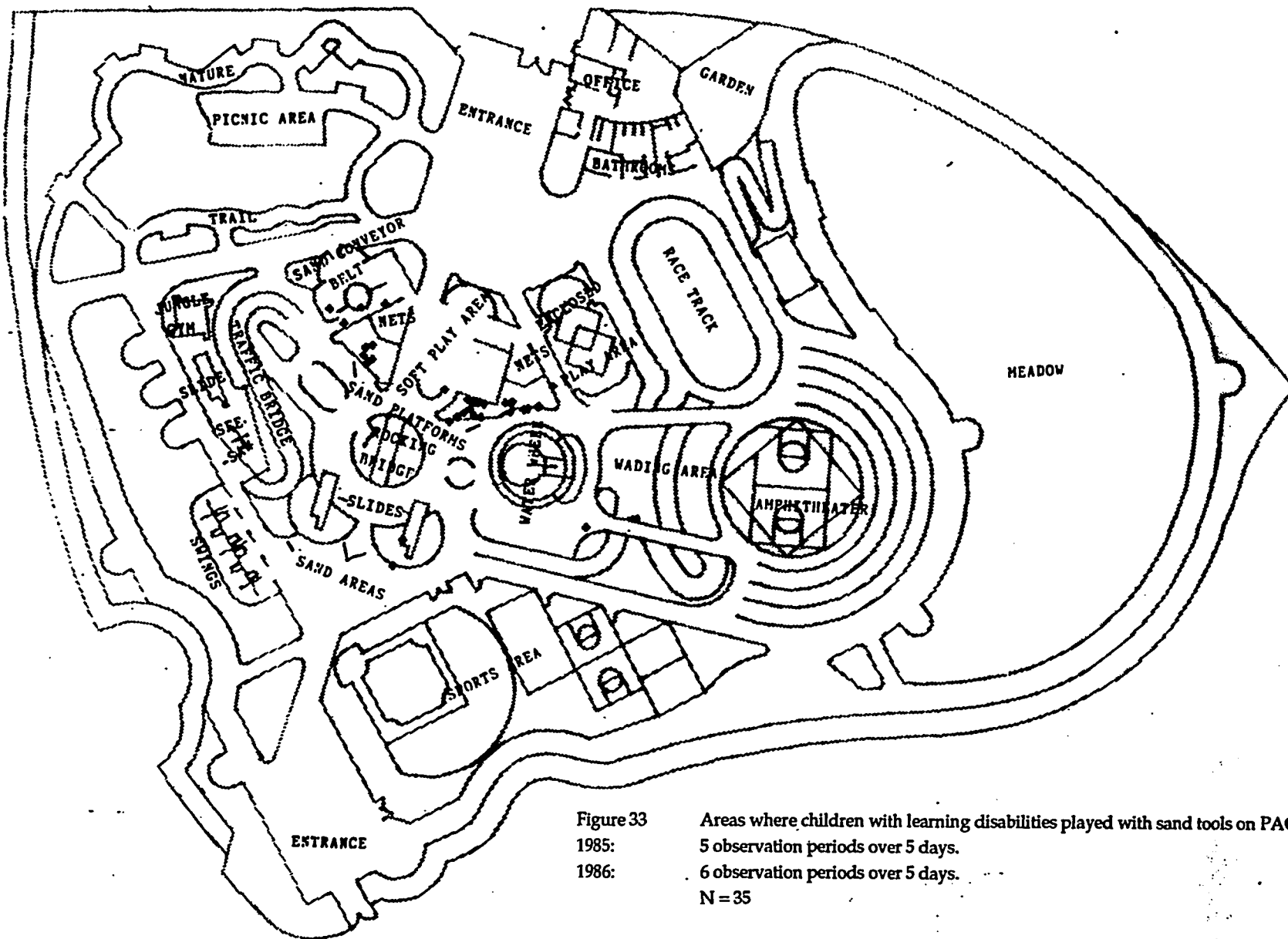


Figure 33

1985:

1986:

Areas where children with learning disabilities played with sand tools on PAC.

5 observation periods over 5 days.

6 observation periods over 5 days.

N = 35

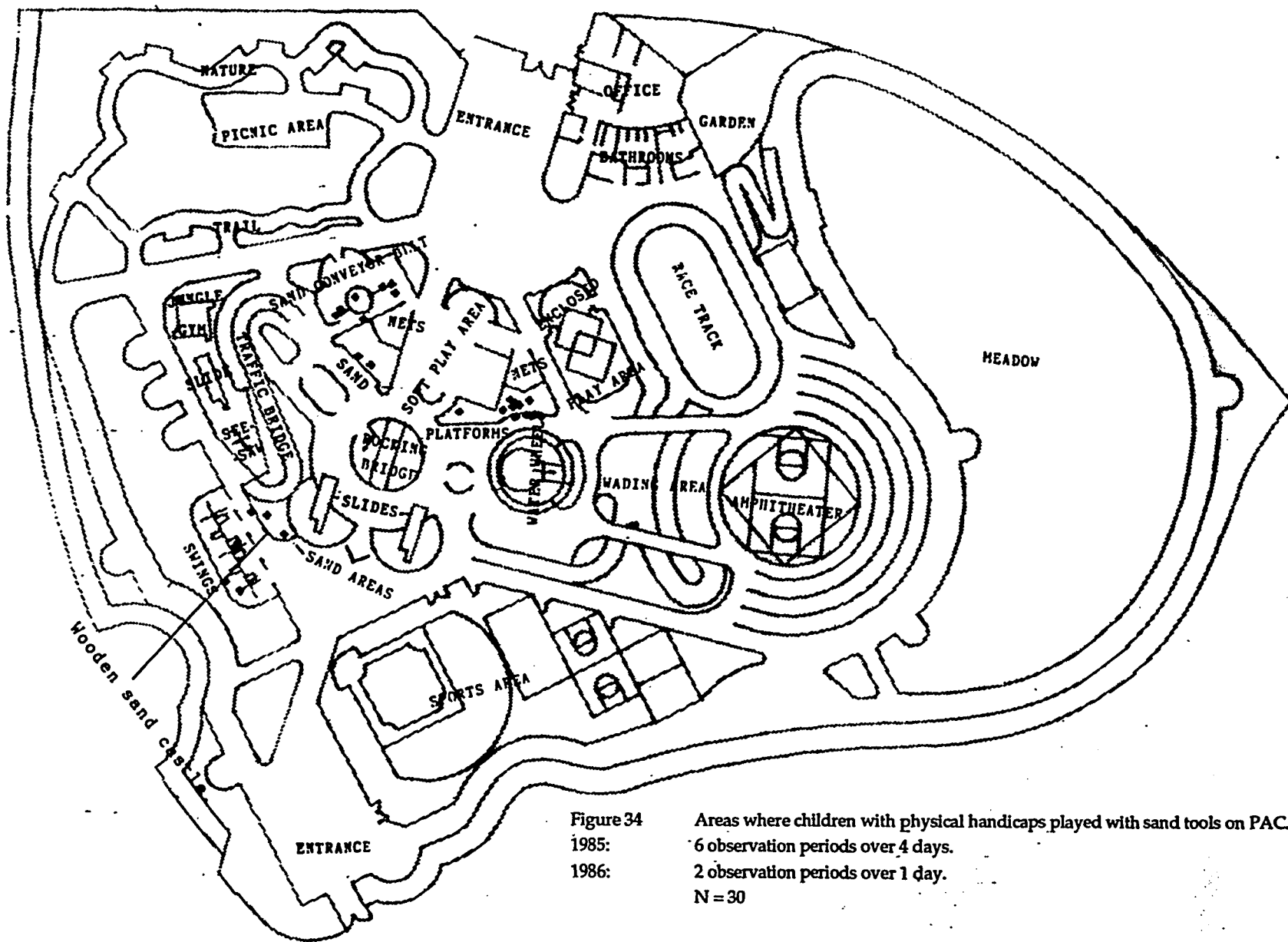


Figure 34
1985:
1986:

Areas where children with physical handicaps played with sand tools on PAC.
6 observation periods over 4 days.
2 observation periods over 1 day.
N = 30

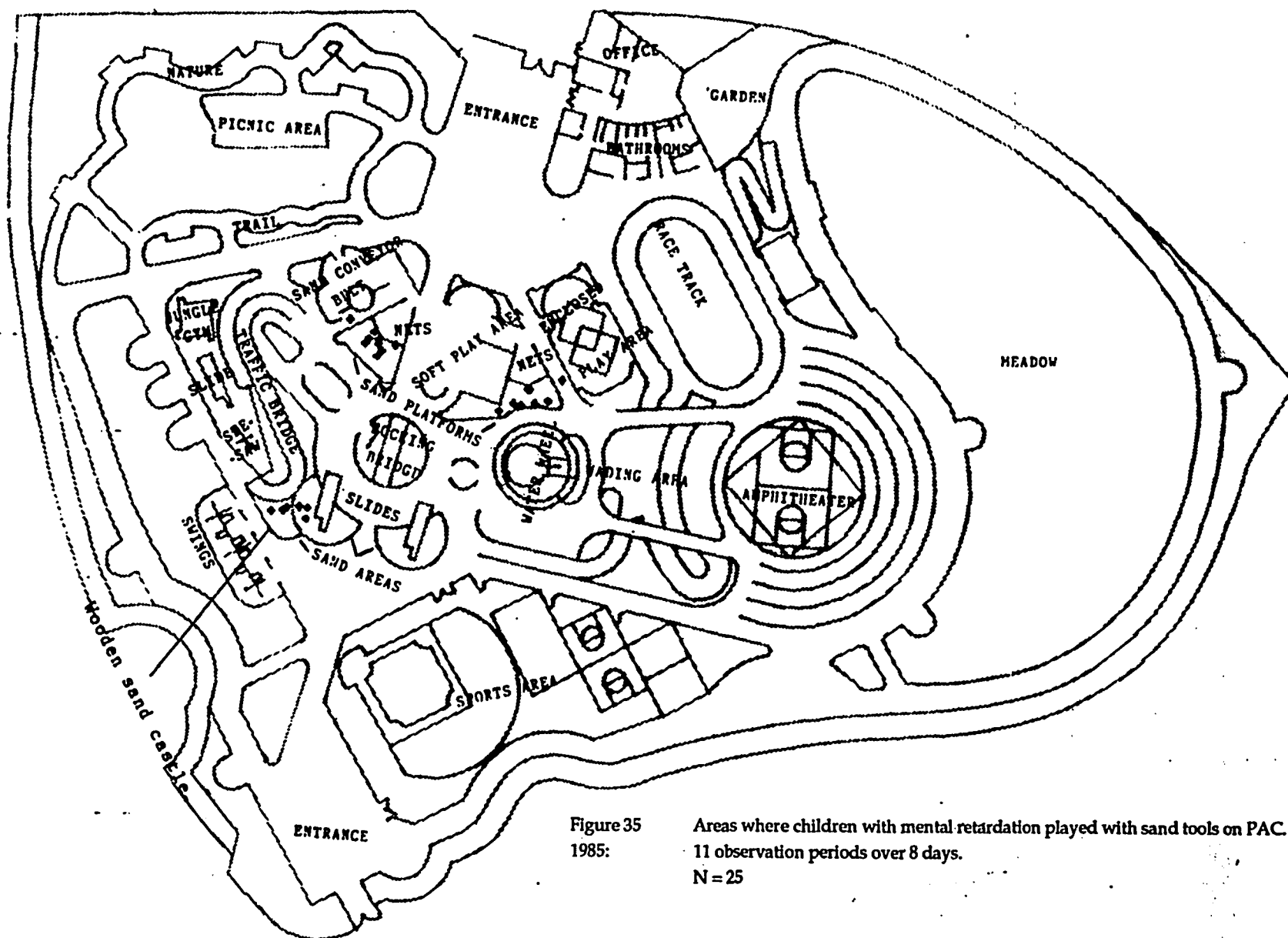


Figure 35
1985:

Areas where children with mental retardation played with sand tools on PAC.
11 observation periods over 8 days.
N = 25

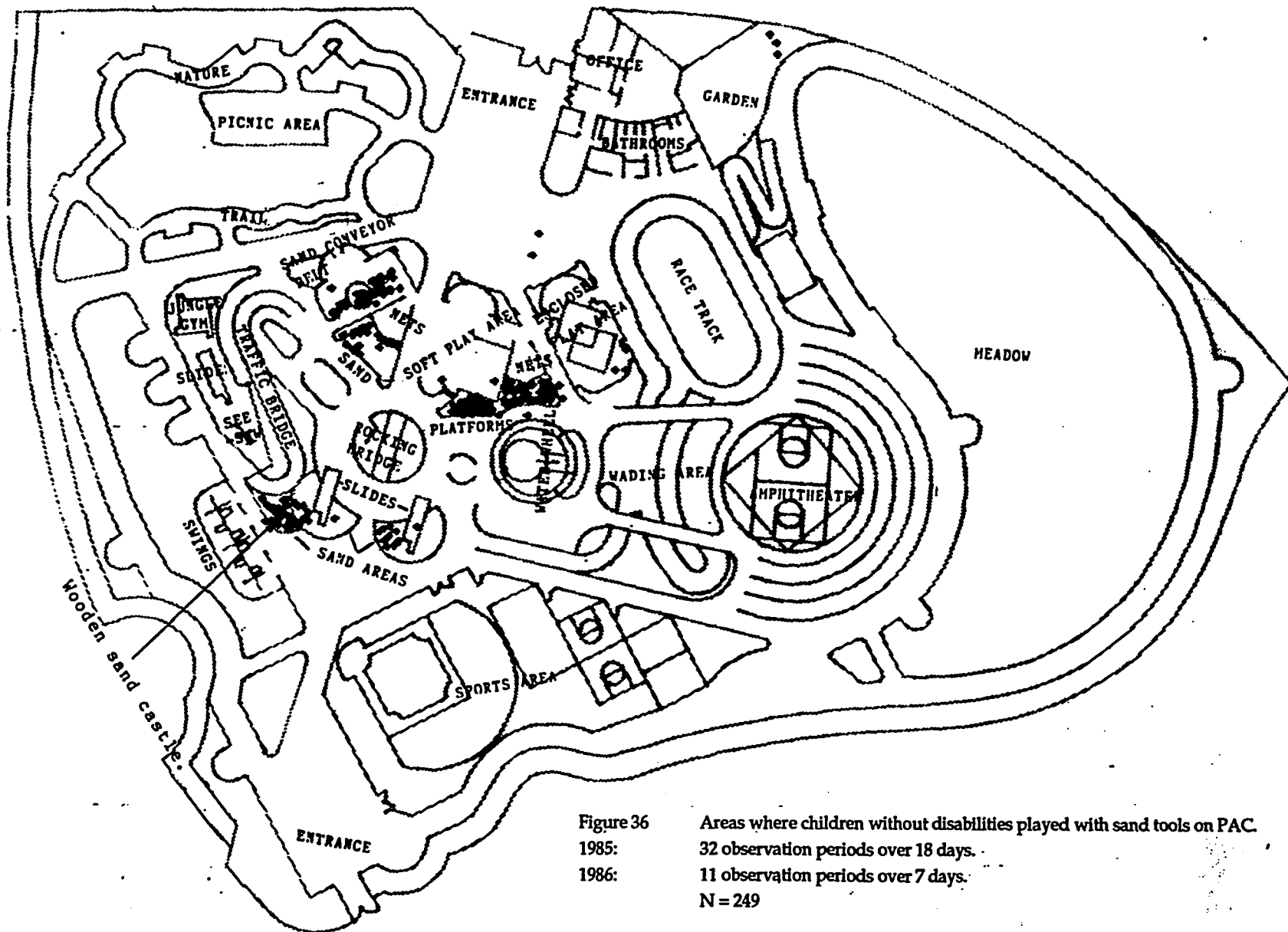


Figure 36
1985:
1986:

Areas where children without disabilities played with sand tools on PAC.
32 observation periods over 18 days.
11 observation periods over 7 days.
N = 249

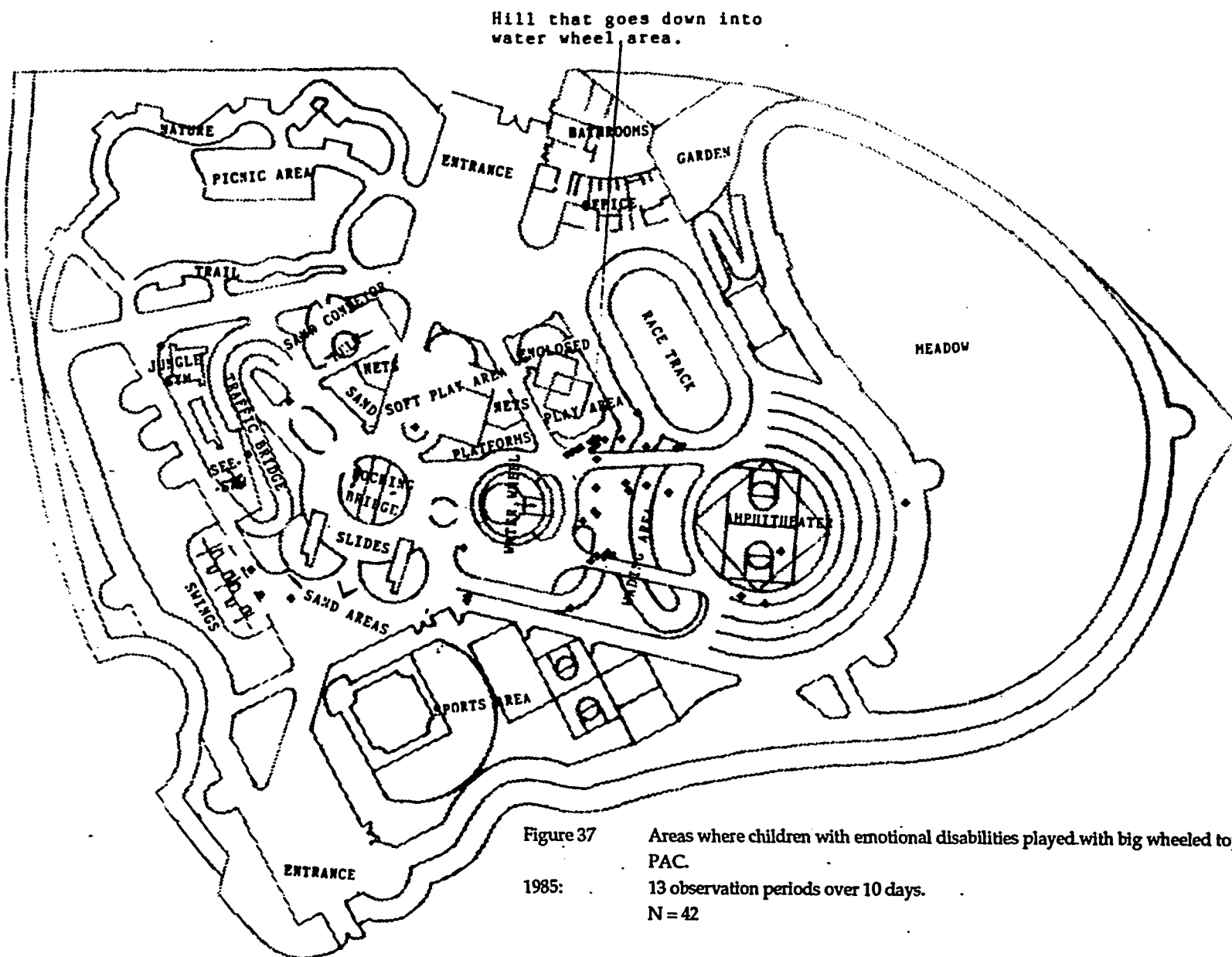


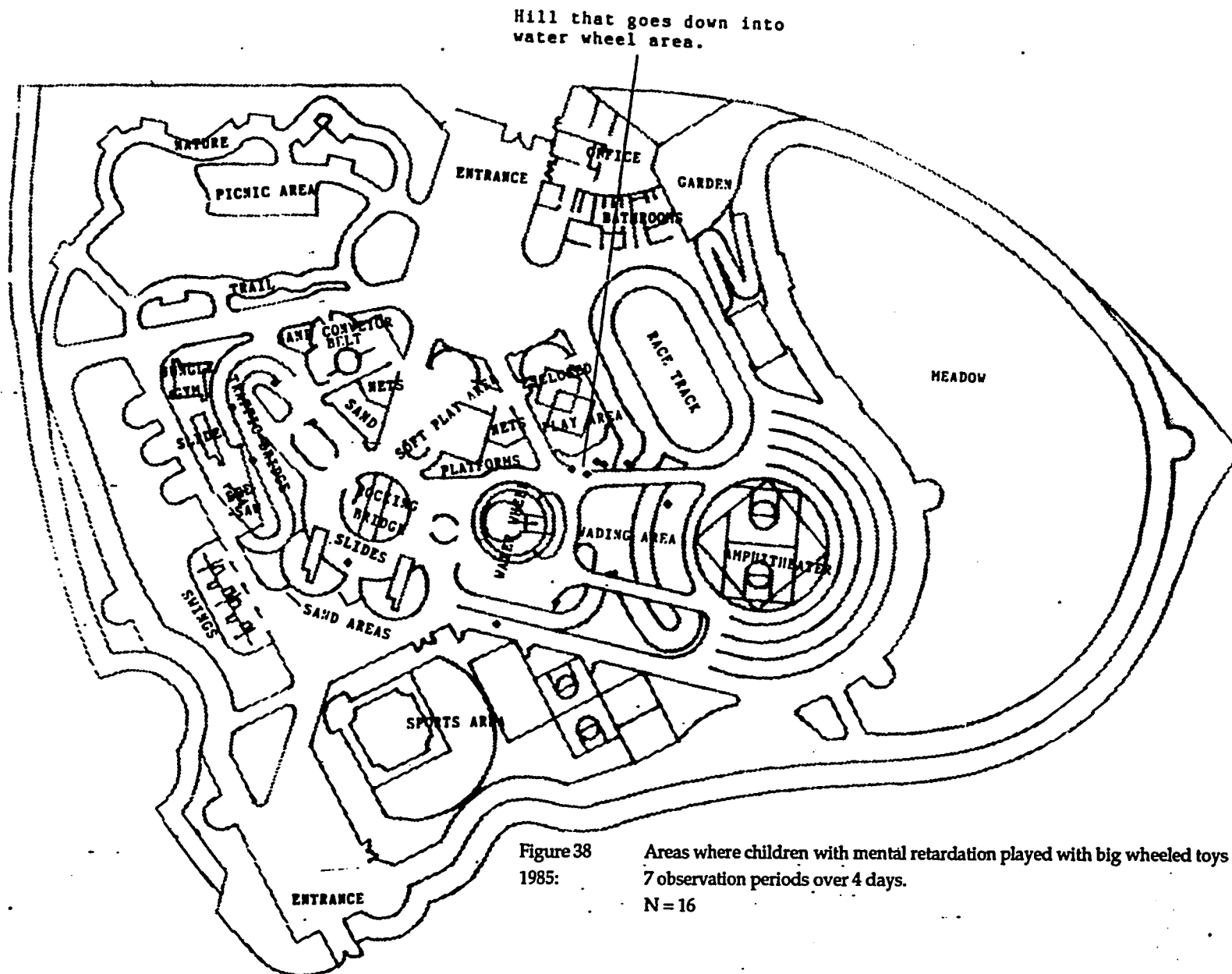
Figure 37

1985:

Areas where children with emotional disabilities played with big wheeled toys on PAC.

13 observation periods over 10 days.

N = 42



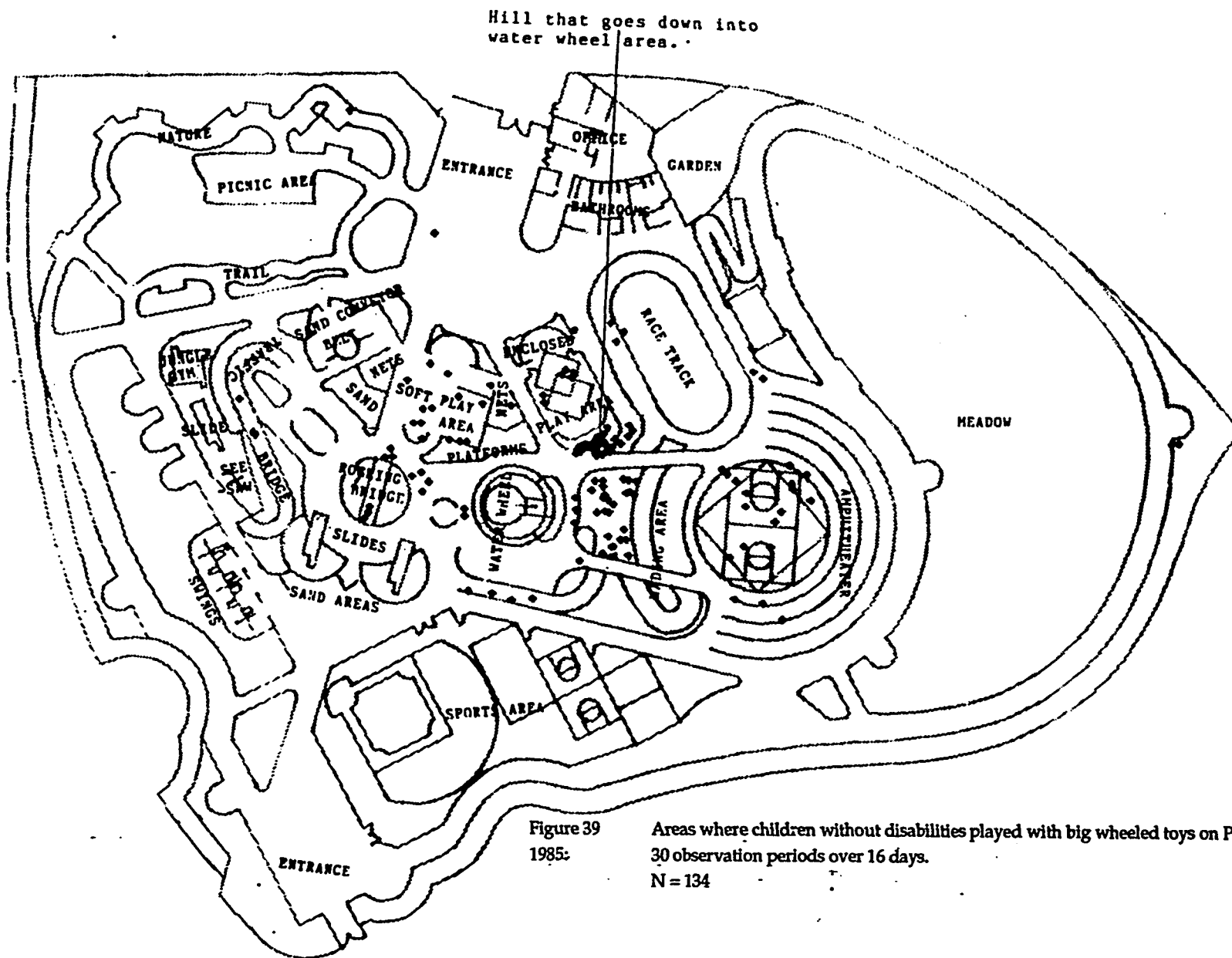


Table 7
 Number and Percent of Times Children With Different
 Disabilities Observed With Each Toy:
 Behavioral Mapping Data

Disability	<u>ED</u> ^a	<u>LD</u> ^b	<u>PD</u> ^c	<u>MR</u> ^d	<u>ND</u> ^e	<u>Total</u>
<u>Toy</u>	<u>N %</u>	<u>N %</u>	<u>N %</u>	<u>N %</u>	<u>N %</u>	<u>N</u>
Balls	39 29%	5 6%	15 28%	12 15%	126 20%	197
Blocks	5 4%	12 15%	3 6%	5 6%	50 8%	75
Replicas	0	22 28%	5 9%	22 28%	66 11%	115
Sand Tools	49 36%	35 49%	30 57%	25 31%	249 40%	388
Wheeled Toys	42 31%	4 5%	0	16 20%	134 21%	196
Total	135 100%	78 100%	53 100%	80 100%	625 100%	971

Note. The abbreviations represent children with:

^aEmotional disabilities. ^bLearning disabilities. ^cPhysical disabilities. ^dMental retardation. ^eNo disabilities.

toys, child caretakers could establish big wheeled toy events on the playground in order to encourage social play. The children with emotional disabilities and without disabilities rode the big wheeled toys on the race track and in the amphitheater area. Not having any observations of children with physical disabilities riding on big wheeled toys is not surprising, because unfortunately there were no specially equipped big wheeled toys. It is unclear why children with learning disabilities (5%) were infrequently

seen riding the big wheeled toys. These children's caretakers may have not allowed the children to ride on the big wheeled toys, since it would have been more difficult to keep the group together.

The children observed proportionately most often in their toy play with the toy replicas were: children with learning disabilities (28%) and children with mental retardation (28%). Children without disabilities (11%) and children with physical disabilities (6%) were not observed proportionately as often in their toy play with toy replicas. As can be seen in Figures 40-43, children with physical disabilities, children with mental retardation, and children with no disabilities, were all observed with toy replicas in the soft-play area. These toy replicas were the musical instruments and the wooden farm set. Children with learning disabilities and children with no disabilities were also observed with toy replicas, the plastic boats, in the waterwheel area. The sand area and soft-play areas were the most common areas to see children with toy replicas.

The children observed proportionately most often in their toy play with sports equipment were children with emotional disabilities (29%), children with physical disabilities (28%) and children with no disabilities (20%). Children with mental retardation (15%) and children with learning disabilities (6%) were not observed with sports equipment as often as the other groups (see Figures 44-48). As can be noted from the maps, children from all groups were

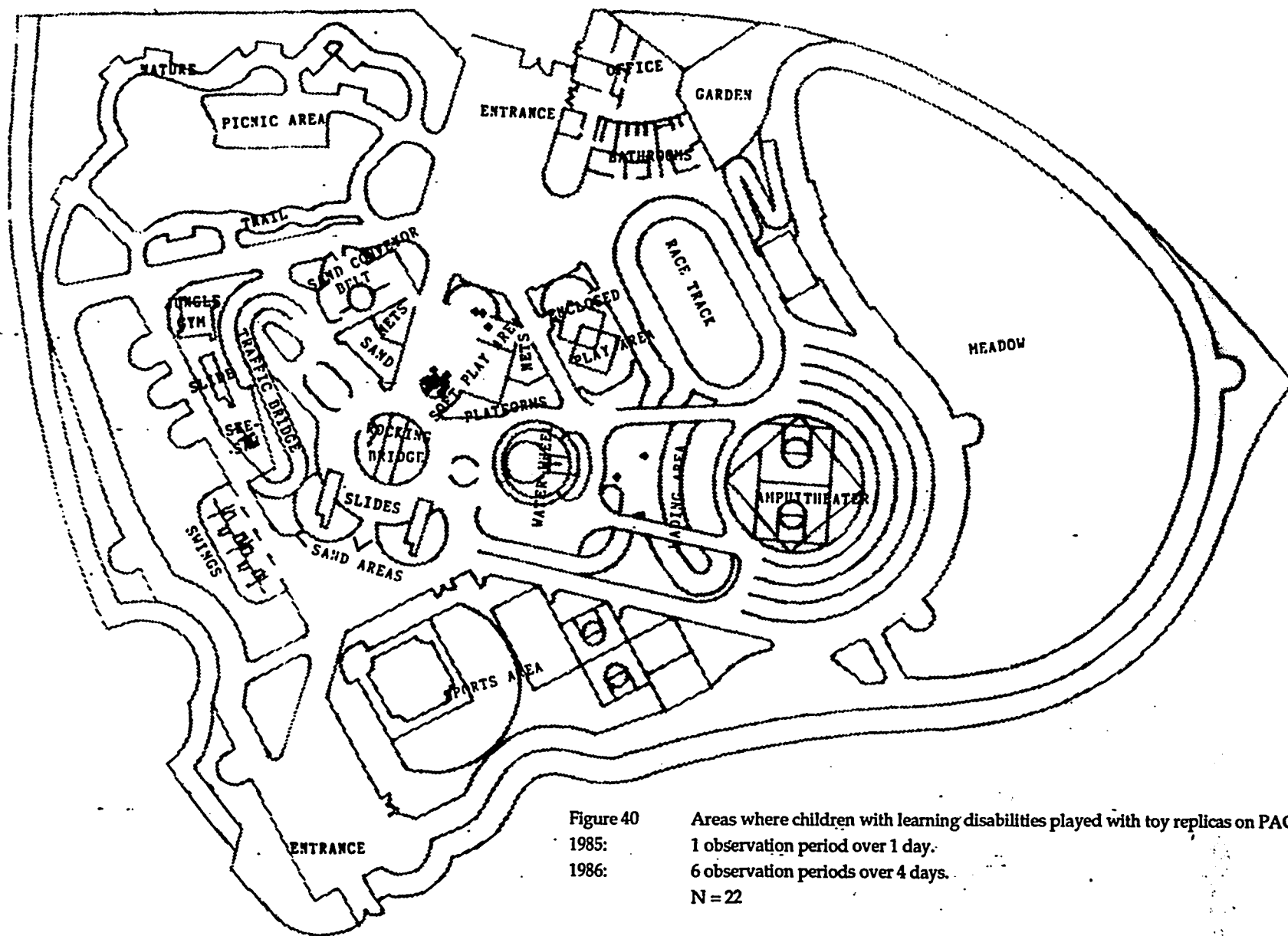


Figure 40

1985:

1986:

Areas where children with learning disabilities played with toy replicas on PAC.

1 observation period over 1 day.

6 observation periods over 4 days.

N = 22

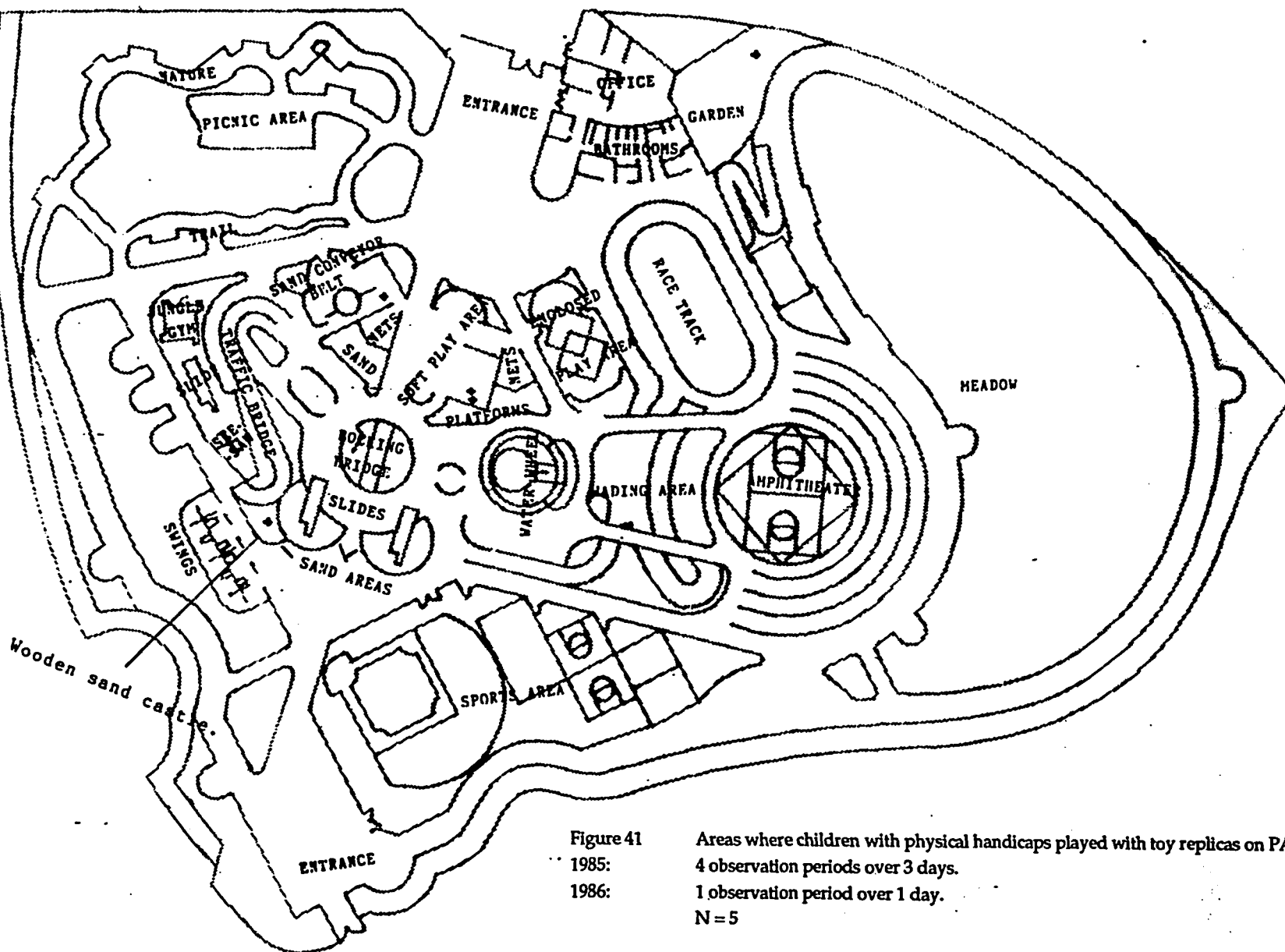


Figure 41
1985:
1986:

Areas where children with physical handicaps played with toy replicas on PAC.
4 observation periods over 3 days.
1 observation period over 1 day.
N = 5

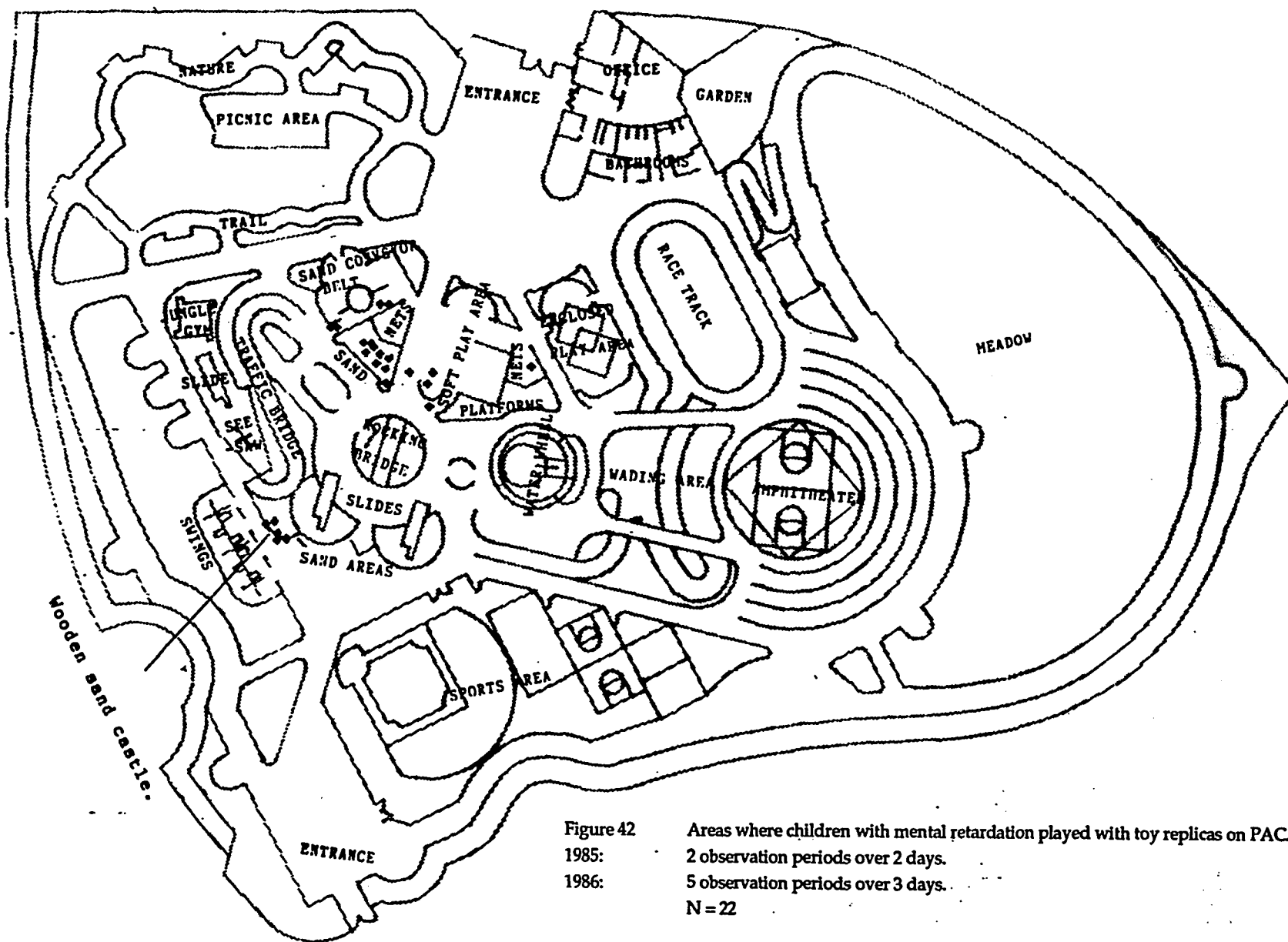


Figure 42

1985:

1986:

Areas where children with mental retardation played with toy replicas on PAC.

2 observation periods over 2 days.

5 observation periods over 3 days.

N = 22

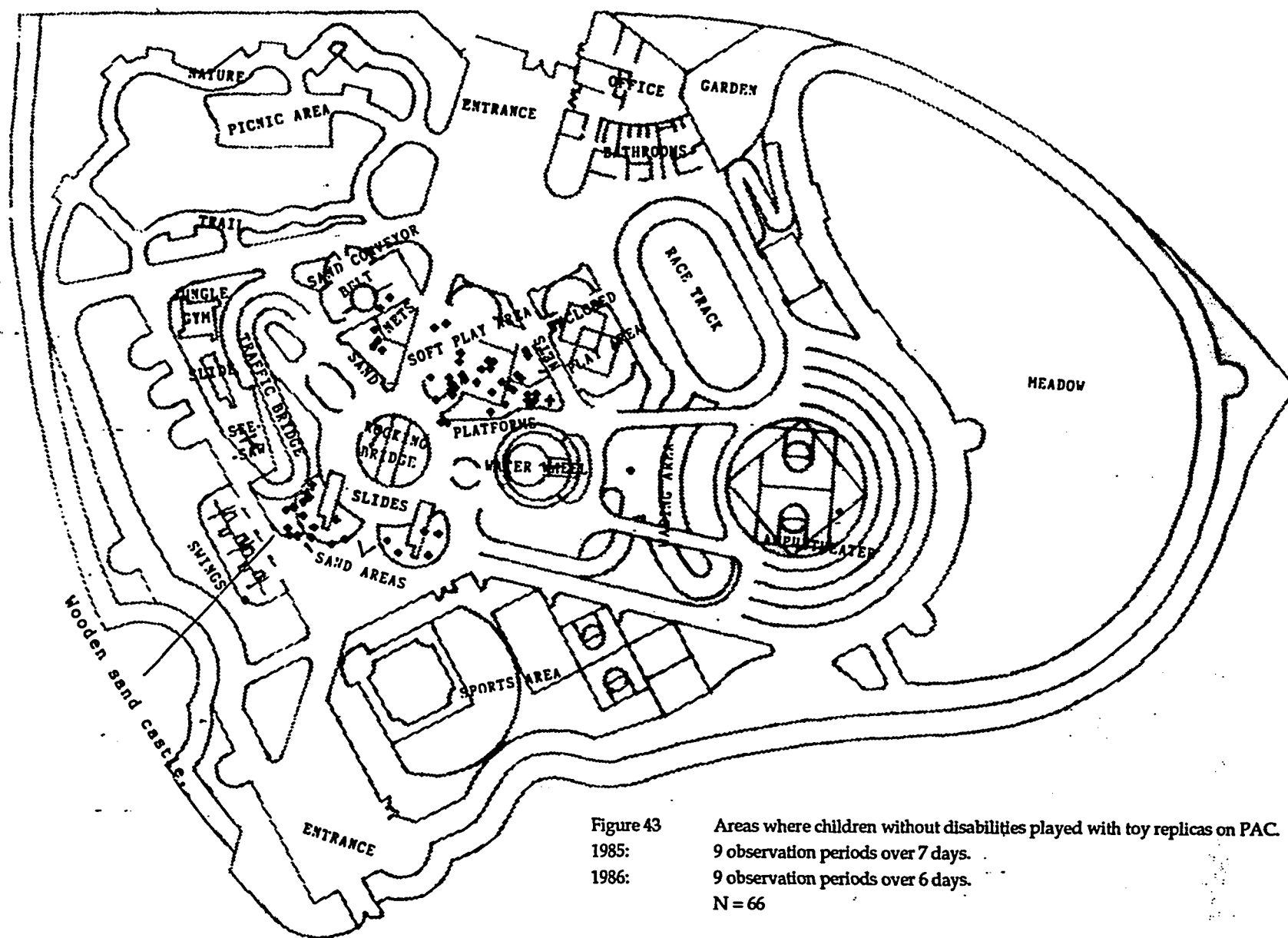


Figure 43

1985:

1986:

Areas where children without disabilities played with toy replicas on PAC.

9 observation periods over 7 days.

9 observation periods over 6 days.

N = 66

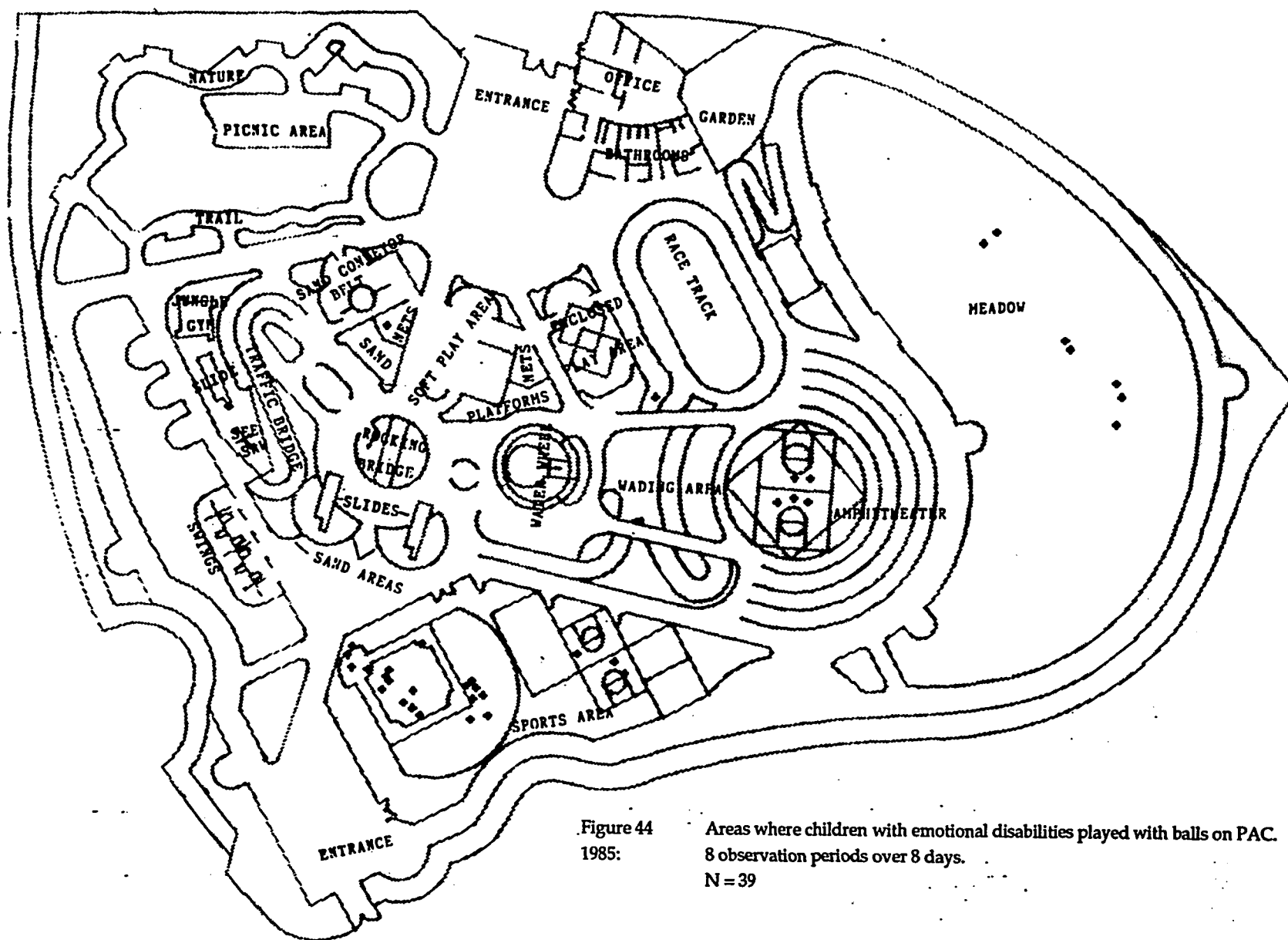


Figure 44
1985:

Areas where children with emotional disabilities played with balls on PAC.
8 observation periods over 8 days.
N = 39

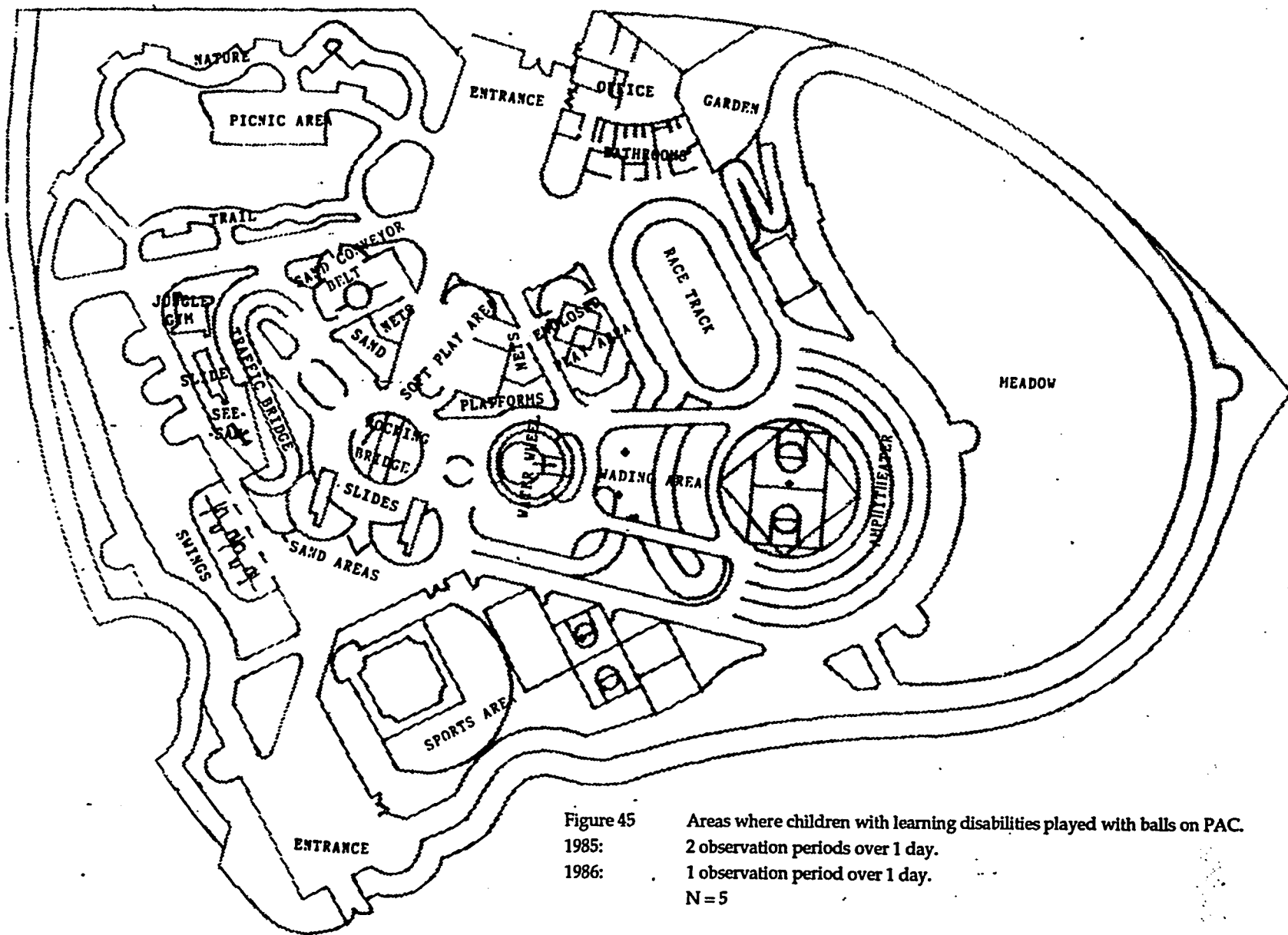


Figure 45
1985:
1986:

Areas where children with learning disabilities played with balls on PAC.
2 observation periods over 1 day.
1 observation period over 1 day.
N = 5

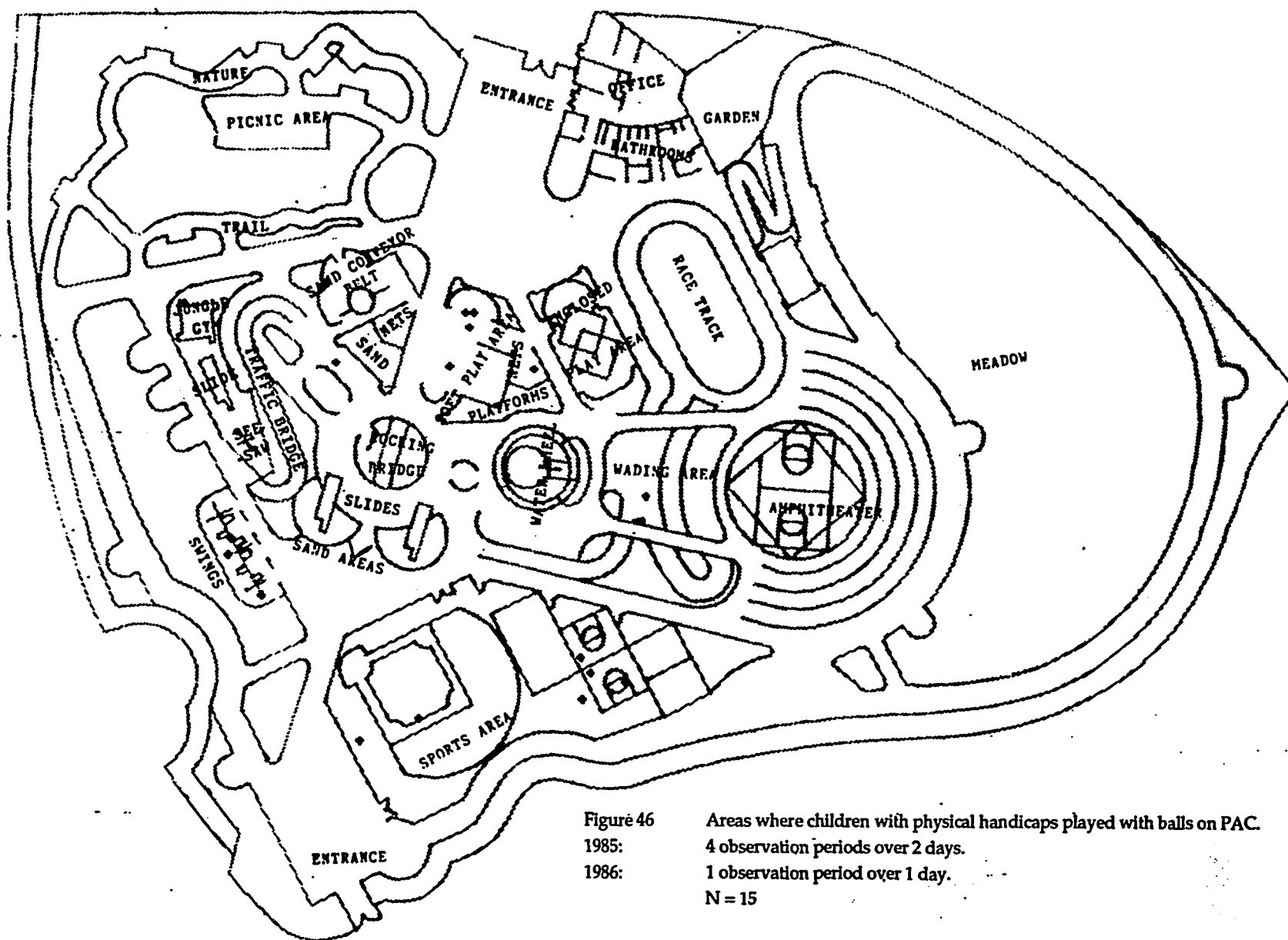


Figure 46

1985:

1986:

Areas where children with physical handicaps played with balls on PAC.

4 observation periods over 2 days.

1 observation period over 1 day.

N = 15

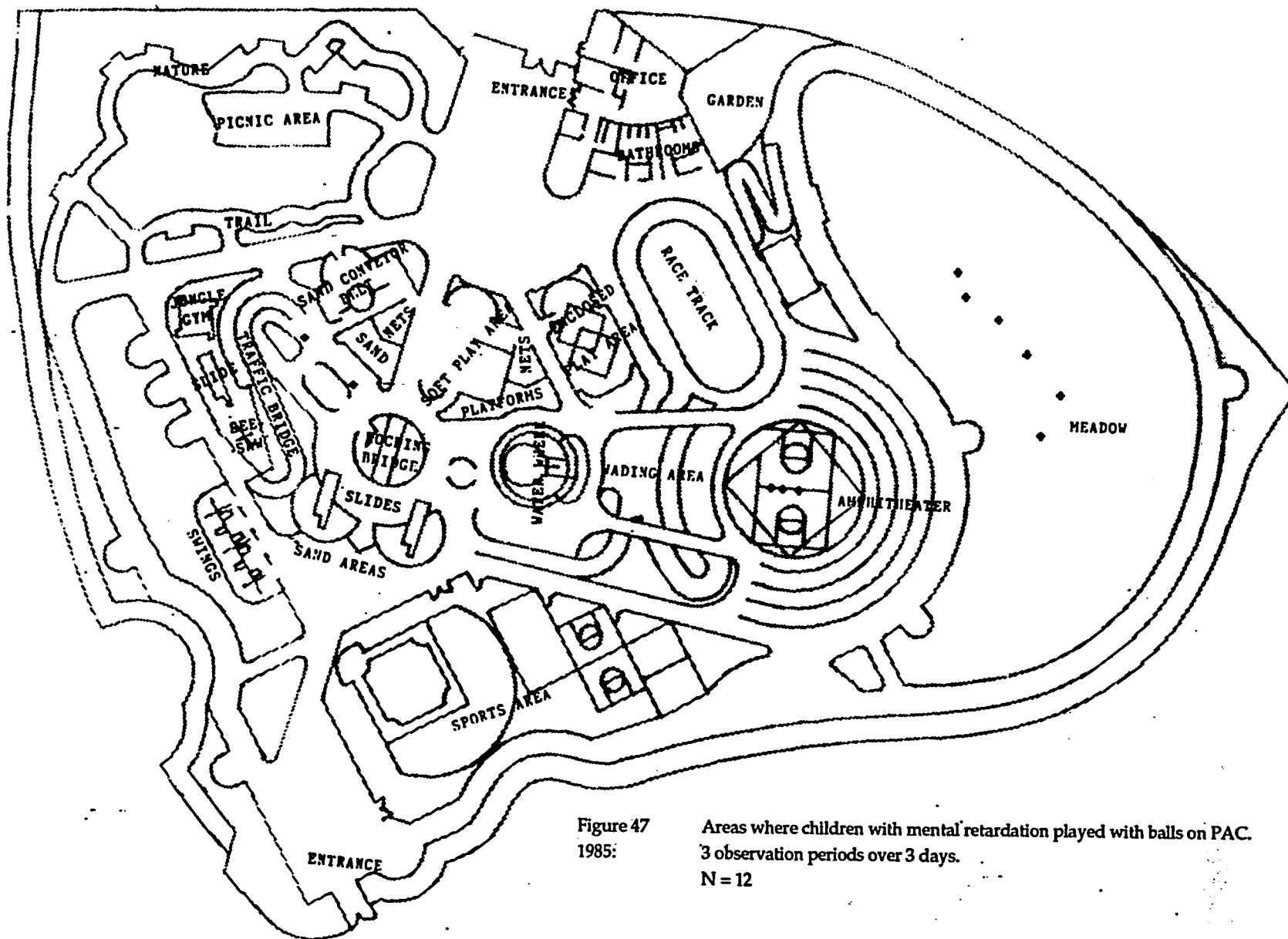


Figure 47
1985:

Areas where children with mental retardation played with balls on PAC.
3 observation periods over 3 days.
N = 12

observed using sports equipment in the sports areas (baseball diamond, basketball court, volleyball/basketball court). Unfortunately, it is not possible to determine whether or not these were organized games. Occasionally there were organized sports games on the baseball diamond, meadow and volleyball court. Organized games would be another way of introducing structured activities to the children. Organizing the games would have to be handled with great care, however, since children have varying abilities and are unfamiliar with one another (between groups). Research suggests that children without disabilities use competence as a factor in their acceptance of children with disabilities (Bak & Siperstein, 1987). Games encouraging competition would thereby undermine the whole purpose of the playground, making it like a classroom by emphasizing different skill levels. On the playground noncompetitive games were organized for the children, such as using a parachute, where children around a circle would hold onto a parachute and a child would run underneath before the raised parachute was brought down. This game was sometimes played on the baseball diamond or on the meadow area. Children with physical disabilities and children without disabilities were observed in the soft-play area, most likely playing the bean bag toss. The bean bag boards were the correct height for wheelchairs, as children who were wheelchair bound were also seen playing the bean bag game. Children with emotional disabilities and children

with physical disabilities were observed in the waterwheel area, with the beach balls. Unfortunately, there was not often very much physical integration in this area, but the beach ball could be used in an activity to encourage social play, as well. The children with emotional disabilities, the children with physical disabilities, and the children with no disabilities were observed with sports equipment in the net areas, most likely balls or bean bags. Lastly, the same groups of children just mentioned were also seen with sports equipment on the stationary playground equipment: slide, swings, and seesaw.

The blocks, as mentioned previously, were not very popular (see Figures 49-53). The group observed with them proportionately most frequently in their toy play was children with learning disabilities (15%). This group of children was observed with the blocks in the soft-play area where the blocks had been placed, except for one observation of a block in the sand. Children without disabilities (8%) were observed with blocks in the soft-play area, the sand, the nets and the basketball area. Children with physical disabilities (6%) were observed with blocks in the sand play area, as were children with mental retardation (6%). The former group of children was also observed with blocks in the meadow area. Children with emotional disabilities (4%) were observed with blocks in the basketball area.

In the summer of 1986, big Lego(c)-type blocks were introduced. On occasion, visiting caretakers were seen

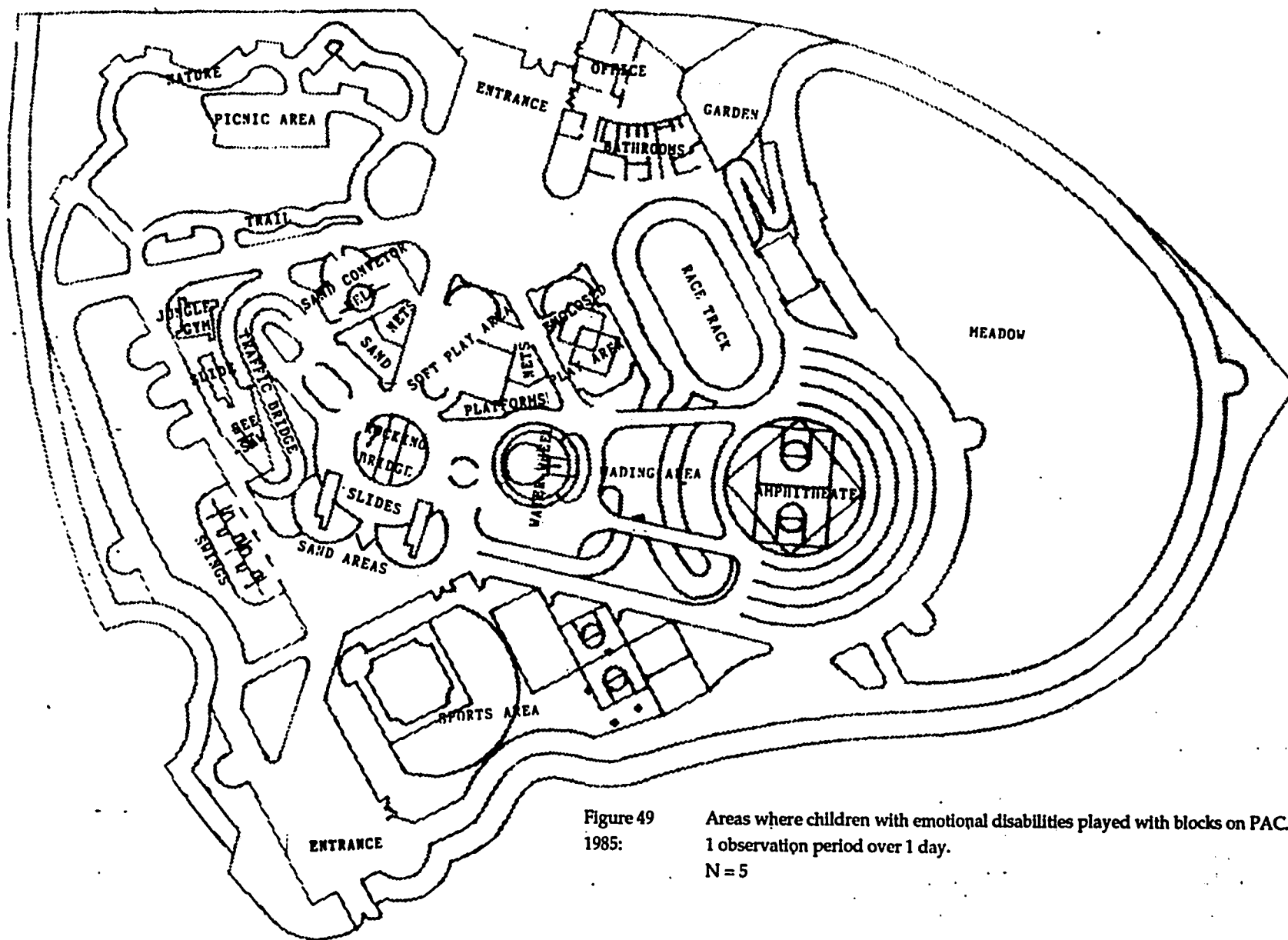


Figure 49
1985:

Areas where children with emotional disabilities played with blocks on PAC.
1 observation period over 1 day.
N = 5

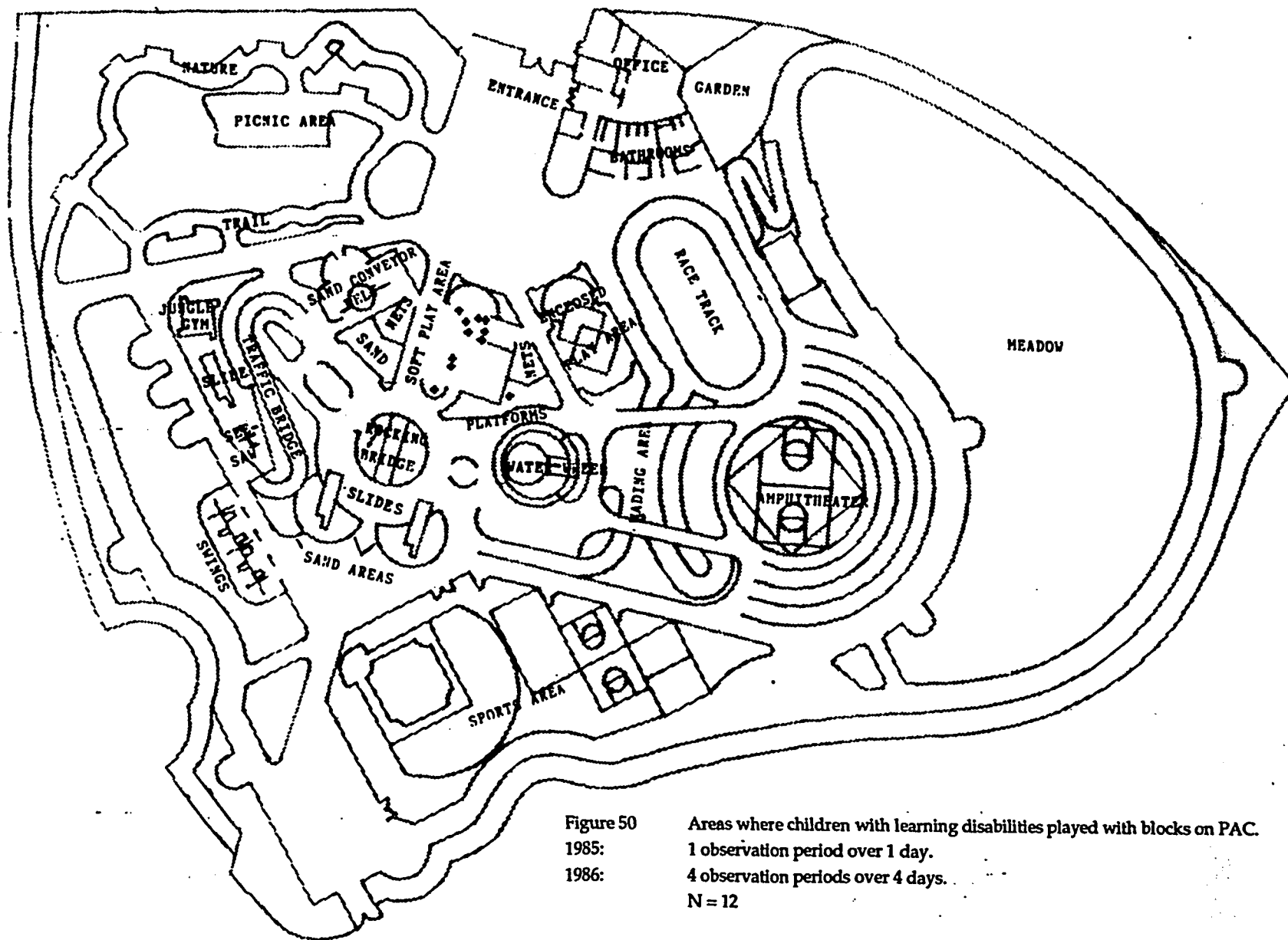


Figure 50
1985:
1986:

Areas where children with learning disabilities played with blocks on PAC.
1 observation period over 1 day.
4 observation periods over 4 days.
N = 12

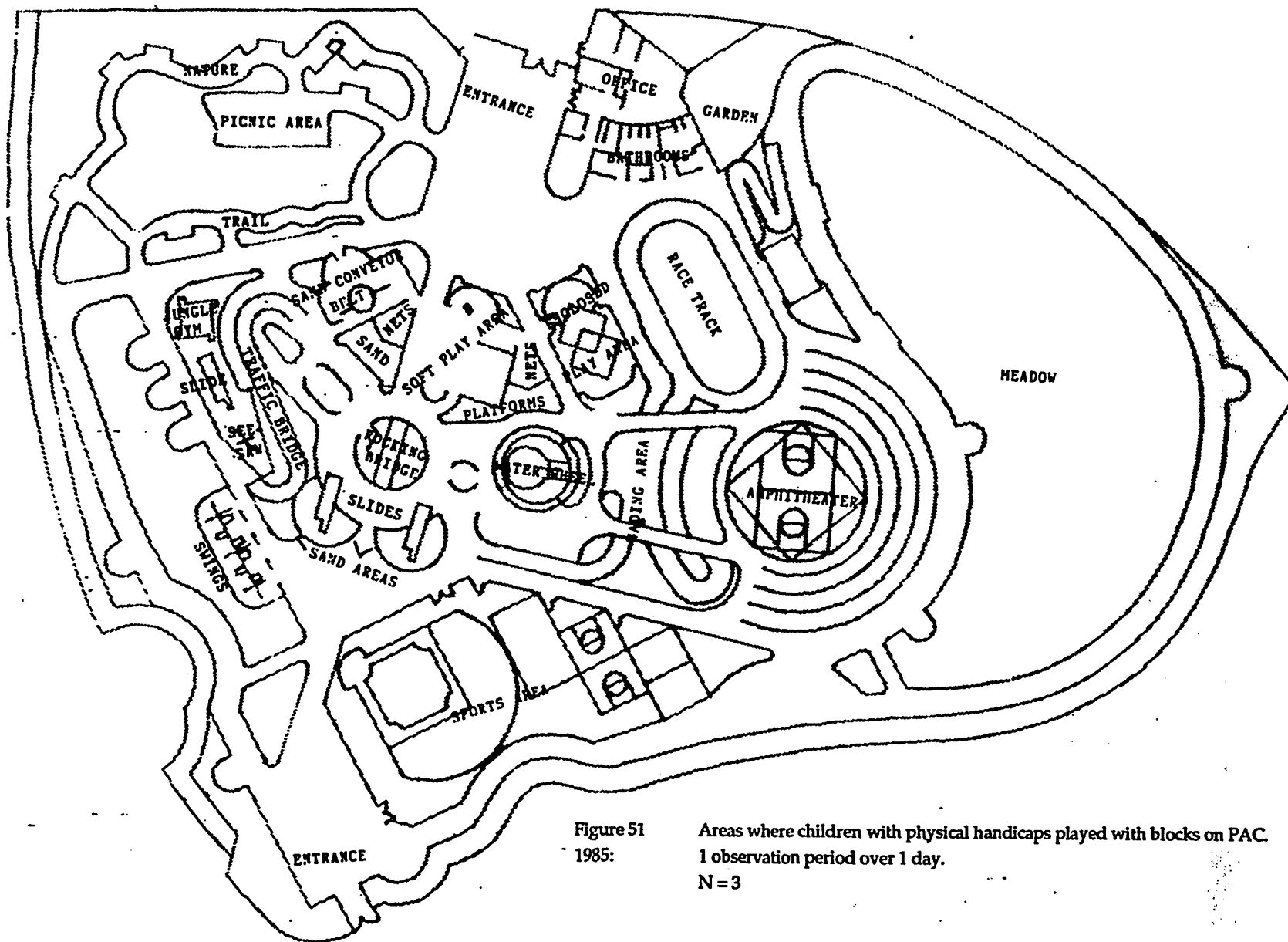


Figure 51
1985:

Areas where children with physical handicaps played with blocks on PAC.
1 observation period over 1 day.
N=3

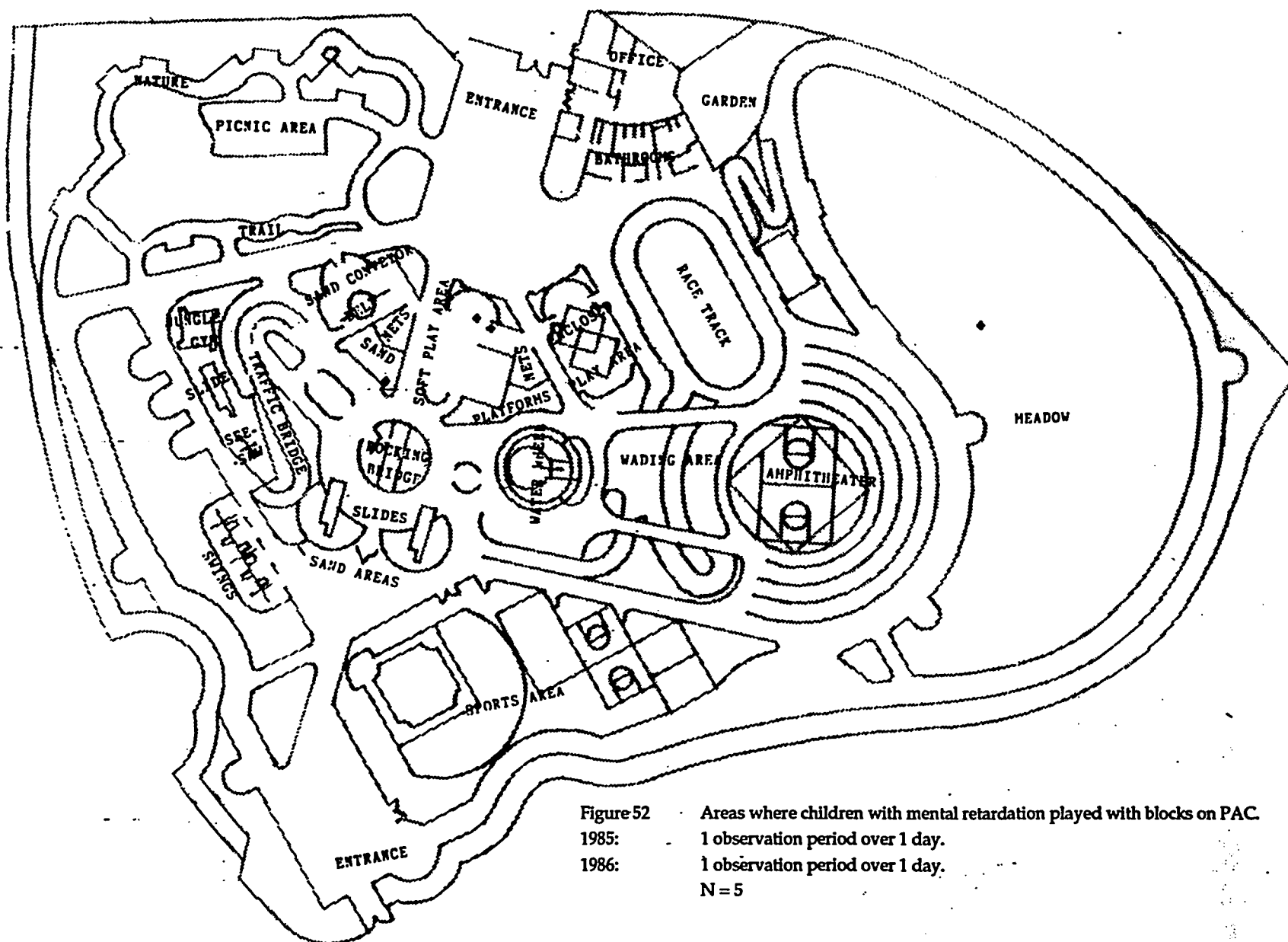


Figure 52 Areas where children with mental retardation played with blocks on PAC.
 1985: 1 observation period over 1 day.
 1986: 1 observation period over 1 day.
 N = 5

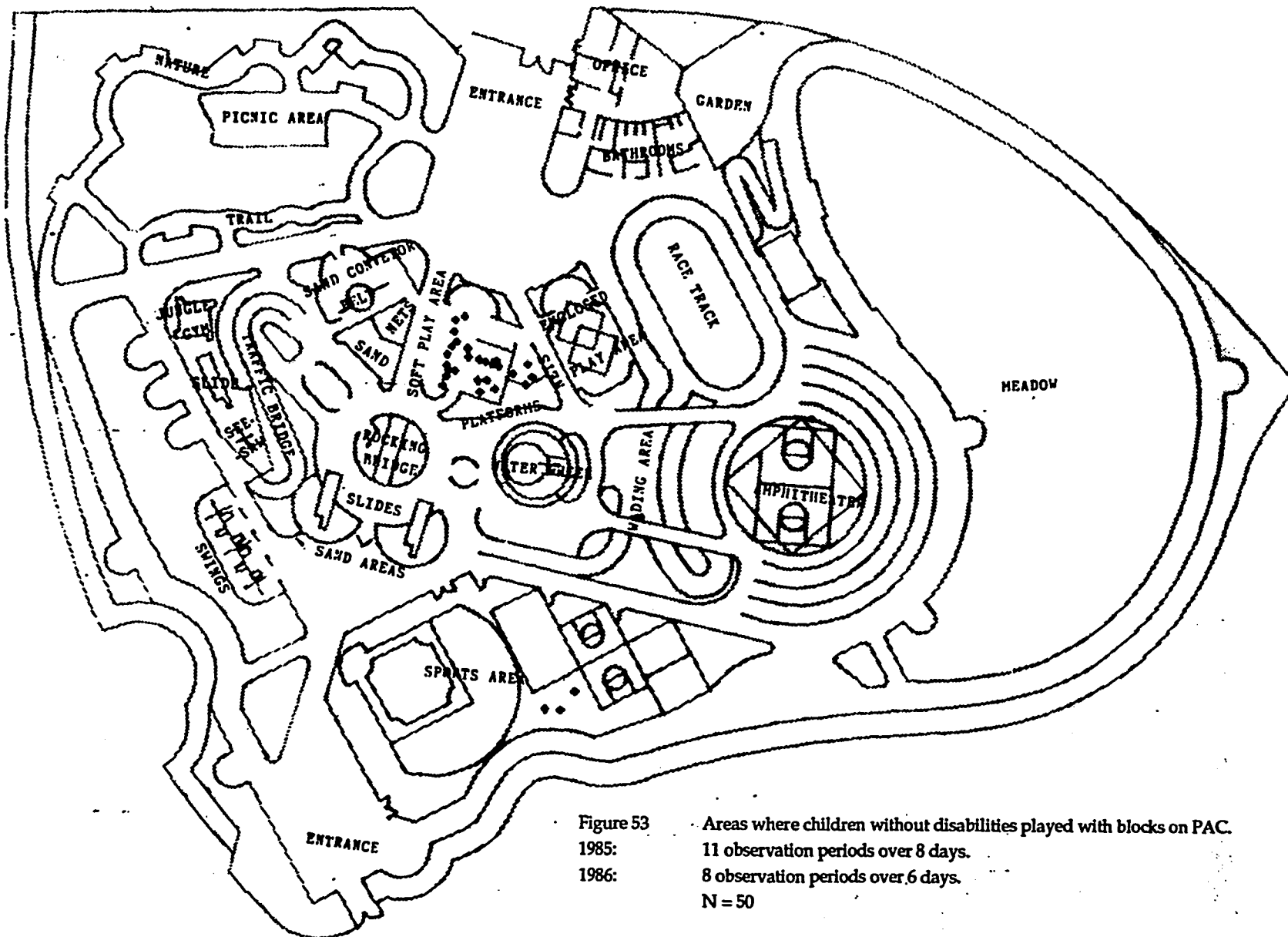


Figure 53 Areas where children without disabilities played with blocks on PAC.
 1985: 11 observation periods over 8 days.
 1986: 8 observation periods over 6 days.
 N = 50

helping children of different groups construct structures out of the big blocks together. As Marjorie Reeves (1949) notes in her guide to toys, big toys such as large blocks are advantageous, because many children can play with them at the same time.

The Physical Integration of Children With Varying Abilities

A most unfortunate finding that the behavioral maps show is that the groups of children with varying abilities did not physically integrate on PAC (see Figures 54-58). The term physically integrate is meant to describe children's physical proximity to one another. This of course needs to occur before social interaction can happen. One of the goals of the playground was that children with disabilities and without disabilities should socially integrate. In an attempt to reach this objective, PAC staff members gave puppet shows with puppets from "Kids On The Block" to children without disabilities, in their classrooms. These puppet shows were also shown on the playground. As this finding suggests, however, this intervention is not enough to achieve this very important goal.

Figures 54 through 58 each combine a set of two maps with red dots depicting children with mental retardation and black dots depicting children with no disabilities. The maps were mapped on the same day at the same time. This sample of maps is from the months of July, August and October,

#

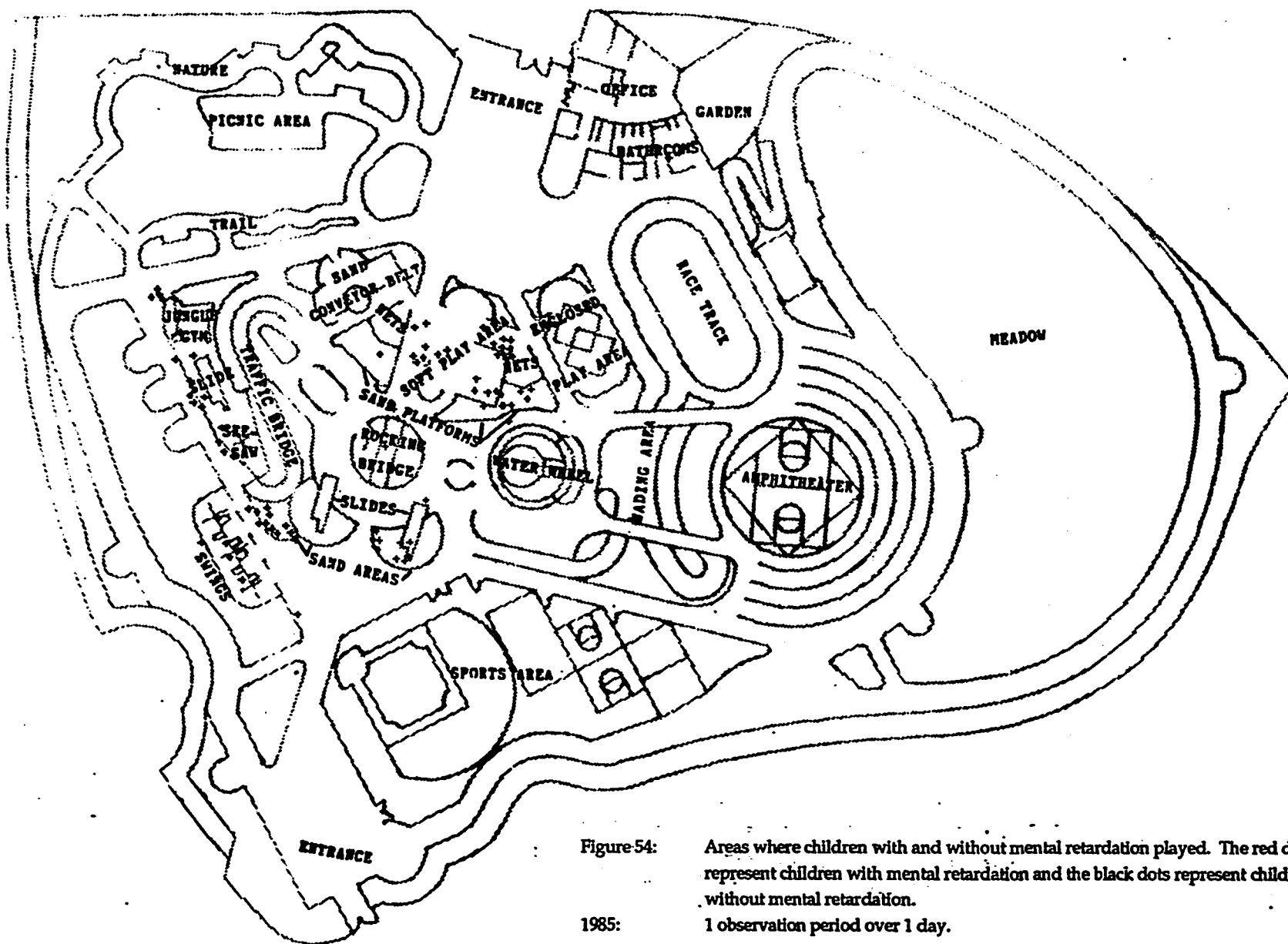


Figure 54:

Areas where children with and without mental retardation played. The red dots represent children with mental retardation and the black dots represent children without mental retardation.

1985:

1 observation period over 1 day.

#

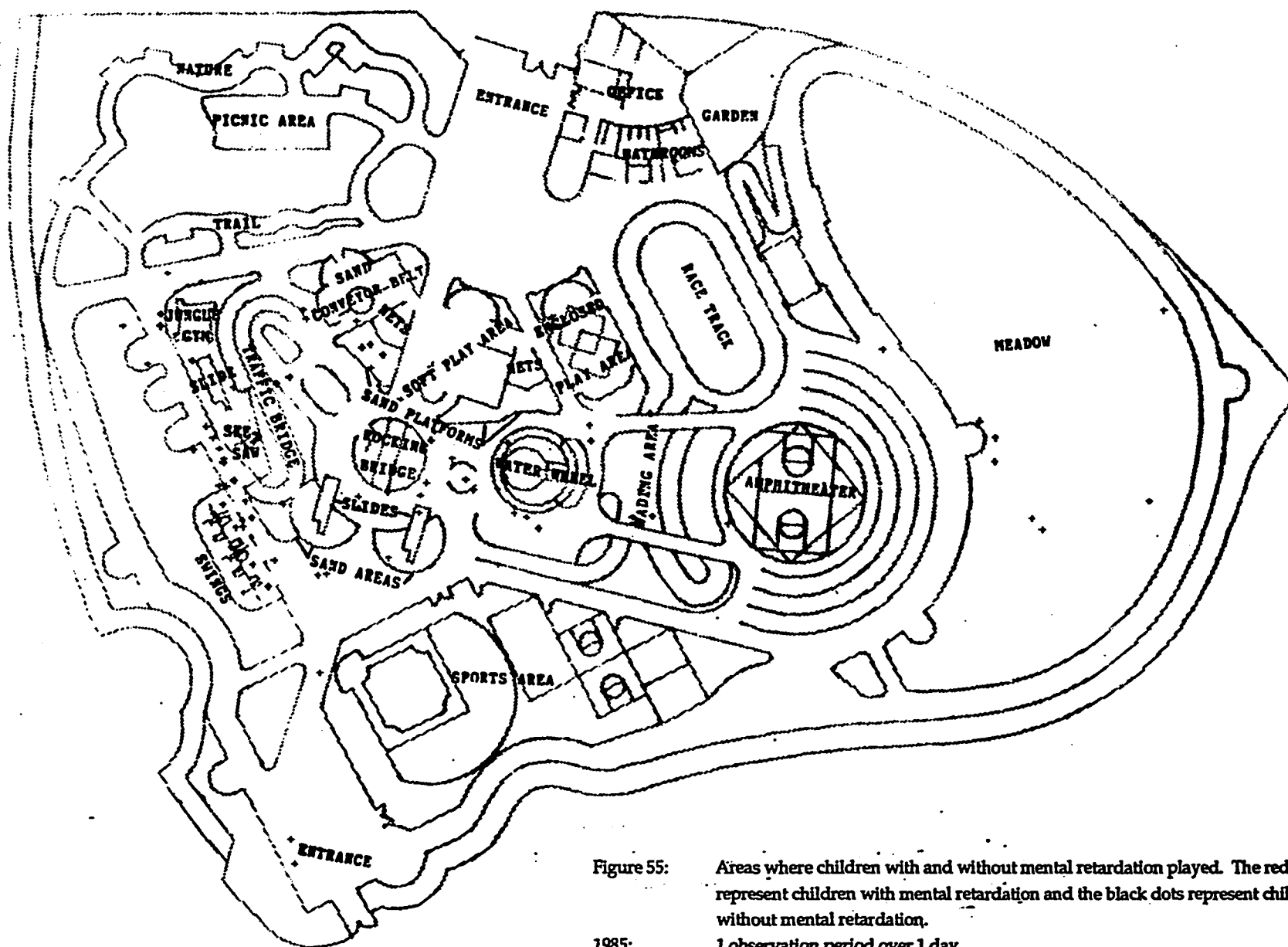


Figure 55: Areas where children with and without mental retardation played. The red dots represent children with mental retardation and the black dots represent children without mental retardation.

1985: 1 observation period over 1 day.

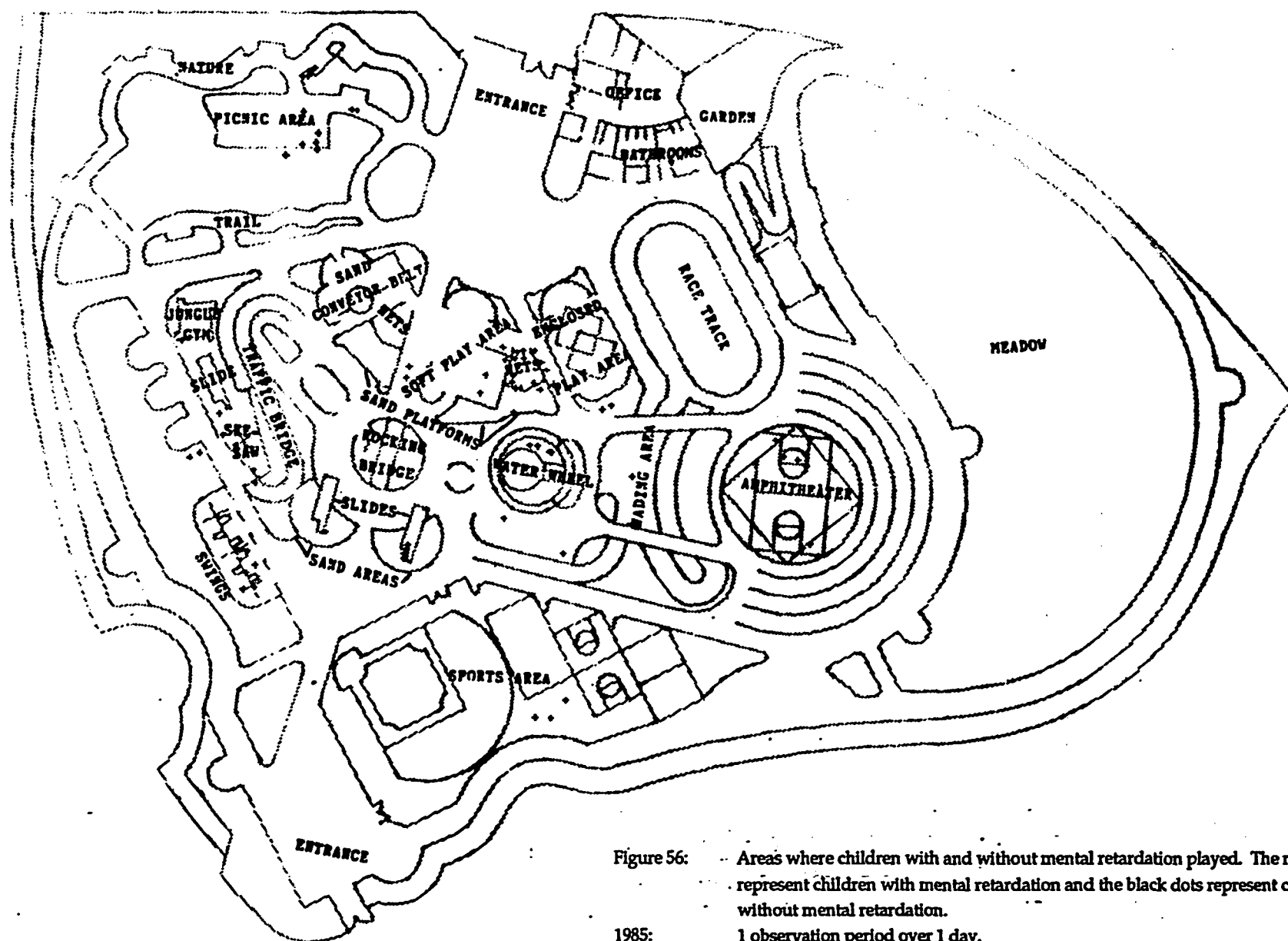


Figure 56: Areas where children with and without mental retardation played. The red dots represent children with mental retardation and the black dots represent children without mental retardation.

1985: 1 observation period over 1 day.

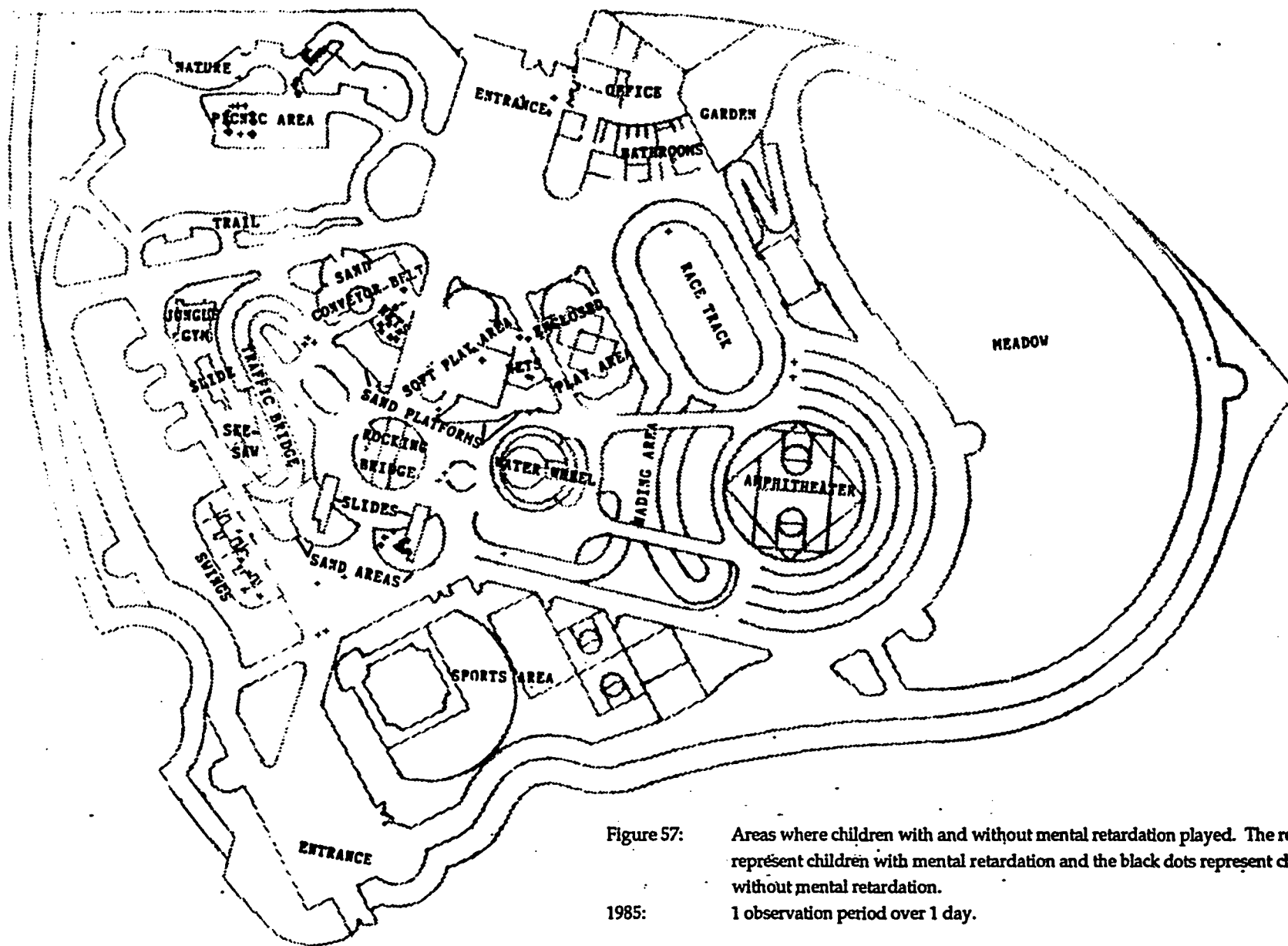


Figure 57: Areas where children with and without mental retardation played. The red dots represent children with mental retardation and the black dots represent children without mental retardation.

1985: 1 observation period over 1 day.

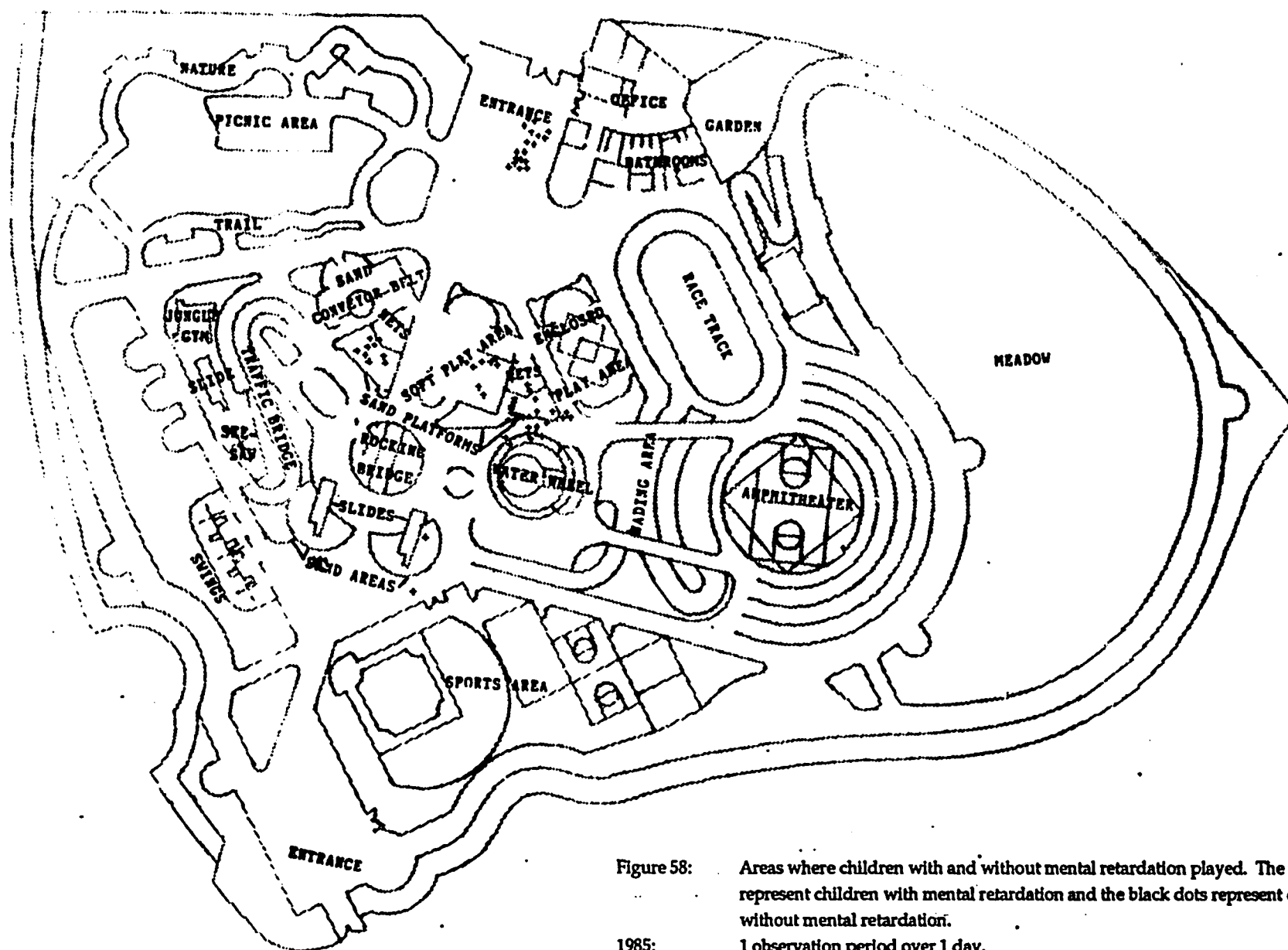


Figure 58: Areas where children with and without mental retardation played. The red dots represent children with mental retardation and the black dots represent children without mental retardation.

1985: 1 observation period over 1 day.

1985. All the behavioral maps shown were mapped at 10:30 in the morning. This time was chosen because at the 11:30 and 12:30 mappings some groups were already either preparing or eating their lunches.

Figure 54 demonstrates the lack of physical integration that occurred on the playground. For example, children without disabilities are on one slide and children with mental retardation are on the other slide. The one place where there is physical integration is in the sand platform.

In Figure 55, most physical integration is seen on the pathways or the swings. It is unclear, but probably not likely that much social integration is occurring. The exception may be those children riding on the big wheeled toys. There is one observation of physical integration in the sand platform. In Figure 56, the groups are essentially separate again. For example, see the slide and the swing areas. However, both groups of children can be seen in the net area and the sand area at the same time. The sand and net areas are very popular for all children. Caretakers could take advantage of this by making a point of bringing different groups of children to these areas at the same time, encouraging social interaction through semi-structured activities with toys. In Figure 57, there is only one observation of physical integration, that is the net area. In Figure 58, once again, with the exception of the net area, children without disabilities are on one side

of the playground and children with mental retardation are on the other side.

Meeting this very important goal of social integration between children with disabilities and children without disabilities, as previous research demonstrates, requires more than placing children with different characteristics on the playground at the same time, for a few hours. The children with varying disabilities are each visiting with their own groups, consisting of children with whom they are already familiar. They really have no need within their two-to-three hour stay at the playground to search out new children. This is true especially if the children's caretakers are keeping their children's groups separate. This separation occurs because it is easier to supervise the children when kept all together. It is therefore up to the playground staff and ultimately the children's caretakers to insure that the children integrate. By placing the children in the same area, toys such as big wheeled toys could encourage the children to socially interact. On the playground, groups of children were seen riding over the rocking bridge together, riding to the traffic bridge, running up one side of the traffic bridge and then riding down. There is even a traffic light adjacent to the bridge (hence the name, traffic bridge) and a caretaker could play the role of a traffic policeman encouraging the children to interact even more.

Social Interaction

Types of Social Play Children Engaged In With Different Toys

The social interaction and play repertoire results were taken from the tracking data in which children were individually filmed while playing on the playground.

The results obtained from this analysis reveal the different modes of social play, i.e. solitary, parallel or group, children who had been tracked were engaged in while playing with toys.

Parallel play was observed most frequently for all the toys (see Table 8). If the hypothesis proposed by Bakeman and Brownlee (1980) is correct, i.e. that parallel play represents a transitional behavior of going from object focus to social focus, these results may not be surprising. The playground is a new place with novel objects and thus children may initially focus on the objects. Once the toys are no longer new, they will then focus on other children.

Not unexpectedly, costumes were associated with the most group play (37%). Sand toys were next (33%) which again would not be surprising since the children did construct sand structures together. Before the research began, it was thought that musical instruments (18%), sports equipment (17%), big wheels (16%) and big blocks (5%) would primarily be associated with group play.

Table 8
 Number and Percent of Times Children Engaged
 In Solitary, Parallel and Group Play
 With Different Toys

<u>Toy</u>	<u>Solitary</u>		<u>Parallel</u>		<u>Group</u>		<u>Total</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Little Blocks	9	30	17	57	4	13	30	100
Costumes	13	22	25	41	22	37	60	100
Big Wheels	55	36	73	48	25	16	153	100
Sand Toys	116	22	246	45	179	33	541	100
Musical Instr.	37	22	103	60	31	18	171	100
Min. Vehicles	38	21	126	68	20	11	185	100

Usually when children did play with the musical instruments, they did not organize a single tune, but each played their own. They did often smile and look at one another, but this would be representative of associative play. As for the big wheels, the playground was large, and the big wheels were a good way to explore. Children would either ride together in an unorganized pack (parallel play) or go off by themselves (solitary play). From a number of personal observations, however, groups of four children often travelled over the rocking bridge to the traffic bridge on big wheeled toys and then back to the rocking bridge. And when the water wheel was in operation the children would use the traffic bridge like they had the hill in the water wheel wading area. Miniature vehicles were also used less frequently in group

play (11%) than would have been expected. This is probably because the miniature vehicles were prized possessions and not let out of reach. From other observations, however, if a truck had a container (e.g. dump truck) or a lot of gadgets to turn or pull (e.g. a crane) the trucks would be used in group play and the "owner" could keep tabs on it. This is explained more in the "Focused Tracking" section.

Types of Social Play Boys and Girls Engaged In With Different Toys

Concurrent with previous research findings that boys engage in more social pretend play outdoors than girls (Lever, 1977), the boys (60%) were observed wearing costume hats in group play more frequently than girls (see Table 9). And boys were in group play with the costume hats significantly more often than with any other toy ($\chi^2=52.0$, with 1 d.f., $p < .01$). Parallel play was the primary mode for the remaining toys for the boys: big wheeled toys (59%), sand toys (60%), musical instruments (45%), miniature vehicles (62%) and water toys (100%). The girls were found to play with sand toys significantly more in group play than any other toy ($\chi^2=51.2$, with 1 d.f., $p < .01$). The parallel play mode was also primarily found among girls' play for the remaining toys: little blocks (58%), costumes (70%), musical instruments (66%) and miniature vehicles (77%). Just as with the over-all findings, most play with toys was in a

Table 9

Number and Percent of Times Boys and Girls Engaged In Solitary, Parallel and
Group Play With Different Toys: Tracking Data

<u>Toy</u>	<u>BOYS</u>								<u>GIRLS</u>											
	<u>Solitary</u>		<u>Parallel</u>				<u>Group</u>		<u>Total</u>		<u>Solitary</u>		<u>Parallel</u>				<u>Group</u>		<u>Total</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>		
Little Blocks	1	100	0	0	0	0	1	100	8	28	17	58	4	14	29	100				
Costumes ^a	6	16	9	24	22	60	37	100	7	30	16	70	0	0	23	100				
Big Wheels ^b	40	33	73	59	10	8	123	100	15	50	0	0	15	50	30	100				
Sand Toys ^c	53	22	139	60	41	18	233	100	63	20	107	35	138	45	308	100				
Music Inst.	19	39	22	45	8	16	49	100	18	15	81	66	23	19	122	100				
Min. Veh.	35	37	82	62	15	11	132	100	7	13	41	77	5	10	53	100				

^a $\chi^2=52.0$, with 1 d.f., $p<.01$. ^b $\chi^2=15.8$, with 1 d.f., $p<.01$. ^c $\chi^2=51.2$, with 1 d.f., $p<.01$.

parallel play mode. This suggests no real gender differences, except for costumes, big wheeled toys and sand toys.

Types of Social Play 3-to-5 Year Old And 6-to-9 Year Old Children Engaged in With Different Toys

Previous research suggests that solitary and group play each develop as opposed to children developing one play mode and then going to the next mode (Rubin et al., 1976). This notion was revealed by these data (see Table 10). The 3-to-5 year olds were found playing with the little blocks, costume hats, big wheeled toys, sand toys, musical instruments and miniature vehicles primarily in the solitary and parallel play modes. The 6-to-9 year old children were observed playing with the little blocks, big wheeled toys, sand toys and musical instruments in the parallel and group play modes. The one exception was the 6-to-9 year old children playing with the miniature vehicles in solitary play more than the 3-to-5 year olds. In this case the older children were probably involved in solitary-constructive play (Rubin, 1982). In fact, the other toy category that had a large percentage of solitary play for the 6-to-9 year olds was sand toys, also involving constructive play. Combining cognitive (functional, constructive, dramatic) games with social (solitary, parallel, group) play modes seem to best explain their development, as this study and previous research suggests.

Table 10

Number and Percent of Times Children Ages 3-5, 6-9 Engaged In Solitary, Parallel
and Group Play With Different Toys: Tracking Data

<u>Toy</u>	<u>3-5</u>								<u>6-9</u>							
	<u>Solitary</u>		<u>Parallel</u>		<u>Group</u>		<u>Total</u>		<u>Solitary</u>		<u>Parallel</u>		<u>Group</u>		<u>Total</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Little Blocks	8	42	11	58	0	0	19	100	1	9	6	55	4	36	11	100
Costumes	10	31	22	69	0	0	32	100	3	10	3	10	22	80	28	100
Big Wheels	55	45	56	46	12	9	123	100	0	0	17	57	13	43	30	100
Sand Toys	31	20	100	64	26	16	157	100	85	22	146	38	153	40	384	100
Music Inst.	35	23	89	59	28	18	152	100	2	11	14	74	3	15	19	100
Min. Veh.	19	14	96	71	20	15	135	100	23	46	27	54	0	0	50	100

With respect to the controversy regarding parallel play (Bakeman & Brownlee, 1980) an interesting trend was revealed by the data. Sand toys, musical instruments and miniature vehicles were the toys with which, the 3-to-5 year olds, were found to engage in the most group play. For these same toy categories these youngest children were found to engage in more parallel play than solitary play. So perhaps children do use parallel play as an intermediary step before going onto group play, as opposed to going directly from solitary to group play. Evidence that parallel play is not reflective of developmental level is that both age groups had similar percentages of parallel play for 67% of the toys. Thus parallel play is not seen declining as would be expected if speaking of developmental changes.

Lastly, the 6-to-9 year old children used costumes in more group play than any other play category. One would assume that these children were approximately 6-to-7 years in age as presumably social pretend play increases from 3-to-7 years and then decreases (Rubin, Fein, & Vandenberg, 1983).

Types of Social Play Children With Varying Abilities Engaged In Different Toys

The children with mental retardation were found primarily to engage in solitary and parallel play, whereas the children without mental retardation engaged in parallel and group play (see Table 11). Roberts, Pratt & Leach

(1991) also found that children with mental retardation interacted less with their peers and more frequently played alone. Crawley and Chan (1982), however, found that children with mild retardation increased their amount of peer interaction with age. They suggest that older children with mental retardation develop peer play skills in the same manner as children without disabilities, but according to their developmental age. Interestingly, the percentages of the children with mental retardation are similar to those of the 3-to-5 year old children. In addition, the percentage of time spent in parallel play is slightly larger than the time spent in solitary play, thus suggesting that the children are aware of others. The toys with which the children with mental retardation did engage in group play were the little blocks (36%), musical instruments (17%), sand toys (11%) and miniature vehicles (9%).

The children without disabilities were engaged in primarily parallel and group play as would be expected (Rubin et al., 1978). An important observation to be taken under consideration is that the toy that was included in the percentage of most group play for the children without disabilities, sand toys (49%), was one of the toys that children with mental retardation played in a group play mode as well.

Table 11

Number and Percent of Times Children With Varying Abilities Engaged in Solitary,
Parallel and Group Play With Different Toys: Tracking Data

<u>Toy</u>	<u>MR</u>								<u>ND</u>							
	<u>Solitary</u>		<u>Parallel</u>		<u>Group</u>		<u>Total</u>		<u>Solitary</u>		<u>Parallel</u>		<u>Group</u>		<u>Total</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Little Blocks	1	9	6	55	4	36	11	100	8	42	11	58	0	0	19	100
Costumes	2	50	2	50	0	0	4	100	11	20	23	41	22	39	56	100
Big Wheels	33	51	32	49	0	0	65	100	22	25	41	47	25	28	88	100
Sand Toys	70	31	131	58	23	11	224	100	46	15	115	36	156	49	317	100
Music Inst.	14	39	16	44	6	17	36	100	23	17	87	64	25	19	135	100
Min. Veh.	33	35	53	56	8	9	94	100	9	10	70	77	12	13	91	100

Summary

Not surprisingly, costumes were involved in the greatest amount of group play. However, when factors such as age, gender and disability are factored in, 6-to-9 year old boys without disabilities are primarily responsible for this finding. This example demonstrates that although the characteristics of toys can influence behavior, other variables besides the toy need to be examined. When factoring in age, gender and disability the toys that were seen proportionately most frequently in group play for all the children were sand toys. Sand toys could play an important role on integrated playgrounds.

Play Repertoires

Toys Chosen By Children Who Were Tracked

The play repertoire analysis of the tracking data noted each time a child chose a new toy while playing during the ten-minute observation period. Additional analysis of the data provided the amount of time children continuously spent with the toys as well. The results obtained from this analysis reveal which toys were chosen the most and least frequently by children who were tracked. The findings of the sample of 176 children show that sand toys (buckets, shovels and sieves) were chosen most frequently, representing 31% of all the toys chosen (see Table 12).

Table 12
Number, Percent and Average Time Used For Toys Chosen By
Children^a Who Were Tracked

<u>Toy</u>	<u>N^b</u>	<u>%</u>	<u>Time^c</u>
Sand toys	88	31%	85.5
Miniature vehicles	66	23%	74.0
Musical instruments	48	17%	77.7
Big wheeled toys	29	10%	195.0
Water toys	16	6%	87.5
Sports equipment	12	4%	59.0
Big blocks	9	3%	16.6
Costume hats	8	3%	104.5
Little blocks	5	2%	57.5
Dolls	2	1%	10.0
Puzzles	2	1%	105.0
Total	172	100%	79.8

^aTotal sample of children=176. ^bN=Number of times chosen.

^cAverage continuous time children spent with toy in seconds.

The miniature vehicles (dump trucks, fire engines, etc.) were chosen 23% of all the toys chosen. These toys represented over 50% of the toys used. It should be noted that the sand areas comprise the largest amount of space that contained toys, and sand toys (shovels, buckets and pails) were most numerous. The fact that 98% of children's

observed use of these toys occurred in sand areas demonstrates the importance of having toys and loose parts in the sand areas of children's play environments.

The third most frequently chosen toys, which one would not readily expect to find on a playground, were the toy musical instruments (xylophones, play pianos, small drums), representing 17% of all toys chosen. These toys were located in the soft-play area which was shaded. It is reasonable that when children wanted to cool off in the shade they would come over to this area to play.

Surprisingly, the toy musical instruments were chosen much more frequently and played with longer than both kinds of blocks (big 3%, small 2%). When one thinks of loose parts on a playground, musical instruments may not readily come to mind. However they could be found among groups of children who were playing and singing songs together, or pretending to be a band.

Twelve-percent of the toys chosen were sports equipment. The sports equipment was kept in a wooden container that was not easily obtained, making it difficult for the children to obtain on their own. There was a bean bag game set up in the soft-play area that children enjoyed. Occasionally there were also sports games such as baseball, sometimes organized by adults and sometimes by children.

Ten-percent of the toys chosen were big wheeled toys (big wheels, scooters). The big wheeled toys were observed on the behavioral maps more often than in the play

repertoires. A larger number of observations of children riding big wheeled toys is what would have been expected in the play repertoires as well. For this set of analyses, however, popularity of certain toys can be interpreted by two measures: One is how many times the toy was chosen and the other is how much time the child spent continuously with the toy. Previous research has shown that big wheeled toys are quite popular (Brown & Burger, 1986; Hulson, 1939; Van Alstyne, 1932; Parten, 1932). The difference in number of observations could then be a result of the popularity of the big wheeled toys and their limited number. Children stayed on them for as long as they possibly could. The average amount of time children spent continuously using the big wheeled toys was longer than any other toys (see Table 12). The big wheeled toys would not then appear to be chosen as often as other toys, because one child would be continually using it. Another difference between the two sets of data could be that children did not want to be filmed riding down the hill of the waterwheel area while being tracked, because they were not supposed to be using their scooters on the hill.

Water toys represented 6% of all toys chosen, which is also lower than expected. However once chosen they were played with a relatively long time (see Table 12). In actuality this type of toy was also more popular than the percentage suggests. The water toys were only permitted at the waterwheel area for a short duration, because the

playground staff was told by an administrator that the water was not sanitized (treated). Children were then stopped from putting mats over the drains and pouring water on each other with the containers since it was a health hazard.

The costume hats represented 3% of the toys chosen and were put on when the children played with the toy musical instruments, sometimes initiated by the children's caretakers and sometimes by the children themselves. Perhaps because there were no other props to be used with the hats, the hats were not used often. However, once the children put on the hats (of which there were only nine) they kept them on a long time, not allowing others to choose them.

It is not surprising that dolls and puzzles represented only 1% of the toys chosen since they have a very limited role on a playground. This was especially true for the dolls as they were only played with for an average of ten seconds.

Toys Chosen By Gender

In a breakdown of toys used by boys and by girls, the results show that the number of toys chosen by boys was significantly more than that of girls ($\chi^2=19.5$, with 1 d.f., $p < .01$). (See Table 13). These findings corroborate the behavioral map findings that report more boys than girls with toys in their possession.

Table 13
Number, Percent and Average Time Used For Toys Chosen By
Boys and Girls Who Were Tracked

<u>Toy</u>	<u>Boys</u> (N=92)			<u>Girls</u> N=80)		
	N ^a	%	Time ^b	N	%	Time
Miniature vehicles ^c	58	30	98.9	8	9	56.3
Sand toys ^d	56	29	70.4	31	34	105.1
Big wheeled toys ^e	23	12	237.5	6	7	88
Musical instruments ^f	20	10	49.3	28	31	101.2
Sports equipment	9	5	63.3	2	2	25
Costume hats	7	4	84.4	2	2	195
Big blocks	6	3	15	3	3	113.3
Water toys	6	3	52.5	10	11	105
Little blocks	5	2	57.5	0	0	0
Puzzle	2	1	105	0	0	0
Doll	0	0	0	1	1	10
Total ^g	192	100		98	100	

^aN=number of times chosen. ^bAverage continuous time children spent with toy, in seconds. ^c $\chi^2=18.0$, with 1 d.f., $p < .01$. ^d $\chi^2=.18$, n.s. ^e $\chi^2=2.6$, n.s. ^f $\chi^2=15.6$, with 1 d.f., $p < .01$. ^g $\chi^2=19.5$, with 1 d.f., $p < .01$.

Sand related toys (sand toys and miniature vehicles) represented 59% of all toys chosen by boys and 43% for girls. The greatest difference between the two genders is

the number of times that the miniature vehicles were chosen. They represent 30% of all toys chosen by boys as compared to 9% for the girls. Since the girls chose sand toys more often than the boys, this raises questions as to why boys chose miniature vehicles significantly more often than girls ($\chi^2=18.0$, with 1 d.f., $p < .01$). Perhaps the lack of interest in trucks by girls can be explained by the fact that trucks are not usually purchased for girls. Or perhaps, the boys monopolized the trucks. In toy studies reviewed by Maccoby and Jacklin (1974), they found that by preschool, girls are found to be primarily sewing, stringing beads and playing with housekeeping toys. While boys are found playing with toy trucks, tractors and fire engines and doing carpentry. Girls, however, are willing to play with opposite-sex toys more than boys (Maccoby & Jacklin, 1974). From observations and the average amount of time the boys spent with the trucks as compared to the girls, the boys did not appear to relinquish them. The boys spent on the average approximately twice as long with the trucks as the girls did. Since there were relatively few miniature vehicles (24), compared to the number of children (approximately 150 per day), the girls might not have had many opportunities to play with them. The reasons for this difference may be a combination of these two related explanations. If girls are not accustomed to playing with trucks, they will not feel the need to exert extra effort to get the trucks in order to play with them, particularly when the sand toys are more

accessible. According to a study by Rothenberg (1977), girls said that the block areas in their classrooms were boys' areas, because blocks are boy toys. Therefore few girls played with the blocks. The girls in this study may have considered trucks as boy toys.

Other major differences in chosen toys are that the girls chose the musical instruments significantly more often than the boys ($\chi^2=15.6$, with 1 d.f., $p < .01$). Girls also played with the toy almost twice as long. The musical instruments were also in a contained area. The other difference was with large wheeled vehicles, boys choosing them 12% of the time and girls 7%, although the difference was not significant, the trend of use was in the same direction as the results found from the behavioral maps. These comparisons suggest that approximately three-quarters of the time the girls used toys in areas that were well defined: Sand areas and the soft-play area. As for the boys, their tendency to choose big wheeled toys, lends to more outdoor exploration, which has been suggested to be more characteristic of boys' play than girls' play (Frost and Klein, 1983). On the other hand, girls may not have chosen the big wheeled toys as often, because relative to the number of children that visited per day (approximately 150), there were only a small number of big wheeled toys (19). Just as with the miniature vehicles, the boys may have monopolized the big wheeled toys. As can be noted from

the average continuous amount of time spent with the toys, boys rode these almost three times longer than girls.

In summary, the boys chose significantly more toys than girls. The most frequently chosen toys for the boys were the miniature vehicles, the sand toys, the big wheeled toys and the toy musical instruments, in that order. The most frequently chosen toys for the girls were the sand toys, the toy musical instruments, the water toys and the miniature vehicles, in that order.

Toys Chosen By Age

The results suggest that the three-to-five year olds chose significantly more toys than the six-to-nine year olds ($\chi^2=35.5$, with 1 d.f., $p < .01$). (See Table 14). These results differ from the behavioral map findings. This finding is not due to the gender finding, because there are, in fact, more 6-to-9 year old boys in this sample than 3-to-5 year old boys. The difference may be because the entire population was observed for the behavioral maps and a subsample of the entire population (children with mental retardation and children without mental retardation) was used for the play repertoires. Another reason may be because the 3-to-5 year olds played with 71% of the toys for shorter periods of time than the 6-to-9 year olds, thus allowing them to choose other toys more often (see Table 14). The play repertoire results for the number of big wheeled vehicles and sports equipment chosen by the older

Table 14

Number, Percent and Average Time Used For Toys Chosen By 3-5 and
6-9 Year Olds Who Were Tracked

<u>Toy</u>	<u>3-to-5 year olds^a</u>			<u>6-to-9 year olds^b</u>		
	<u>N^c</u>	<u>%</u>	<u>Time^d</u>	<u>N</u>	<u>%</u>	<u>Time</u>
Sand Toys	50	24	61.4	36	47	105.4
Miniature vehicles	50	24	72.9	16	21	84.4
Musical instruments	32	18	76.7	11	14	85.0
Big wheels	28	14	190.0	1	1	146.7
Water toys	13	6	103.0	3	4	10.0
Big blocks	8	4	74.0	1	1	80.0
Sports equipment	7	3	20.0	5	7	77.1
Costume hats	5	2	144.0	3	4	71.7
Little blocks	5	2	57.5	0	0	
Dolls	2	1	10.0	0	0	
Puzzles	2	1	105.0	0	0	
Total ^e	207	100		76	100	

^aTotal sample of 3-to-5=96. ^bTotal sample of 6-to-9=76.

^cN=number of times chosen. ^dAverage continuous time children spent with toy, in seconds. ^e $\chi^2 = 35.3$, with 1 d.f., $p < .01$.

children are considerably lower than the behavioral mapping results. For some reason the older children who were filmed did not participate in these activities as often. As mentioned previously, the older children may not have wanted

to ride down the hill in the waterwheel area while being filmed. As for the sports equipment, the behavioral mapping results included children 9-to-12 years of age, which may in part explain that discrepancy.

Sand related toys (sand toys and miniature vehicles) represent 48% of the toys chosen by three-to-five year olds and 68% for the six-to-nine year olds. The toy musical instruments were third on the list for both groups of children, representing 18% of all toys chosen by three-to-five year olds and 14% for the six-to-nine year olds. As mentioned above, an unexpected finding was that big wheeled toys represented 14% of the toys chosen by the three-to-five year olds as compared to 1% for the six-to-nine year olds. The other toys were chosen by both age groups for about the same percentage of time, except that the six-to-nine year old children never chose the dolls, the puzzles, or the small blocks. The fact that the three-to-five year old children did not choose the dolls and the puzzles very often suggests that these toys are not the most appropriate toys for a playground.

In summary, the most frequently chosen toys for the three-to-five year old children were the sand toys, the miniature vehicles, the toy musical instruments and the big wheeled toys, in that order. The most frequently chosen toys for the older children were the sand toys, the miniature vehicles and the toy musical instruments, in that order.

Toys Chosen By Children With Mental Retardation and By Children Without Mental Retardation

Both children with mental retardation and children without mental retardation chose toys a similar number of times (see Table 15), suggesting that both groups of children have an interest in toys. When examining the breakdown of toys for the two groups, the results show that sand toys represent over 50% of all toys chosen for both children with mental retardation (52%) and children without mental retardation (56%). The toy musical instruments were also on the top of both of the rank order lists for children with mental retardation (13%) and children without mental retardation (19%). The major differences between the groups of children were that children with mental retardation chose large wheeled toys more often (20%) as opposed to children without mental retardation (6%). Since the caretakers of children with mental retardation kept their children in closer range, these children were more apt to be riding the big wheeled toys along the playground's paths. Also, blocks (both sizes) represented 11% of all toys chosen for children with mental retardation as compared to 3% for children without mental retardation. Once again the infrequent choice of blocks by the children without mental retardation is puzzling. Because of the educational value that is associated with blocks, the teachers of children with mental retardation may have encouraged the children to play with the blocks more (see Schwartzman, 1988).

Table 15

Numbers, Percent and Average Time Used For Toys Chosen By Children
With and Without Mental Retardation Who Were Tracked

<u>Toy</u>	<u>Children with MR^a</u>			<u>Children Without MR^b</u>		
	<u>N^c</u>	<u>%</u>	<u>Time^d</u>	<u>N</u>	<u>%</u>	<u>Time</u>
Sand toys	26	30	112.0	61	32	74.7
Miniature vehicles	19	22	80.5	47	24	67.1
Big wheels	17	19	210.0	11	6	174.5
Musical instruments	11	13	77.1	37	19	77.9
Big blocks	5	6	74.0	0		
Little blocks	4	5	85.0	1	1	48.3
Water toys	2	2	88.0	14	7	87.1
Dolls	1	1	10.0	1	1	10.0
Sports Equipment	1	1	14.0	10	5	25.0
Costume hats	1	1	50.0	7	4	110.0
Puzzles	0			2	1	105.0
Total ^e	88	100		193	100	

^aTotal sample=62. ^bTotal sample=110. ^cNumber of times chosen.

^dAverage continuous time children spent with toy, in seconds.

^e $\chi^2 = 2.6$, n.s.

In summary, the most important finding here is that sand toys, miniature vehicles and musical instruments represent at least two-thirds of all toys chosen for both groups of children. These common choices of toys suggest

that these two groups of children have similarities in what they like to play with on a playground. Playing in close proximity to each other, with these toys (and occasional intervention), may encourage social interaction between these two groups of children.

Play Behavior Frequency By Types of Toys Chosen
By Children Who Were Tracked

The toys chosen by the children afforded them play experiences that stationary play equipment would not necessarily have offered (see Table 16). With sand toys, miniature vehicles, blocks and puzzles children were given the opportunity to engage in constructive play, such as building forts with sand. While using the trucks and big wheeled toys children were able to engage in wheeled locomotion, propelling themselves around the playground. Children were able to play music and dance along to it by using the toy musical instruments supplied. And finally, although some dramatic play may occur on the stationary equipment, such as children forming trains on the slide, props such as miniature vehicles, musical instruments and water toys can also encourage dramatic play. More dramatic play instances were expected from the costume hats. At times, children were seen putting on the fire hat while playing with the fire trucks. If more hats had been placed with the trucks, perhaps additional incidents would have been observed.

Table 16
Number and Percent of Different Play Behaviors Used With Each
Toy: Tracking Data

	N	%		N	%
<u>Sand Toys</u>			<u>Miniature Vehicles</u>		
Constructive play	49	56	Manipulating object	27	41
Sensory stimulation	20	23	Constructive play	12	18
Manipulating object	9	10	Pushing	11	17
Object exploration	5	6	Object exploration	9	14
Rough and tumble	2	2	Wheeled locomotion	6	9
Preparing to play	2	2	Dramatic	1	2
Water play	1	1			
<u>Musical Instruments</u>			<u>Big Wheeled Toys</u>		
Music/dance	26	54	Wheeled locomotion	18	62
Manipulating object	10	21	Object exploration	5	17
Object exploration	6	13	Manipulating object	5	17
Rough and tumble	3	6	Pushing	1	3
Sensory stimulation	1	2			
Dramatic	1	2			
Sliding	1	2			
<u>Water Toys</u>			<u>Sports Equipment</u>		
Water play	10	63	Sports	6	50
Constructive play	2	12	Throwing	3	25
Dramatic	2	12	Manipulating object	2	17
Manipulating object	2	12	Sliding	1	8

Table 16 (continued)

	N	%		N	%
<u>Big Blocks</u>			<u>Costume Hats</u>		
Object exploration	4	44	Putting on costume	3	38
Constructive play	3	33	Music/dance	3	38
Rough and tumble	1	11	Manipulating object	2	25
Manipulating object	1	11			
<u>Little Blocks</u>			<u>Dolls</u>		
Object exploration	5	100	Object exploration	1	50
			Manipulating object	1	50
<u>Puzzles</u>					
Constructive play	2	100			

Toys and loose parts also offered children a sense of control over their environments. Children were found to have explored and manipulated each kind of toy that was offered. Large pieces of playground equipment can be explored, but because they are stationary, children are not able to change or manipulate the pieces. With toys and loose parts children have the opportunity to change the environment around them. Looking at the environment from a macro level, children can move toys or loose parts to different areas of the playground, for example, taking the water toys to the sand areas. And looking at the environment from a micro level, children can manipulate the parts of the toy or the loose part itself, such as by discovering how all the parts on a fire truck work. This

must be important to the children, because a third of the time that children played with the toys they were either exploring or manipulating the toy.

An additional way for children to explore and manipulate their environment is by using the toys and loose parts in ways in which they would not normally be used. Some examples of this were then the children would "drive" the dump trucks by bending over and pushing them by applying most of their weight to their hands and then walking. Another example was putting the costume hats on when playing the musical instruments, which encouraged the children to pretend play. The children also used toys to make the playground more challenging for themselves. As mentioned previously, during one of the summers when there was a drought, and the waterwheel was turned off, the children used the hill of the waterwheel as an exciting place to ride scooters.

To summarize, the most frequently chosen toys were the sand toys, miniature vehicles, musical instruments, big wheeled toys and water toys respectively. Each of these toys allowed the children to explore and manipulate their environment in different ways, for example, by enabling them to construct, make music, pretend and wheel around the playground.

Focused Tracking

How Toys Can Encourage Social Interaction

While the tracking methodology was useful for noting the occurrence of social interaction for different groups of children, it did not allow for in depth examination of children's social interactions with toys. Focused tracking was designed to describe the sequence of children's social interactions with toys. Only those children who possessed a toy and had social contact with a child from another institution were used for these data. Of the 87 children filmed, only 27 fit these criteria. In order to describe the characteristics of toys that encourage social interactions, the transcriptions were categorized. The following are examples from transcriptions of the video tapes. Twenty-two of the children used were aged 3-to-5 years and 5 were 6-to-8 years. Only 9 of the 27 children's interactions were between children with disabilities and children without disabilities, which is similar to the previous findings that children with varying abilities were often not in physical proximity of each other.

As noted in the entry behavior skills literature review, sharing a frame of reference is a component for successful entry into play. Toys can provide a mutual frame of reference for children to use in order to join in another's play. It is important to remember however, especially for younger children, that entry often will not be successful

(Corsaro, 1981). Also to consider, is that children's willingness to share increases with age (Rubin & Schneider, 1973). Thus, as one child uses the toy as a frame of reference, the other children who have perceived "transitory ownership" of the toy, may refuse to share.

Example 1: Target Child: 5 year old boy, with no disability.
Other child (boy with no disability, about same age) asks target child if truck has batteries. Target Child lifts truck to look at bottom of truck, leaving a second truck that it was hitched to on the sand. Other Child takes the truck left behind. Target Child takes truck back. Other Child walks away.

Example 2: Target Child: 5 year old boy with learning disabilities.
Target Child is playing with truck. Other Child (girl with no disability) asks if she could play with the truck. Target Child shakes his head no. Other Child gets up looking at the truck and walks away.

If a toy has a couple of knobs to turn or a container to be filled, so that could a common activity could be supported, one toy could encourage social interaction as opposed to incurring conflict over its possession.

Example 3: Target Child: 3 year old girl with physical disability.
Other Child (boy, with no disability) squats beside Target Child and puts some sand into the truck she is playing with. Target Child puts in sand also. Other Child lifts up the truck and empties out the sand. They both put more sand into the truck.

Example 4: Target Child: 3 year old boy, with developmental delay.
Target Child is playing with a dump truck. Other Child (boy, with no disabilities) approaches, looks at Target Child, sits down and touches the truck. The two play with the truck making "zoom" - type noises.

Example 5: Target Child: 5 year old boy, with no disabilities.
 Target Child is filling up a dump truck container.
 Other Child (2 boys, with no disabilities) add sand to container.

Each child having his/her own toy of course means that the child attempting to enter another's play has the least amount of risk for being rejected since the other child does not need to share the toy. But by entering with a toy, something of possible interest is available to the other child. The other child can focus on the new toy which can then begin an interaction. Of course if the other child is not interested, the entering child always has a toy to fall back on. The largest number of the 27 cases were of this category:

Example 6: Target Child: 3 year old boy, with no disabilities.
 Target Child is playing with a truck in the soft-play area. Other Child (2 girls, with no disabilities) enter area and play with musical instruments. Target Child sits near them and begins to play musical instruments in a parallel play mode.

Example 7: Target Child: 4 year old girl, with no disabilities.
 Target Child is patting sand down in a dump truck. Other Child (boy, with no disabilities) brings truck with him and sits in front of Target Child. Target Child continues patting sand down. Other Child wheels truck around. Other Child leaves truck to get another truck. Other Child brings truck over by Target Child. Other Child wheels truck, Target Child continues patting sand. Other Child leaves.

Example 8: Target Child: 4 year old boy, with no disabilities.
 Target Child goes over to truck. Other Child (boy, with no disability) goes to other side of truck and asks Target Child if he can use it. Target Child nods yes. Both pick up their respective trucks. Target Child watches Other Child put his truck on the wooden divider

surrounding the sand area. Target Child puts his truck there as well.

Example 9: Target Child: 4 year old girl, with no disabilities.
Target Child pours water on PAC staff person's legs with container. Other Child (girl, with no disability) imitates Target Child.

Example 10: Target Child: 5 year old boy, with mental retardation.
Target Child and Other Child (girl, with no disability) are both playing musical instruments. Other Child looks up at Target Child. Target Child looks back and smiles. Other Child comes over with her musical instrument and sits facing Target Child. Both play their musical instruments. Other Child tells Target Child to hit the purple key of the xylophone he is playing. Target Child does not, but continues to play.

Example 11: Target Child: 5 year old boy, with no disabilities.
Other Child (boy, with no disability) sits next to Target Child. Both are playing with their trucks. Other Child walks away and then returns. He takes his truck and wheels it on the asphalt. Target Child follows with his truck and wheels his truck on the asphalt too.

Example 12: Target Child: 5 year old boy, with no disabilities.
Other Child (boy, with no disability) sits down and helps Target Child fill his truck with sand. Target Child dumps out the sand. Other Child says, "Let me give you gas." Other Child has a fire engine with a hose. Target Child puts the truck down. Other Child pulls dump truck toward him and Target Child pulls it away. Other Child walks away. Another child (girl, with no disability) has hose put to the side of the truck while Target Child holds onto the dump truck. Other Child comes back and pours sand into the dump truck with a bucket. Target Child and Other Child both work on filling the truck. Other Child now fills the truck with "gas".

Example 13: Target Child: 6 year old boy with no disabilities.
Target Child, with costume hat on is turning wheel at sand conveyor belt. Other Child (boy, with no disability) enters area with costume hat and Target Child asks if he wants to be the fireman. Other Child answers yes and Target Child says, "I'll be the squawkman."

Example 14: Target Child: 6 year old girl, with no disabilities. Target Child is playing with a truck. Target Child looks over to Other Child (boy, with emotional disability). Other Child looks at Target Child. Target Child goes over to Other Child. Target Child leaves, picks up a rock and brings it back. Target Child takes sand sieve. Other Child tells her its empty. He asks if she likes it, and that she should try it. Target Child turns away. Other Child gets up and picks up something and tells Target Child to look. Target Child goes closer to him, and begins to shovel sand. Other Child puts sand in the sieve. He says, "Look, look-watch this!" They both continue shoveling. Target Child points over to some children and says, "That's my class." Target Child tells Other Child he has sand on his mouth. Other Child starts putting sand in Target Child's bucket. Target Child does too. Other Child says "Make more, make more!" Target Child levels off the bucket and says, "No more." He gets up and tells Target Child he is getting a shovel. Target Child gets another sand mold. Other Child tells Target Child she can fill the mold herself. Target Child fills the mold. Other Child gets up and jumps around.

These examples show how having an object can and cannot be successful in obtaining interaction with another.

Eisenberg and Giallanza (1984) studied how children obtain toys from others. They found that young children use physical gestures and the researchers hypothesize that school age children would use verbal techniques. Even though in these examples children are not taking another's toy, they are trying to make contact by using physical gestures. The younger children primarily attempt this by bringing themselves and their toys close to the other child and/or imitate each other's play. Or as Eisenberg and Giallanza (1984) found young children use physical means to control their toys. This was found in 3 instances of young children whose toys were attempted to be grabbed away by

another. By school age, the children are beginning to use verbalizations. "Hit the purple key."; "Let me give you gas.". And by 6 years of age, language appears to be used often.

Language in addition to toys can be especially useful in lengthening interactions between unfamiliar children because children who often play with one another are better acquainted with each other's play repertoires. Doyle, Connolly and Rivest (1980) found that the social interactions of acquainted children were more frequent and the complexity of their social play was enhanced. The following example corroborates those researchers' findings, as well as the problem of caretakers' unfamiliarity with the complexities of children's play. These boys, if they had been left alone, may have continued their play together.

Example 15: Target Child: 7 year old boy, with no disabilities.

Other Child (boy, with no disability) taps Target Child's shoulder. Target Child turns around facing Other Child and says something (their speech is indiscernible). Both boys play with their respective toys, Target Child with a truck, Other Child with a sand mold. Other Child looks at Target Child and says something. Both go back to playing. Target Child says something to Other Child, and both continue what they are doing. Target Child pushes his truck up to Other Child. Both continue to play with their separate toys. Target Child's caretaker comes up to the sand platform and asks what he is doing. Target Child tells her playing with a truck. Target Child looks up at Other Child and watches him play with his truck. Target Child goes back to playing with his truck. Target Child moves around to his caretaker with his back to Other Child. He talks with his caretaker.

It may be that these two children would have never played together in a more cooperative manner, but the caretaker's presence did break into the children's momentum. Adult-child and child-child interactions compete with one another. Because it can take a relatively long time for unfamiliar children to start playing with one another, caretaker's interventions should be done with sensitivity for the flow of children's play. As will be discussed later, intervention should be initiated by caretakers who are trained.

How Caretakers Can Encourage Social Interaction

Although groups of children with varying abilities did not often play in the same areas, there were times when the children were in close physical proximity. The focused tracking data reveals that caretakers did not intervene in order to encourage social integration. Research done by Johnson, Rynders, Johnson, Schmidt, and Haider (1979) found that more positive interactions occurred between children with and without disabilities under cooperative conditions than under individual or laissez faire conditions. Thus it should be the responsibility of the caretakers to facilitate the children's cooperative play.

Findings from another study from PAC, that compared the teachers of children with and without mental retardation, suggested that they had different ideas of what their roles on a playground were; however, neither groups saw themselves

as facilitators of social interaction (Schwartzman, 1988). Teachers of children without mental retardation saw their role as managerial and teachers of children with mental retardation were concerned with how the play could be of educational value to the children. Schwartzman notes that when the teachers of the children with mental retardation were a part of their children's play they would see them as individuals with a deficiency, instead of "organiz[ing] the environment in such a way that whatever the child's difficulty is, that difficulty [could] be overcome, [so that] the teacher...function[s] as an external support system" (Schwartzman, 1988, p. 142). In Sweden, nursery school children with and without special needs are integrated so that they can be exposed to one another. According to researchers the Swedish the process is not an easy one, but requires the continuous assistance of a support staff to insure that the children with special needs function at full capacity and interact with the children without special needs as often as possible (Mueller & Bergstrom, 1982). In order for more social interaction between children with varying abilities to occur on PAC, as is one of its goals, the PAC staff and caretakers need to incorporate into their responsibilities the role of social interaction facilitator.

The following examples illustrate caretakers who had an opportunity to encourage social play between children of different groups, but did not intervene.

Example 16: Target Child: 5 year old boy, with mental retardation.

Target Child is playing with blocks in a parallel mode with others from his group and children from another group without mental retardation. Target Child's caretaker suggests to Target Child that he build a house.

This caretaker could have brought the children from her group and those from the other group together by building something as a group project. The caretaker could have initiated the project, and then lent her support as it was needed.

Example 17: Target Child: 5 year old boy, with mental retardation.

Target Child is playing with a truck. He takes the truck and walks over to where two girls, not from his group, are playing with their caretaker. Target Child stands beside them and watches them play. No one says anything and he eventually walks away.

Example 18: Target Child: 4 year old boy, with no disabilities.

Target Child watches two caretakers of children with disabilities and their children playing with a boat. Target Child walks closer to them and continues to watch. Target Child walks away. Target Child returns and watches.

From Examples 17 and 18, the caretakers ideally should have been aware of the other children's presence and included them in their play. Unfortunately, when the caretakers are briefed about the playground's goals they are not given any instructions on how they might help implement them. For instance, the caretakers as they enter the playground should be made to feel responsible for all of the children. Such as when children who are not from their group

are observing their play, the caretaker should help integrate them into the group if the children desire.

Example 19: Target Child: 5 year old boy, with no disabilities.

Target Child is playing with sand toys next to a boy from another group. The other boy asks Target Child if he can play. Target Child's caretaker tells him to share. The other child looks on, waits, and then walks away and watches from afar.

Example 20: Target Child: 4 year old boy, with mental retardation.

Target Child watches a boy from another group playing a xylophone. The other child takes the stick attached to Target Child's musical instrument and starts using it for his xylophone. Target Child points to the stick. Target Child's caretaker comes over and takes the stick away from the other child explaining that the target child needs it for his instrument. The caretaker illustrates what she means. The other child plays his instrument and then walks away.

In both instances the caretaker intervenes, but stops short. In Example 19, the caretaker could have initiated a project for the two children by asking if they would like to build a tunnel or sand mound together. If they wanted to, she could have helped get them started by encouraging them to share the sand toys and work together. In Example 20, the caretaker after showing the child what she meant could have suggested that the children play a song together. The caretaker could have clapped along or used another musical instrument to help the tune along.

As in the following example, sometimes children do make an effort to play socially with one another, but do not understand when the child, because of communication impairments, does not respond as they would expect.

Example 21: Target Child: 8 year old boy, with mental retardation and autism. Target Child is playing with a toy piano. A girl from another group sits next to him and asks if she can play with him. Target Child does not answer. The girl picks up the bells and starts to play with them. She taps Target Child on the shoulder and asks what song he is playing. Target Child does not reply. The girl touches the piano Target Child is playing - "Jon, what song are you playing?" (Target Child is wearing a name tag). Target Child says something, but she does not understand and turns the piano around. Target Child says something inaudible. They play the piano together. "Jon, JON, JON" - Target Child does not look at her, but plays the piano. "JON!" she says louder. She asks the sound person, "why does Jon not answer." But as according to the research team's noninterference policy, the sound person does not answer her. "Jon, Jon-" she taps his knee. Target Child plays the piano. She plays the piano. Target Child looks at her. She takes the piano and puts it on her lap. Target Child pulls it and says, "No!" She says, "No?" She plays the bells. She asks, "Jon would you like me to leave?" He looks at her. "I'm going to leave now, okay Jon?" and she leaves.

This girl was clearly very frustrated. The target child's speech was very difficult to understand. A caretaker who understood the situation could have possibly given the girl a better understanding when she asked why the target child did not answer. A similar example of not understanding occurred during a personal observation between a boy wearing an eye patch and a girl not from his group. The girl asked the boy why he had an eye patch. The boy turned away. The girl asked two more times and the boy looking very angry turned away. The girl asked several more times, and the boy finally walked away. Perhaps if a caretaker had been there, she could have made the boy feel more comfortable about his eye patch while answering the girl's question. As Aiello (1983) noted, children notice

people who are different from themselves. Especially in the case of people with disabilities, they are told not to point or talk about differences. This lack of information turns into fear of the unknown. At a playground whose goal is to integrate children with and without disabilities, disabilities should not only be discussed through puppet shows, but should be understood in real life terms. A possible way to accomplish this, is by trained staff and caretakers, who are placed throughout the playground.

The following observations illustrate that caretakers can be successful in bringing together children from different groups. One caretaker was observed with a group of children wearing costume hats, playing musical instruments and singing jingle bells. Another caretaker gathered children together and helped coordinate them in building a structure with big blocks. According to Mueller and Bergstrom (1982) blocks are an especially good activity to promote social interaction since they can be specially designed for all children (e.g. weight, size and colors). And one of the highlights of one summer occurred when a caretaker had children from different groups putting on costume hats and playing musical instruments in a marching parade band over the traffic and rocking bridges.

These examples demonstrate that caretakers, if educated about the importance of helping to create cooperative play opportunities, can assist PAC in achieving its goal to have children of varying abilities socially integrate.

Summary

Once children from different institutions do find themselves in close physical proximity, results show that toys can provide a frame of reference for the children to enter each other's play. If only one toy is available, it should be one that can be used by more than one child at the same time, such as one that has multiple moving parts, so that it can encourage social interaction. Children each having their own toy means that neither child has to share. This reduces the risk for potential conflict, as well as decreasing the possibility of the approaching child being rejected.

It was concluded, however, that with an adequate number of appropriate types of toys, social interaction between children with and without disabilities will only occur if it is also supported by the knowledgeable interventions of trained caretakers.

Children's Interviews

"What Is Your Favorite Toy"

In order for toys to be able to encourage social interaction between children with varying abilities, one has to be sure that all children like the toys provided, especially the same toys, thus increasing the likelihood for the occurrence of social interaction (Beckman & Kohl, 1984). In order to obtain that information, children with and

without disabilities were asked, "What is your favorite toy?"

Seventy-one percent of the children without disabilities and 69% with disabilities who were interviewed said that action figures or dolls were their favorite toy (see Table 17). In addition, for both groups of children, only boys said action figures (Voltron, Transformers, G.I. Joe, etc.) and only girls said dolls (Cabbage Patch, Rainbow Brite, Barbie, etc.). The percentages of the boys and the girls in both groups who answered action figures or dolls were very similar. For children without disabilities, it was 67% of the boys and 74% of the girls, while for children with disabilities, it was 65% of the boys and 79% of the girls (see Table 18). And when distinguishing the responses by age and disability, children from all age groups gave action figures or dolls as their most frequent response. The trends for the different age groups for both children with and without disabilities are very similar, with the 6-to-8 year olds responding with action figures or dolls most frequently (see Table 19). Thus, over two-thirds of the children interviewed, both with and without disabilities, liked the same type of toy and their preferences were consistent across gender and age.

The percentages of the other toys that both groups of children gave as responses were also similar (see Table 17).

Table 17
 Number and Percent of Times Each Toy Was Named By
 Children of Varying Abilities In Response To
 "What Is Your Favorite Toy?"

<u>Toy</u>	<u>Without Disabilities</u>		<u>With Disabilities</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Act. fig./Dolls	119	71.0	37	69.0
Cars/Trucks	11	7.0	6	11.0
Sports Equip.	9	5.0	3	6.0
Bikes	7	4.0	1	1.3
Comp./Video Games	5	3.0	2	4.0
Music. Inst.	2	1.0	2	4.0
Blocks	2	1.2		
Board Games	2	1.2		
Etch-a-Sketch	2	1.2		
Tool set	2	1.2		
Toy gun	2	1.2		
Science set	1	1		
Doctor's kit			1	1.3
Puzzle			1	1.3
None	4	2.0		
Total	168	100	53	100

Table 18
 Number and Percent of Times Each Toy Was Named
 By Boys and Girls of Varying Abilities, In Response
 To "What Is Your Favorite Toy?"

Toy	Non-disabled				Disabled			
	Boys		Girls		Boys		Girls	
	N	%	N	%	N	%	N	%
Act. fig./Doll	49	67	70	74	26	65	11	79
Cars/Trucks	10	14	1	1	6	15	0	
Comp./Video Games	4	5	1	1	2	5	0	
Sports Equip.	3	4	6	6	3	8	0	
Bikes	1	1	6	6	1	2.5	0	
Music. Inst.	0		2	2	1	2.5	2	14
Blocks	0		2	2	0		0	
Board Games	0		2	2	0		0	
Etch-a-Sketch	1	1	1	1	0		0	
Science set	1	1	0		0		0	
Puzzle	0		0		1	2.5	0	
Doctor's kit	0		0		0		1	7
None	0		4	4	0		0	

Table 19
 Number and Percent of Times Each Toy Was Named
 By Children of Varying Abilities and Ages
 In Response to "What Is Your Favorite Toy?"

Toy	Non-disabled						Disabled					
	3-5		6-8		9-12		3-5		6-8		9-12	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Act. fig./Dolls	21	70	69	76	29	62	5	56	16	80	16	64
Cars/Trucks	4	13	7	9	0		1	11	2	10	3	12
Sports Equip.	1	3	2	2	6	13	1	11	0		2	8
Bikes	1	3	2	2	4	9	0		0		1	4
Comp./Video Games	0		3	3	2	4	0		0		2	8
Music. Inst.	0		2	2	0		2	22	0		1	4
Tool Set	1	3	1	1	0		0		0		0	
Toy Gun	0		2	2	0		0		0		0	
Etch-a-Sketch	0		2	2	0		0		0		0	
Blocks	0		1	1	1	2	0		0		0	
Puzzles	0		0		0		0		1	5	0	
None	2	7	0		2	4	0		1	5	0	
Board Games	0		0		2	4	0		0		0	
Doctor's kit	0		0		0		0		1	5	0	
Science set	0		0		1	2	0		0		0	

There were some toys that one group mentioned and the other did not, but these only accounted for 7% of the children without disabilities and 2.6% of the children with

disabilities. When the responses are separated by gender and by age, once again the responses are very similar. Comparison of the findings between the children with and without disabilities is unremarkable (Table 18 and Table 19). For example, none of the responses given by the children were out of the ordinary for their age groups. The 6-to-8 year old children without disabilities mention a greater variety of toys than the other groups, but this is because these children represent the greatest number of children interviewed.

From the responses that children gave to the question, "What is your favorite toy?", a determination could be made that both children with and without disabilities have similar favorite toys. Undeniably toys are a large part of a child's culture (Sutton-Smith, 1989). Discovering that another child has similar tastes in toys can be an important tool in changing a child's attitudes toward other children with apparent differences (Bak & Siperstein, 1987).

"What Toys Would You Add to the Playground?"

This question was asked to discover what suggestions the children might have in adding toys and loose parts to the playground and whether children with and without disabilities would choose similar additions. As can be seen from the results in Table 20, approximately one-third of children from both groups would like to add action figures and dolls; which as mentioned above was by far the most

Table 20
 Number and Percent of Times Each Toy Was Named By
 Children of Varying Abilities in Response to
 "What Toys Would You Add to the Playground?"

<u>Toy</u>	<u>Non-disabled</u>		<u>Disabled</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Act. fig./Dolls	46	33	14	38
Cars/Trucks	16	11	6	16
Big wheeled toys	27	19	5	14
Sand Toys	9	6	2	5
Water Toys	7	5	1	3
Sports Equip.	20	14	4	11
Pretend Play Toys	6	4	3	8
Animals and Plants	2	1	1	3
Music. Inst.	3	2	0	
Blocks	1	1	0	
Comp./Video Games	1	1	0	
Wood to Build With	2	1	1	3

favored toy. It is of course questionable how practical these toys would be for outdoor play, although action figures and small dolls would probably be fun for pretend play in the sand. To quote one child, "I'm going to skip (i.e. not answer) Voltrons (an action figure) because everyone would want to bury them." The feasibility of keeping track of action figures would be of concern.

Except for the action figures and dolls, the only toys mentioned that were not on the playground were: computer games, wood to build with, dramatic play items, and animals. Interestingly, two of the most frequently mentioned toys were two of the most popular toys as mentioned in the Play Repertoire analysis, big wheeled toys and miniature vehicles (cars and trucks), thus suggesting that there were too few on the playground. Another popular choice was sports equipment. However, according to the Play Repertoire analysis sports equipment was not chosen frequently. A conclusion that can be drawn is that because the sports equipment was not that accessible to children, it should be made more so, as children appear to have an interest in it. Sand toys, water toys, musical instruments, and blocks are probably mentioned less frequently because there was less conflict over these toys.

Children also gave some other interesting responses. One child had a very inventive idea which was to have a huge transformer that children could climb on. This is an interesting approach to bringing what is very popular among children in their play indoors and adapting it to their outdoor play. One of the characteristics of transformers is that they transform from a machine into an animal - the combination of a structure to climb on as well as change could be very exciting. Children also asked for costumes to be included with the costume hats. Another child suggested that there be little figures for the sand castle. Research

by Cheung (1989) has revealed the sand castle to be very successful in supporting social interaction. The idea of incorporating dolls and action figures might further support social interaction. This would be a setting in which social interaction themes are suggested both by the "stage" and by the "characters." Other children thought that there should be wood on the playground so that they could build, and another suggested that animals be added. These suggestions, which came from both children with and without disabilities were especially refreshing, as they were able to see beyond what the adults had placed before them.

PAC Directors' Interviews

Three PAC directors were interviewed about their opinions of and experiences with toys used on the playground. In response to whether they thought toys were of value for children, the directors all agreed that toys enriched the playground experience. The following is a list of values they gave, with examples:

- * Toys and loose parts supplement the stationary apparatus. When the children are bored with the apparatus, they have other things to entertain them, therefore they do not have to leave the playground. Loose parts are also crucial in making certain areas work, such as baseball equipment for the baseball diamond.

- * Toys and loose parts also encourage children to socialize with one another, as they build sand castles or when playing with blocks. An example specific to PAC, as

explained by one of the directors, was with the water wheel and water toys. Without water toys there was not much social interaction: after going through the "sprinkler" a couple of times the fun was over. The toys added to the children's play experience. Unfortunately, when a Parks Department official came to the playground, she insisted that the water toys be removed, because the recycled, untreated water was not considered sanitary.

* They felt some toys and loose parts were particularly educational, such as those used for planting in the garden area.

* Because the wheeled toys are not fixed, children are encouraged to explore their environment by wheeling around the playground.

* They felt that some toys motivated children to express themselves creatively and imaginatively, such as those used for playing in the sand.

* Cognitive skills can also be developed from activities such as block building and sand play.

The Earth ball (a large canvas weighted ball) in the net area is valuable for developing motor skills.

According to the directors, some toys were considered better than others. The toys mentioned were: scooters and skate boards (previously referred to as big wheeled toys), miniature farm animals, large building blocks, sand toys, bats and balls, hats, musical instruments, and water toys.

The only disagreement between the directors concerned board games. Two directors felt that board games were not good for the playground because the small pieces were easily lost. One also noted that the children did not ask for them very often. Another director, however, felt that board games were good for educational skills and for learning how to compete. She felt that it was hard for children to integrate on the stationary equipment, such as the swings, but easier with board games because they are more structured. Board games that encourage competition, however, are probably not the most optimal toy activities to have on a playground attempting to integrate children with and without disabilities. Building a sand castle or playing with the parachute, for example, could be structured to promote social interaction without depending on classroom skills that readily stress the differences between children with and without mental retardation, for example. Gentry (1983) found that children with disabilities are more likely to be included in the play of children without disabilities in activities that require less skill. Also, with the presence of board games, children with physical handicaps may use them instead of taking risks with the less familiar, more challenging outdoor play activities. All three directors did agree that toys containing small pieces were not good, because younger children placed them in their mouths.

Another toy that was popular, but considered unsafe was the jump rope. According to one director, people would get hurt as they walked by because the children turning the rope would not pay attention to those passing by. The director thus took the jump ropes away, which was unfortunate because nine girls mentioned them in their interviews. (Jump ropes were listed under the sports equipment category.) Instead of doing away with the jump rope, the girls could have been told to use the back entrance area which was rarely used. Jumping rope is a very popular and social outdoor activity, especially for city kids, and should not be excluded from the children's playground experience (Dargan & Zeitlin, 1990).

A very important concern about use of toys on the playground is their management. When discussing this with the directors many issues were raised. In 1985, the staff let the community children as well as the reserved groups play with the toys. According to one of the directors, this created major problems, the first of which was that there was not adequate storage space. The room where the children would go to choose a toy was also where they would receive first aid. This space problem was solved the following year when the New York City Parks Department provided the playground with a trailer to house toys, loose parts and other equipment. Another problem was that during the community hours, \$250 worth of toys were stolen. The toys need to be marked and some kind of management system needs

to be in place or the toys disappear. For the following years the only toys made available to the community groups were shovels and buckets for the sand areas and baseballs and bats for baseball games.

Toys also needed to be monitored carefully for safety reasons. The directors noted that it is important to be aware at all times when a toy is too worn or a safety hazard. For example, one of the scooters lost a wheel. If it had not been observed, a child could have used it and been injured. In purchasing the toys, their durability must be considered since many children will be playing with them. All toys should be evaluated for their safety, such as the size of their pieces.

The directors were also asked what toys they would add to the playground. The answers were primarily more of the popular toys that they had spoken of previously, namely, big wheeled toys, large building blocks, a larger variety of sand toys, water toys, balls in a variety of sizes and weights, and sand castles. The new kinds of toys that they would add were: adapted toys with switches for children with physical disabilities, toys with velcro on them, a large velcro dart board, a play house, carts for the track area, and water play with music, i.e. chimes that would ring when water hit them. Push carts for the race track had been originally included in the design, but when they were built, they did not fit the track and as of this writing they have not been retrofitted.

All three directors spoke of the importance of how toys could bring children together, such as by block building or sand play, but none of them considered how to actually get the children with and without disabilities to do these spontaneous activities together. One director mentioned that if a child with disabilities is playing blocks, an able-bodied child will come over and ask to play. It should be noted that programmed activities designed to integrate children, such as arts and crafts, gardening and playing with a parachute did occur but these were not part of the study of children's spontaneous activities. The directors did not mention that children brought to the playground would not be expected to search out new children on their own, especially when coming with a group of familiar children. They also did not mention that visiting caretakers should be trained to support social integration as part of their role when visiting the playground.

Summary of Major Findings

- (1) What did the Playground For All Children directors, from 1986-1987 think were the values and problems of including toys on the playground?

*Toy values: Toys and loose parts supplement the stationary playground equipment. They also encourage children to socialize with one another. In addition, toys and loose parts can be selected to accommodate varying abilities, such as big wheeled toys for children without physical disabilities and adapted big wheeled toys for children with physical disabilities.

*Toy management problems: Storage space is necessary for the toys and loose parts. There needs to be a system to keep toys from being stolen. Toys need to be monitored for safety.

- (2) What toys do children who visit the Playground For All Children think are valuable to include on the playground?

*As evidence that the play environment is a place of common interests to all children, over 67% of the children interviewed, both with and without disabilities, like the same type of toy (action figures and dolls) and their preferences were consistent across gender and age.

- (3) What types of toys do children on the Playground For All Children use and how does this vary according to age, gender and type of impairment?

*Age: The observations recorded by the behavioral maps show that toy possession by children ages 3-to-5, 6-to-8, and 9-to-12, were not significantly different. The results from the tracking data, however, show that the 3-to-5 year old children chose toys significantly more often than 6-to-9 year old children. The discrepancy may be because the 3-to-5 year olds played with toys for shorter periods of time than the 6-to-9 year olds, thus allowing them to choose toys more often.

The behavioral map data show that the 3-to-5 and 6-to-8 year old children were observed most with sand toys, while the 9-to-12 year olds were observed with both sand toys and big wheeled toys. The tracking data show that both the 3-to-5 and 6-to-9 year old children chose sand toys and miniature vehicles most frequently.

*Gender: Both the behavioral map and tracking data observed boys with toys significantly more often than girls.

The tracking data observed girls significantly more often with sand tools and musical instruments than boys. The boys were observed significantly more often with miniature vehicles, big wheeled toys and balls than the girls.

*Disability: According to the behavioral map results children with emotional disabilities, learning disabilities, physical disabilities, mental retardation and no disabilities were observed playing with the sand tools most often. The results from the tracking data did not show a significant difference between the number of toys chosen by children with and without mental retardation. Combined, sand toys, miniature vehicles and musical instruments represent over two-thirds of the toys chosen by children both with and without mental retardation.

- (4) Where on the playground are toys used and how does this vary according to children's age, gender and type of impairment?

All children used most toys in locations where one would expect to find them, such as the sand toys in sand areas.

*Age: The best examples of toy migration were observed from behavior map results. The 3-to-5 and 6-to-8 year old children were observed on the rocking bridge with trucks. The children would "ride" the trucks across the bridge, using them like big wheeled toys. All children, but especially 9-to-12 year olds, were observed using the big wheeled toys on the hill of the water wheel area during the summer that the water was turned off.

*Gender: The big wheeled toys were dispersed most over the playground. Boys were observed riding the big wheeled toys somewhat further out than the girls.

*Disability: Children both with and without disabilities were observed riding the big wheeled toys on the water wheel hill, suggesting that all children pursue challenges in the environment. Unfortunately there were no adapted big wheels for children with certain physical disabilities.

(5) What kinds of play are associated with different toys?

*The results from the tracking data suggest that toys chosen by children afforded them with play experiences that stationary play equipment could not easily have offered: constructive play, dramatic play, and musical play.

*Toys offered children a sense of control over their environment. For example, they were able to change their environment by moving toys around.

(6) What kinds of social play are associated with different toys and how does this vary according to children's age, gender and type of impairment?

*Age: The results from the tracking data suggest that 3-to-5 year old children engaged in both solitary and parallel play. The 6-to-9 year old children engaged in both parallel and group play. The amount of parallel play did not decline between the youngest and oldest

children which concurs with Bakeman and Brownlee's conjecture about parallel play. The 3-to-5 year olds used toys in parallel play most frequently, while the 6-to-9 year olds used costumes and sand toys in group play most frequently.

*Gender: Both boys and girls played in a parallel play mode most frequently with most toys. The exceptions were that girls played with sand toys significantly more in group play than any other toy. Boys played with costume hats significantly more during group play than any other toy.

*Disability: The children with mental retardation were found primarily to engage in solitary and parallel play, whereas the children without disabilities engaged in parallel and group play. Children with and without mental retardation used sand toys, musical instruments and miniature vehicles during group play.

(7) Are there any specific qualities of toys which support children's social interactions?

*The results from the focused tracking data suggest that toys can provide a mutual frame of reference for children to use in order to join in another's play.

*Toys that could be used by more than one child at the same time, such as one that has multiple moving parts, can encourage social interaction.

- (8) What role does the staff play in influencing children's interactions?

*The behavioral map data show that groups of children with disabilities and children without disabilities were often not in the same physical proximity. Even once children with varying abilities are brought together, mere physical contact will not necessarily result in social interaction. As a remedy, caretakers should be trained in order to facilitate social interaction between children with and without disabilities.

CHAPTER VI

IMPLICATIONS

There is no doubt from observing all the children playing at A Playground For All Children, that they are having a glorious time. The playground has unique elements for all, such as children with certain physical disabilities who have never had the option to see-saw before, as well as children who have never played on a see-saw with chairs. A Playground For All Children is a play environment that provides important play opportunities for children with and without special needs. Applying the findings from this research can further enhance the children's play experiences on the playground.

Implications For Staffed Playgrounds

Strategies For Enabling Toys To Influence Children's Social Interactions

Toys themselves will not magically draw children with varying abilities to each other. A multifaceted intervention needs to occur and what follows are some suggestions which have emerged from this research.

Most of all, the caretakers bringing children with and without disabilities to an integrated play setting need to want to integrate their children, not just think that integration is a good idea. Also, just as children need to be taught about disabilities, so do their caretakers.

Misunderstandings and biases about disabilities are as likely to be present among those adults, bringing the children without disabilities to the playground, as anyone else in our society.

At a minimum, children could begin their visit with a programmed activity that would introduce children of different groups to each other. These could be non-competitive games for children with and without disabilities to participate in together. Caretakers could then divide their children into small groups and seek out others from different institutions while playing on the playground. Ispa (1981) and Beckman and Kohl (1984) note that certain toys and objects do encourage children to interact, so that if they are at least in close physical proximity the children's chances of interacting are increased. This would be especially true if the children were physically integrated in areas with toys and objects that were of common interest to them. This research revealed that on PAC toys of common interest were: sand toys, miniature vehicles, big wheeled toys and musical instruments. Dolls and action figures would also be valuable if some large, robust ones could be designed that were suitable for outdoor use and not easily stolen.

Training needs to be provided for all playground staff and caretakers, not only on disability awareness, but also on how they can provide the means to encourage children to socially integrate. This could be done by arranging

compulsory seminars for camp directors or school directors wishing to bring their children to the playground.

Informational packets and possibly a video containing explanations of the importance of socially integrating the children, as well as concrete ideas on how this can be done, should be distributed for the camp directors to share with their counselors and teachers.

Caretakers must be carefully trained to know how to interpret play-sequences, when to be silent and observe and when to intervene. A "hands-off" intervention needs to be implemented. Sometimes it may be necessary for adults to encourage children's social interactions, but they need to be careful not to redirect or truncate the play situation, as Schwartzman (1988) found caretakers commonly tended to do at PAC. Rather they should extend play by being aware of the children's intentions (Tamburrini, 1986).

A concrete example of a successful intervention, as previously described, was a caretaker who encouraged children from different groups who were playing musical instruments and wearing costume hats to form a parade. Once the children started marching, the caretaker stood back and watched.

In summary, the adults (as well as the adolescents working on the playground) need to be trained, strategically placed, and seen as integral to accomplishing the goal of socially integrating children with varying abilities. Once this is accomplished toys and loose parts can provide a

further vehicle for social interaction between children to occur.

The Management of Toys and Loose Parts on A Staffed Playground

Playgrounds' budgets should include toys and loose parts. Additional funds should be set aside to repair and replace toys and loose parts as needed. Although toys chosen should be quite durable, a lot of children use them, and no toy is totally indestructible.

Storage of the toys and loose parts is another important issue. The first year at PAC, a room that doubled as toy storage and a first-aid station, was used. The children came to the room to choose the toys. This situation was not good because the room was too crowded. Two summers later the Parks Department gave the playground a trailer to use for the toys and loose parts which was placed next to the staff office. This was an excellent solution and one which should be available to all staffed playgrounds.

A system is needed for putting the toys out and retrieving them. While this research was occurring, the research staff placed the toys and retrieved them. Upon returning to visit PAC during the following fall, however, it was discovered that the toys were not being used. Although the director spoke highly of the value of toys for a playground, in practice the logistics for actually placing

them out was another issue. With a shortage of staff, toys were unfortunately not a priority.

Monitoring of toy safety has to be incorporated into any system. Ideally toys and loose parts should be made the responsibility of a staff member. They would be responsible for overseeing purchasing, maintenance, replacement, repair, daily distribution and collection. This person should also be responsible for evaluating the best toys for children with special needs and those without disabilities.

A system is also needed, especially if toys are to be distributed during community hours, to insure that toys are not stolen. For instance, a permanent toy library might be housed on the playground. Children could be issued "library cards" and photographs could display the types of toys available. In order to retrieve their card, they must return the toy. A large map on the toy library could help children decide on what toys they would want. This system would have to be studied, not only for management issues, however, but also for the effects it would have on children's social interaction, in particular their sharing behaviors.

Suggestions For Changes To A Playground For All Children

The interesting and unexpected ways children use toys and loose parts suggest ideas for changes to make PAC an even more interesting play environment.

Design Recommendations

Toys added to the children's play opportunities in the water wheel area. The toys were taken away, however, because the water was recycled and not treated. It would be ideal if the water could be treated so that the children could have a fuller play experience in the water wheel area.

On the playground there is a virtually unused race track. The race track would probably become much more successful if it were made wider and landscaped to include hills. This would perhaps satisfy the urge for riding down hills which the children enjoy so much at the water wheel area when there is no water. Two differently graded lanes should be included to take into account the varying abilities (disability and age) of the children who visit the playground. In addition, a storage area should be built near the race track area and the bridges for the big wheeled toys.

Children played musical instruments while jumping on a rocking bridge. If a playground is unable to care for small musical instruments, maybe some type of musical apparatus could be attached to the rocking bridge with which the children could interact, such as pulling strings to hear chimes. Before implementing this, experts who deal with hearing impairments should be consulted, as extraneous noise could be confusing for children with hearing impairments.

Sand is a very valuable setting for toy play and social interaction. Sand is perhaps itself the ultimate kind of "loose part." However, on PAC the sand platforms were not freely accessible to the children, as they were too high for young children to climb into them; once there, they were trapped into these sand areas. Stairs should be added, because social interaction between children requires freedom for the child to enter and to exit into play with one another. This addition may also provide the opportunity for wheel-chair bound children to be able to get out of their wheel chairs and sit in the sand with the others.

The children would place vehicles, such as a toy train on the conveyor belt and turn the wheels to move the train. Having the steering wheels across from each other encouraged social play. Unfortunately, the conveyor belt was often broken. It would be beneficial to redesign the conveyor belt, maybe even adding some different kinds of steering wheels from various types of vehicles, such as a boat, racing car, or airplane, to encourage socio-dramatic play. More costume hats should be added to this area as well.

The amount of dramatic play elicited by costume hats was lower than expected. This may be remedied by adding a platform stage to the amphitheater area with some other costume accessories, such as over-sized ties and magic wands. Also, a puppet theater (accessible to wheel chairs) could be added along with puppets.

A problem observed with PAC was that it was too large. Caretakers were often fearful of letting the children roam on their own, because it was too difficult to watch all their children at once. Thus the spontaneous social interaction that may have occurred was curtailed. A few strategic placements of benches and hedges could have a very liberating effect for children on PAC.

Selection of Additional Toys and Loose Parts on PAC

Additional large blocks should be added to the playground because of their value for social integration. A good reason of why they should be added is given by the following example: A caretaker was with a group of his children building with the larger blocks. There were children from another group standing around. The caretaker handed the children some blocks so that they could participate with his group.

Specially adapted big wheeled toys need to be added for children with physical disabilities. These are especially valuable for children with physical disabilities because they give them an opportunity to explore their environment on their own. Additionally, vehicles with trailers can be hooked on to the vehicles which would support the goal of social interaction.

Jump ropes should be allowed on the playground. Children could use them near the entrance area that is closed.

More toys to which girls are accustomed should be added to the playground, because boys were observed significantly more with toys than girls.

Suggestions For Future Playground Designs

A major problem with A Playground For All Children as a place for achieving social integration is that the children cannot return frequently to the place. Friendships cannot be formed from single visits. Staffed integrated playgrounds should be built smaller in size and dispersed throughout the city so that transportation and crowds are not barriers to formation of social relationships between children.

An interesting challenge for playground designers might be to include places on a playground that allow children the opportunity to include "violation of convention" (Garvey, 1977, p. 106) in their play. Children on PAC did find some ways of making challenging play happen. From the numbers of children seen using the hill leading into the water wheel wading area as a race track, there must not have been enough challenge designed into the playground, so the children made their own. During an interview, one child had an inventive idea of having a huge "transformer" on the playground on which children could climb. Not only could they climb on this structure, but true to the nature of a "transformer," the form of the structure could be constantly changed by the children. The children would be given the challenge of

manipulating their environment and then playing on this environment.

Children should be involved in the constant redesign of their play environments, as in the Adventure Playgrounds of Europe. It has been difficult to develop these kinds of playgrounds in the United States for a number of reasons, but the primary one has probably been the absence of staffing. Now that some playgrounds like PAC are including staffing, it might be possible to reintroduce the idea of play materials jointly designed by playleaders and children.

Larger model features, such as the wooden sand castle, built by a PAC sports director, are also valuable features for encouraging social dramatic play. They can serve as stage sets for the use of toys. They lie conceptually somewhere between traditional play equipment and toys.

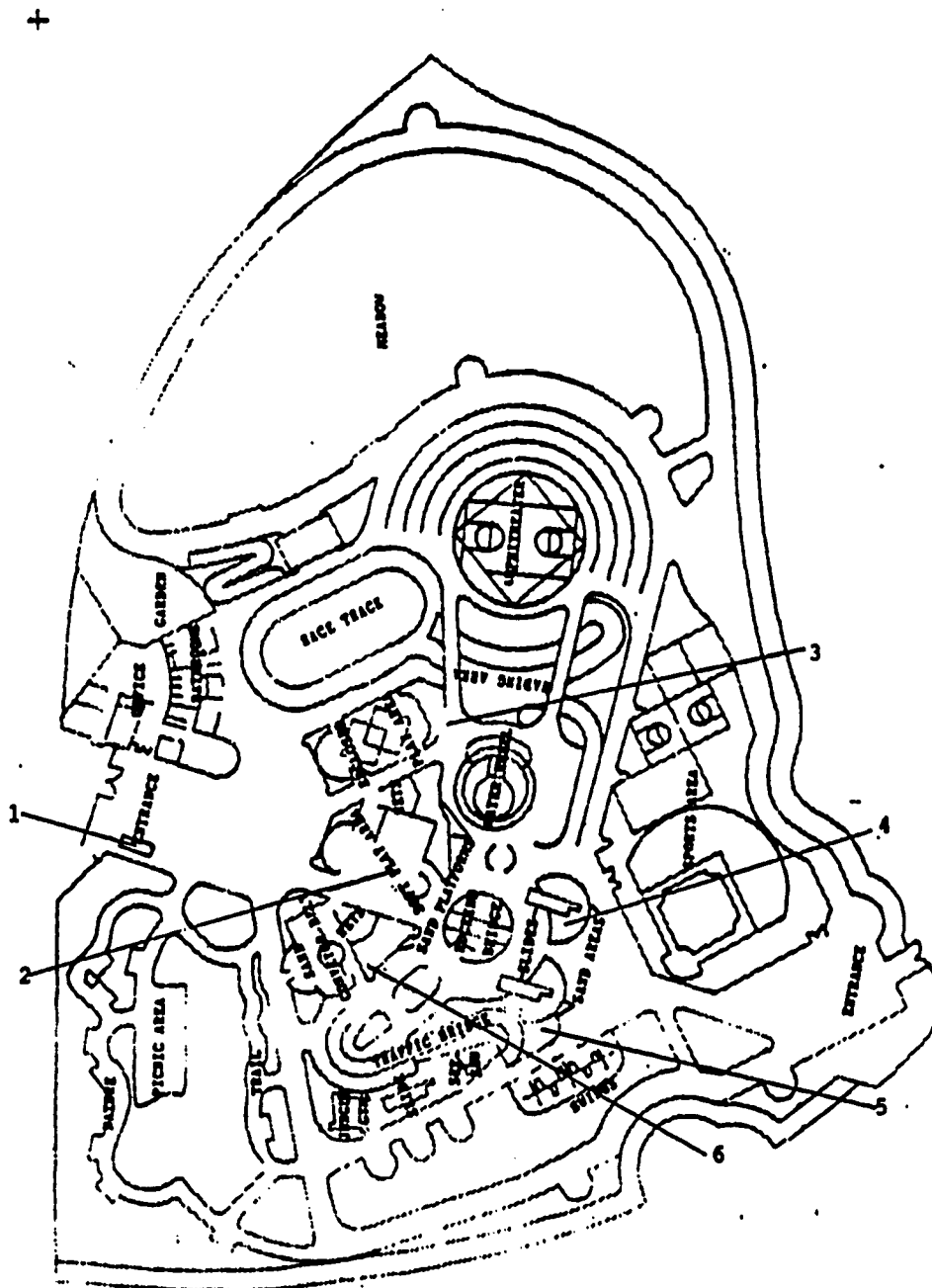
Toys developed specifically for playground use would be ideal. For example, large, light, inter-locking blocks that require teamwork could be developed. Also toys that could be played with by one child, but could easily support more than one child's play activity, such as large dump trucks with big containers to fill. In addition, since children stated that dolls and action figures were their favorite kinds of toys, large, robust dolls and action figures could be developed to be used with wooden sand castles.

Playground and play equipment designers both need to think about toy use in relation to their designs. They should think of how toys and loose parts might be used in

combination with the play equipment and the playground designs to enhance children's play opportunities. They must also think of the problem of toy and loose part storage.

APPENDIX A

Photographs of locations where toys were placed. This map shows where the photographs were taken.

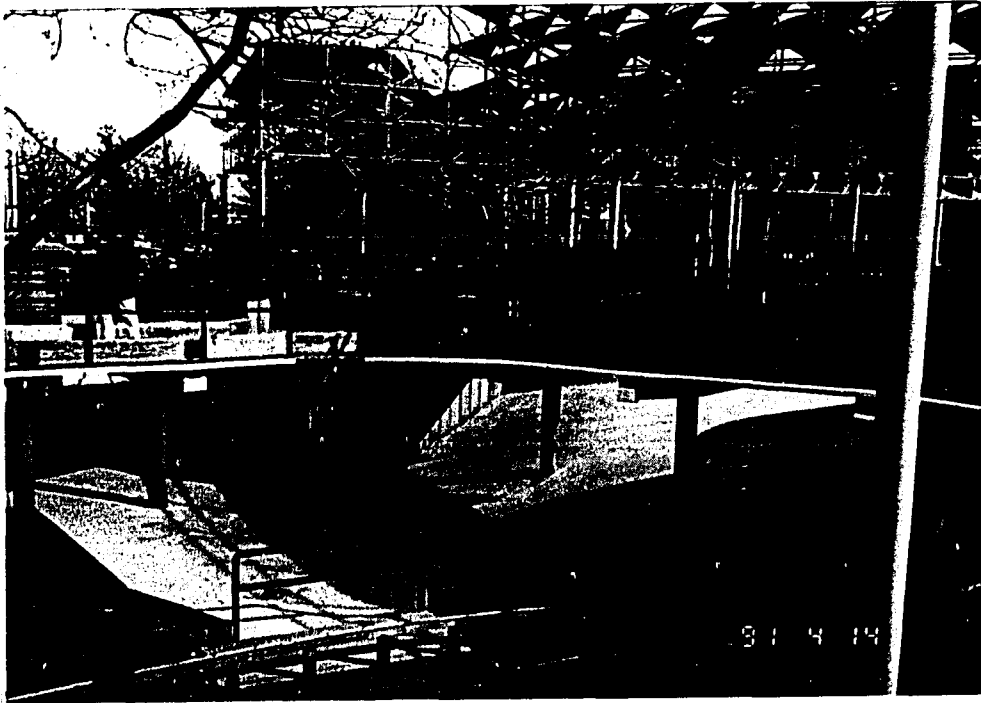




1. Trailer for storing toys and equipment on PAC.
Photo: L. Dien



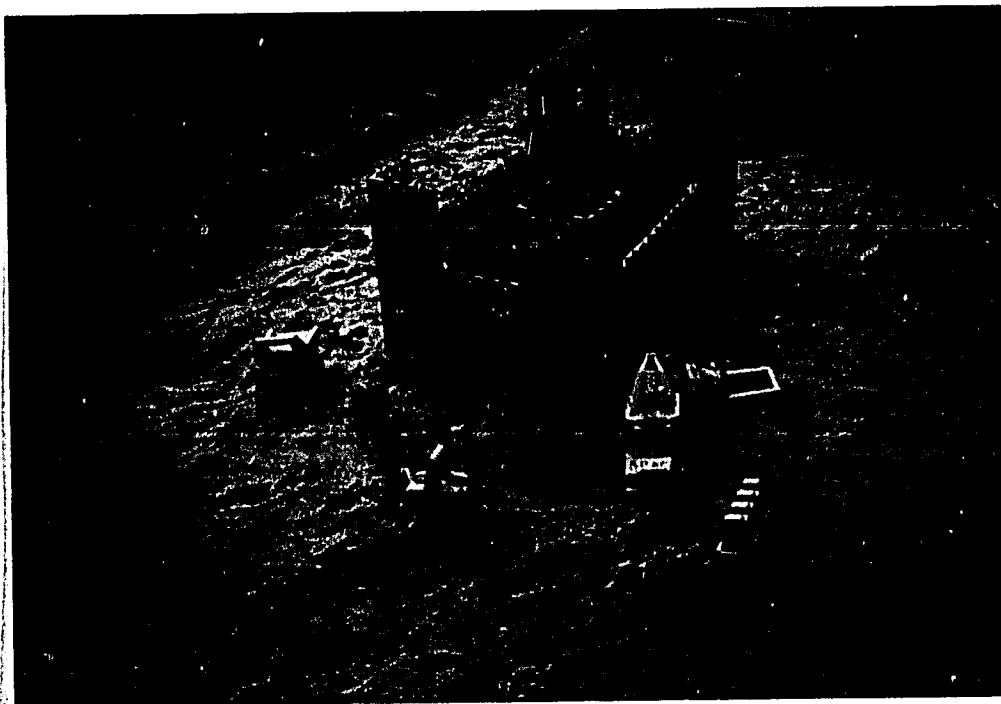
2. Soft-Play Area. Shaded area with rubber surface. Approx.: 29' x 38.7'.
Photo: J. DiRosa Treglia



3. Water Wheel Area. Hill: Approx. 18.6'
down incline. Photo: L. Dien



4. Sand area under slide. Wall: Approx.
6" high. Photo: L. Dien



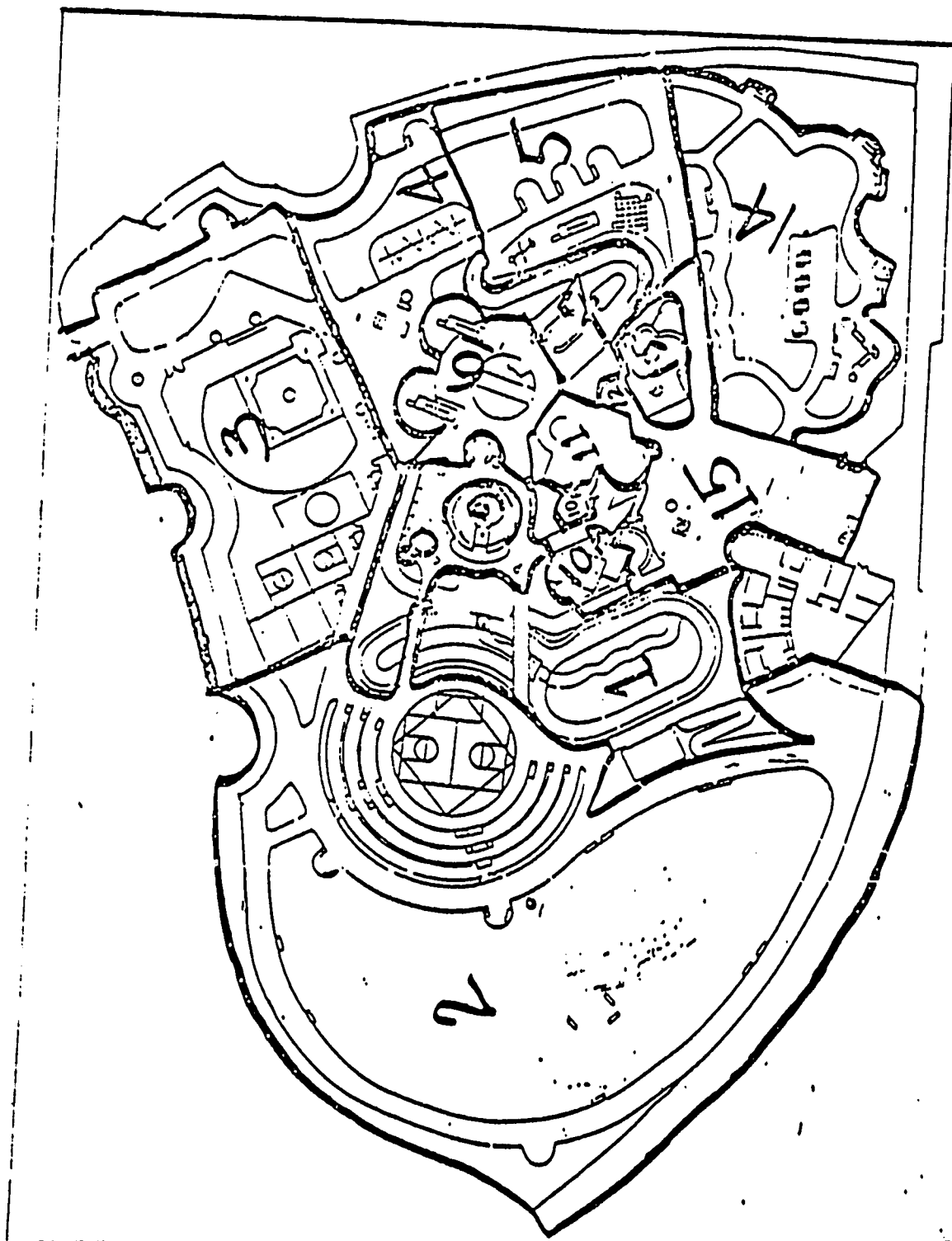
5. Sand castle with sand toys.
Photo: J. DiRosa Treglia



6. Sand Platform. Wall: Approx. 3' high.
Photo: L. Dien

APPENDIX B

This map shows the 15 regions in which the playground was divided for behavioral mapping.



APPENDIX C

The following are the forms used for behavioral mapping.

BEHAVIORAL MAPPING

Observer —

Day —

Date —

Time —

Weather

Cloudy—

Rainy—

Sunny—

Temp—

INSTITUTION

COLOR CODE

1

2

3

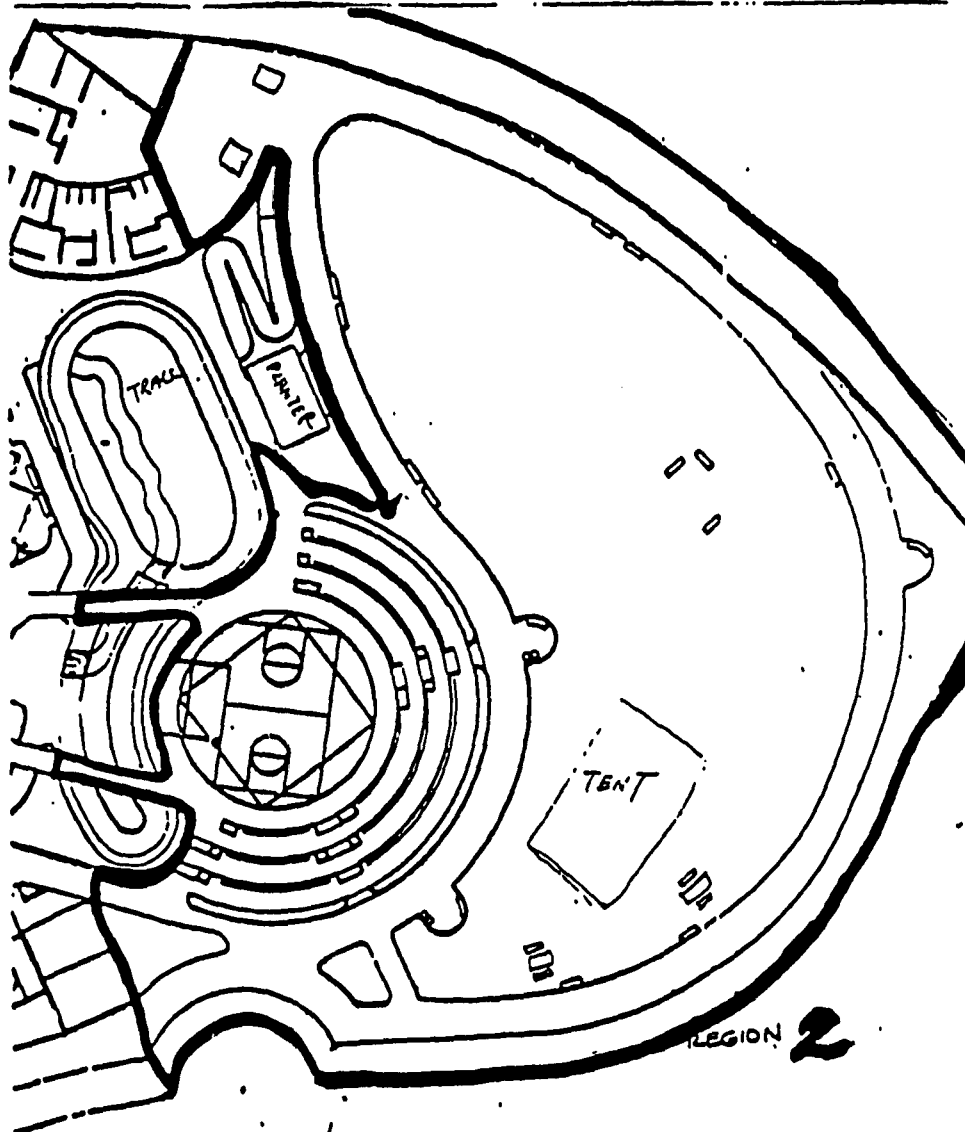
4

5

6

Special Information:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEX (2)																
AGE (8)																
COLOR (8)																
wheelchair																
limb appliance																
carried																
held																
play with other																
EQUIPMENT																
balls																
blocks																
replicas																
tools																
wheeled toys																
other (specify)																



	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
SEX (2)																
AGE (8)																
COLOR (8)																
wheelchair																
limb appliance																
carried																
held																
play with other																
programmed play																
balls																
blocks																
replicas																
tools																
wheeled toys																
other (specify)																

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
SEX (2)																	
AGE (8)																	
COLOR (8)																	
wheelchair																	
limb appliance																	
carried																	
held																	
play with other																	
programmed																	
balls																	
blocks																	
replicas																	
tools																	
wheeled toys																	
other (specify)																	

	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
SEX (2)																	
AGE (8)																	
COLOR (8)																	
wheelchair																	
limb appliance																	
carried																	
held																	
play with other																	
balls																	
blocks																	
replicas																	
tools																	
wheeled toys																	
other (specify)																	

	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
SEX (2)																	
AGE (8)																	
COLOR (8)																	
wheelchair																	
limb appliance																	
carried																	
held																	
play with other																	
balls																	
blocks																	
replicas																	
tools																	
wheeled toys																	
other (specify)																	

Region 4 — 2

APPENDIX D

This was the introduction given by the research team to the visiting groups when they arrived at PAC.

TRACKING
Intro to Caretakers

1. Hello, I'm _____ part of the research team at the Playground for All Children.
2. With the Video Camera we follow for 10 minutes children's play activities around the playground.
3. Today we would like to track any children in your program with moderate retardation as a disability. Could you point out for us children with this disability, that have a yes on their permission waiver.

or

We have chosen at random this child (point) and this child (point) to video tape for ten minutes. Do they have a yes on their permission waiver. Could you tell me their names, and ages.

4. What are the children's names, ages.
5. If at anytime you feel that our cameras are making the children uncomfortable, please tell us and we will turn them off.

APPENDIX E

The following is the "Individual Child Profile" that was completed for all children who had been tracked.

INDIVIDUAL CHILD PROFILE

NAME OF AGENCY _____ DATE _____

ADDRESS _____ ZIP _____

TELEPHONE _____ CARETAKER NAME _____

CHILD NAME _____ AGE _____

DOES CHILD LIVE IN AN INSTITUTION/GROUP HOME? _____ # OF YEARS _____

Directions:

1. Please check the general categories which best describe the child's primary disability (in capitals).

2. Please check next to each group category (lower case type) the child's specific type of disability.

_____ COGNITIVE LEVEL	_____ HEARING IMPAIRMENTS
_____ gifted	_____ hard of hearing
_____ normal range	_____ deaf
_____ mildly retarded	
_____ moderately retarded	_____ VISUALLY IMPAIRED
_____ severely retarded	_____ visually impaired/requires assistance to negotiate environment
_____ profoundly retarded	_____ visually impaired with vision to perform table tasks
_____ LEARNING DISABILITY/	_____ totally blind/negotiates environments independently
COMMUNICATION DISORDERS	_____ totally blind/negotiates environments with assistance
_____ academic disorders	_____ requires special lighting conditions for far or near tasks
_____ visual/perceptual disorders	
_____ speech impairments	_____ PHYSICALLY HANDICAPPED
_____ language impairment (understanding and producing words)	_____ upper limb impairments
_____ language pragmatic impairment (use of language out of context)	_____ lower limb impairments
	_____ requiring assistance with fine motor tasks
_____ EMOTIONALLY DISTURBED	_____ requiring wheelchairs
_____ attentional disorder	_____ ambulatory
_____ conduct disorder	
_____ autistic disorder	_____ HEALTH IMPAIRMENTS
_____ mood disturbances	_____ hemophilia
_____ hyperactive disorder	_____ epilepsy
_____ other (please specify)	_____ heart conditions
	_____ diabetes
	_____ other (please specify)
_____ CEREBRAL PALSY	
_____ upper limb impairment	
_____ lower limb impairment	
_____ requiring assistance with fine motor tasks	
_____ requiring wheelchairs	
_____ ambulatory	

Please check the number which best describes the child's ability under each category.

FINE MOTOR MANIPULATION ABILITIES

- ☐ 1. Age appropriate fine motor abilities.
- ☐ 2. Impaired/delayed fine motor abilities.
- ☐ 3. Uses adaptive equipment for play.
- ☐ 4. The child is missing a limb.
- ☐ 5. Other_____

GROSS MOTOR ABILITIES

- ☐ 1. Can walk.
- ☐ 2. Can skip, jump.
- ☐ 3. Can run.
- ☐ 4. Can climb independently.
- ☐ 5. Can negotiate stairs.
- ☐ 6. The child is non-ambulatory.

COMMUNICATION ABILITIES

- ☐ 1. Age appropriate communication skills
- ☐ 2. Verbal (can communicate needs and wants)
- ☐ 3. Non-verbal (cannot communicate basic needs)
- ☐ 4. Uses gestures
- ☐ 5. Uses oral communication method for hearing impaired.
- ☐ 6. Pre-sign language
- ☐ 7. Uses sign language to communicate needs and wants.

APPLIANCES

- ☐ 1. Glasses
- ☐ 2. Hearing Aids
- ☐ 3. Wheelchair
- ☐ 4. Walker
- ☐ 5. Crutches/braces
- ☐ 6. Neck Brace
- ☐ 7. Helmut
- ☐ 8. Other_____.

SOCIALLY INAPPROPRIATE BEHAVIOR

- ☐ 1. Self-stimulatory/autistic-like mannerisms.
- ☐ 2. Self-abusive behaviors.
- ☐ 3. Abusive/aggressive to others.
- ☐ 4. Aggressive toward objects.

MAINSTREAMING EXPERIENCE

Please indicate if the child attends any class(es) or workshop(s) which integrate disabled children with non-disabled children on a regular basis. YES_____ NO_____. If yes, please specify type of class or workshop:_____

PLAY HISTORY

Please check one of the following choices which best describes the child's predominant play activities in your institution.

- ☐ Child rarely engages in play activities.
- ☐ Child does not play independently without adult guidance.
- ☐ Child engages predominantly in isolated play activities (child does enjoy contact with his/her peers.)
- ☐ Child engages predominantly in parallel play activities (child plays beside other children doing similar activity but does not engage in cooperative activity with others.)
- ☐ Child engages predominantly in cooperative play activities with other children. If checked this choice, please also check one of the following:

- ☐ The child demonstrates leadership qualities during cooperative play.
- ☐ The child is usually a follower during cooperative play.
- ☐ The child demonstrates both leadership and follower qualities.

ENVIRONMENTAL RESOURCE INVENTORY

Please check the resources available to your class in your school or institution.

INDOOR RESOURCES

- ☐ soft play area
- ☐ sand play area
- ☐ water play area
- ☐ housekeeping area
- ☐ large play equipment(s) (please specify) _____
- ☐ blocks or other constructive materials
- ☐ adaptive toys
- ☐ sports area/gymnasium
- ☐ other (please specify) _____

OUTDOOR RESOURCES

- ☐ sand play area
- ☐ water play area
- ☐ ball/sports play area
- ☐ traditional swings
- ☐ adaptive swings
- ☐ traditional see saw
- ☐ adaptive see saw
- ☐ monkey bar
- ☐ traditional slide
- ☐ adaptive slide
- ☐ nets for climbing
- ☐ rocking bridge
- ☐ meadow/natural area
- ☐ other (please specify) _____

SOCIABILITY

We would like to know, as best as you can judge, about how sociable your child is. For example, would you say he/she is:

1. A popular child who has many friends (yes/no), or;
2. Has a few friends, but is not amongst the most popular in the class (yes/no), or;
3. Has no friends and is usually isolated from others (yes/no) or;
4. Does not apply, explain why _____

5. Also, do you know if he/she has any brothers and/or sisters, and if so what their ages are approximately? _____

6. Finally, do you know if he/she has any friends outside the institution and what their ages are approximately? _____

APPENDIX F

This is the form on which the coded tracking data was recorded.

[illegible]

APPENDIX G

This is the coding manual for tracking data: "focus", "social participation at play", "participation with" and "objects" (which are entered on form in Appendix E).

ACTIVITY FOCUS CATEGORIES

NOTES: If a child is in momentary transition from one activity to another the activity should be coded as belonging to the subsequent activity. If child, at 10 second mark is buckling him/herself into swing, code this as swinging.

<u>Focus (intention)</u>	<u>Code</u>	<u>Description</u>
Unfocused activity	01	Used for aimless, non-directed behavior without any sustained observation or focus. This category includes a person walking, standing or sitting, showing no activity other than restless movement.
Gross-motor/locomotion	02	Used when the child is walking, with primary behavior being to go from one location to another.
Wheeled/locomotion	03	Used when the child is utilizing wheelie/scooter toys for playing purposes. Includes being pushed by someone.
Carried/locomotion	04	Used when the child is being carried from one location to another.
Fidgeting	05	This category includes diffuse and repetitive body movements.
Waiting	06	Sometimes, in anticipation of an activity. Can be waiting for availability of equipment, being held back by a caretaker or waiting for a caretaker to help.
Wheelchair/walker/locomotion	07	Child is moving in either a wheelchair or walker. Includes being pushed by someone.

<u>Focus (intention)</u>	<u>Code</u>	<u>Description</u>
Social	08	All other activities have ceased in order to engage in a social interaction.
Sensory stimulation	09	Used when the child's activity is for tactile stimulation or experience. Do not include gross-motor activities like swinging or sliding. Includes play with water, mud, sand, dirt and leaves.
Constructive play	10	The child is involved with constructive play like building sand castles, putting sand in a bucket, and making sand molds, blocks, putting pieces of a puzzle together.
Dismantling	11	The child is dismantling play materials at hand, e.g. kicking down sand castles or throwing toys around or taking apart a toy/equipment, etc. (do not code activities that can be coded as rough and tumble play).
Dramatic/fantasy play	12	Included here is make-believe behavior such as playing house, Cowboys and Indians, or talking with a make-believe friend. This is distinguished from other forms of play with its non-literal quality or make-believe element.
Preparatory for using play equipment	13	Caretaker assists child in his/her preparation of intended activity. Example: buckling child in or out of swing; lifting in or out of sand tables or; shaking sand off clothes.
Swinging	14	An activity usually performed on the swings, but includes swinging motion on other surfaces.

<u>Focus (intention)</u>	<u>Code</u>	<u>Description</u>
Pushing	15	Child's activity is pushing, e.g., pushing a swing, a wagon, etc. (do not include pushing someone aggressively).
Climbing	16	An activity usually performed on the slides, jungle gym, nets but includes climbing on other objects. Actions prior to climb, but that are in preparation of climbing are included here.
Tumbling/jumping	17	Includes tumbling, rolling, jumping and hopping or jumping down from a high level.
Blocked view/ technical failure	18	Code this only when camera view of target child is clocked for a sustained period, no voice over on the child activity is recorded, and no other visual indicator of child's activity prior to or after the blocked view.
Infantile games	19	Examples: peek-a-boo and patty-cake.
Informal games	20	A play situation with or without language, where the child is playing an informal game with another child. These are spontaneously and loosely organized, e.g. following one another around while chanting, chasing game, hiding in a corner and giggling, or holding hands and jumping.

<u>Focus (intention)</u>	<u>Code</u>	<u>Description</u>
Rough and tumble play	21	This activity involves more than one person and is <u>obviously playful</u> rather than aggressive and/or restraining behavior in a playful manner. (If the behavior becomes overtly aggressive code as "Social" and as "Overt Aggression" in the Social Specific column.)
Music/dance	22	Dancing, playing musical instrument. Active, semi-patterned rhythmic movements with or without music. Includes rhythmic clapping or stamping.
Object exploration	23	Includes exploration of objects through touching and close scrutiny, but no evidence for dramatic/fantasy, constructive play or sensory activities.
Personal needs	25	Includes dressing or undressing, including shoes and toileting activities. This includes drinking from a water fountain. Includes waiting or lining up for drinking or eating.
Running	26	Done for sake of enjoyment. Includes skipping, hopping etc. Note: If obviously part of a game--see <u>game</u> categories. Also, could involve moving one place to another--but, that is not primary focus, e.g. running, start to jump.
Sliding	27	Activity usually performed on slide but includes sliding on other surfaces. Includes actions immediately preceding the slide, but are in preparation of sliding are included in this category.

<u>Focus (intention)</u>	<u>Code</u>	<u>Description</u>
See-saw	28	Riding a see-saw.
Sports	29	Organized sport involving rules and more than one person.
Manufactured games	30	Manufactured games, board games.
Games with rules	31	Conventional games, e.g., tag, hide-n-seek, parachute, etc.
Water play	32	Running under water, splashing water, being splashed with water, pouring water, swimming.
Manipulating object	33	E.g., playing with object if not constructing (10), making music (22), or pretend playing (12).
Bouncing/being bounced	34	
Throwing	35	
Putting on costume	36	
Programmed activity	37	
Other	38	

SOCIAL PARTICIPATION AT PLAY CATEGORIES FOR TARGET CHILD

This category is only to be recorded when the child is recorded as playing in the Focus column.

<u>Categories</u>	<u>Code</u>	<u>Description</u>
Solitary	1	Child is playing all alone according to designated region.
Parallel	2	Child is playing in area that contains others, but is not sharing space or objects with others, even though similar activity is played or similar toys are used.
Group	3	Child is playing with others in same space and sharing objects. It is apparent that child is interacting with at least one other person in play. (They are engaged in a common activity that they are aware of and acknowledged each other's presence by either verbal or gestural communications).

<u>Categories</u>	<u>Code</u>	<u>Description</u>
Action figure	01	E.g., G.I. Joe, Go-Bot, He-Man, etc.
Arts and crafts	02	Materials used during arts and crafts.
Board games	03	Mr. Big Mouth, Checkers, etc.
Books	04	
Big blocks	05	
Little blocks	06	
Costume	07	Cape, masks, etc.
Dolls	08	
Physical activity equipment	09	Sports equipment
Puzzle	10	
Large wheeled toys & scooters	11	E.g., Big Wheel & scooters
Sand toy mold, etc.	12	Shovel, pail, buckets,
Sound making device	13	Musical instruments
Stuffed animals	14	
Miniature vehicles	15	E.g., Hot Wheels, dump trucks, boats.
Miscellaneous	16	
Water toys	17	
Balls	18	
Bean bag frame	19	
Baseball rack	20	
Sheet (parachute)	21	

APPENDIX H

This is the form on which the coded play repertoire data was recorded. Codes were used from "focus" and "object" sections of the coding manual (Appendix F).

PLAY REPERTOIRE CODING FORM

Date_____

Tape Number_____

Coder_____

Child's Name_____ Age_____ Sex_____ Disability_____

Play Behavior	Loose Parts	Location(s)	Time in Seconds		
			Begin Time	End Time	Total # of Sec.

APPENDIX I

The following is the PAC Directors' interview schedule. .

NAME _____ DATE _____
EDUCATIONAL BACKGROUND _____
POSITION ON PLAYGROUND _____
INTERVIEWER _____
TAPE NUMBER BEG. _____ END _____

The purpose of this interview is to ask you about toys, sports equipment, and loose parts. Loose parts are defined as all other materials on the playground that are not nailed down.

1. In what ways if any are toys, sports equipment and loose parts a valuable experience for children? What are the qualities of these objects that make them valuable?

2. Forgetting about any management problems, are toys, sports equipment and other loose parts important for children on the playground?

If yes- in what ways?

If no- why not?

3. Of all the objects we've been talking about which did the kids find most popular?

Did this vary at all for different disability groups? In what ways?

4. Of all the objects we've been talking about which did the kids find least popular?

Did this vary at all for different disability groups? In what ways?

5. Given your specialized responsibilities on the playground as a _____, which toys that you introduced on the playground were the most valuable for your area of professional concern.

Would your opinion on this vary, for different disability groups? In what ways?

6. Given your specialized responsibilities on the playground as a _____, which toys that you introduced on the playground were the least valuable for your area of professional concern?

Would your opinion on this vary for different disability groups? In what ways?

7. As a result of this past summer's experience, how would YOU change the use of toys, sports equipment, and other loose parts on the playground? In answering this question feel free to include management problems if any.

8. Would you remove any toys, sports equipment, or loose parts, why? (Specify actual objects.)

9. Would you add any? Why? (Specify.)

REFERENCES

- Allen, K.E. (1980). Mainstreaming: What have we learned: Young Children, 35 (5), 54-63.
- Bak, J. J. & Siperstein, G. N. (1987). Effects of mentally retarded children's behavioral competence on nonretarded peers' behaviors and attitudes: Toward establishing ecological validity in attitude research. American Journal of Mental Deficiency, 92(1), 31-39.
- Bakeman, R. & Brownlee, J. R. (1980). The strategic use of parallel play: A sequential analysis. Child Development, 51, 873-878.
- Ballard, M., Corman, L., Gottlieb, J. & Kaufman, M.J. (1977). Improving the social status of mainstreamed retarded children. Journal of Educational Psychology, 69 (5), 605-611.
- Beckman, P.J. & Kohl, F.L. (1984). The effects of social and isolate toys on the interactions and play of integrated and nonintegrated groups of preschoolers. Education and Training of the Mentally Retarded, 169-174.
- Birch, L. L. & Billman, J. (1986). Preschool children's food sharing with friends and acquaintances. Child Development, 57, 387-395.
- Bogdan, R. (1983). A closer look at mainstreaming. Educational Forum, 47(4), 425-434.
- Bregman, N. J., Lipscomb, T. J., Mc Allister, H. A. & Mims, M. (1984). Sharing behavior: Effect of denomination value and number. The Journal of Genetic Psychology, 144, 131-135.
- Brewer, J. (1979). Childhood revisited: The genesis of the modern toy. In K. Hewitt & L. Roomet (Eds.) Educational toys in America: 1800 to the present. Vermont: The Robert Hull Fleming Museum.
- Bricker, D. D. (1978). A rationale for the integration of handicapped and nonhandicapped preschool children. In M. J. Guralnick (Ed.), Early intervention and the integration of handicapped and nonhandicapped children. Baltimore: University Park Press.

- Brody, C. (1984). Social studies and self-awareness. In E.S. Hirsch (Ed.), The block book (pp. 103-120). Washington, D.C.: National Assoc. for the Educ. of Young Children.
- Brown, J. G. & Burger, C. (1984). Playground designs and preschool children's behavior. Environment and Behavior, 16(5), 594-626.
- Bruinicks, V.L., Rynders, J.E., & Gross, J.C. (1974). Social acceptance of mildly retarded pupils in resource rooms and regular classes. American Journal of Mental Deficiency, 78, 377-383.
- Bruner, J. S., Jolly, A., Sylva, K. (1976). Play: Its role in development and evolution. England: Penguin Books.
- Bryan, T.H. (1976). Peer popularity of learning disabled children: A replication. Journal of Learning Disabilities, 9, 307-311.
- Cavallaro, S.A. & Porter, R.H. (1980). Peer preferences of at-risk and normally developing children in a preschool mainstream classroom. American Journal of Mental Deficiency, 84, 357-367.
- Cavallo, D. (1981). Muscles and Morals. Philadelphia: University of Pennsylvania Press.
- Chennault, M. (1967). Improving the social acceptance of unpopular educable mentally retarded pupils in special classes. American Journal of Mental Deficiency, 72, 455-458.
- Cheung, M.M. (1989). The impact of the play environment on the social integration of mentally retarded and non-disabled children. Unpublished doctoral dissertation, City University of New York, New York.
- Conant, S. & Budoff, M. (1983, June). Patterns of awareness in children's understanding of disabilities. Mental Retardation.
- Connolly, J.A., Doyle, A. & Resnick, E. (1988). Social pretend play and social interaction in preschoolers. Journal of Applied Developmental Psychology, 9, 301-313.

- Cooke, T.P., Ruskus, J.A., Apolloni, T., & Peck, C.A. (1981). Handicapped preschool children in the mainstream: Background, outcomes, and clinical suggestions. Topics in Early Childhood Special Education, 1 (1), 73-83.
- Corsaro, W. A. (1979). We're friends, right? Children's use of access rituals in a nursery school. Language in Society, 8, 315-355.
- Crawley, B. & Chan, K. (1982). Developmental changes in free-play behavior of mildly and moderately retarded preschool-aged children. Education and Training of the Mentally Retarded, 17, 234-239.
- Damon, W. (1977). The social world of the child. California: Jossey-Bass, Inc.
- Devoney, W., Guralnick, M. & Rubin, H. (1974). Integrating handicapped and nonhandicapped preschool children: Effects on social play. Childhood Education, 50, 360-364.
- Dewey, J. (1900). The child and the curriculum and the school and society. Chicago: Univ. of Chicago Press.
- DiLalla, L. F. & Watson, M. W. (1988). Differentiation of fantasy and reality: Preschoolers' reaction to interruption in their play. Developmental Psychology, 24(2), 286-291.
- Dodge, K.A., Schlundt, D.C., Schocken, I. & Delugach, J.D. (1983). Social Competence and children's sociometric status: The role of peer group entry strategies. Merrill-Palmer Quarterly, 29, 309-336.
- Doyle, A.B., Connolly, J. & Rivest, L.P. (1980). The effect of playmate familiarity on the social interactions of young children. Child Development, 51, 217-223.
- Dunlop, K.H., Stoneman, Z., Cantrell, M.L. (1980). Social interaction of exceptional and other children in a mainstreamed preschool classroom. Exceptional Children, 47 (2), 132-143.
- Eckerman, C. O. & Stein, M. R. (1982). The toddler's energizing interactive skills. In K. H. Rubin & H. S. Ross (Eds.), Peer relations and social skills in childhood (pp. 41-71). New York: Springer-Verlag.

- Eckerman, C. O. & Whatley, J. L. (1977). Toys and social interaction between infant peers. Child Development, 48, 1645-1656.
- Eisenberg, N. & Giallanza, S. (1984). The relation of mode of prosocial behavior and other proprietary behaviors to toy dominance. Child Study Journal, 14 (2), 115-121.
- Eisenberg, N. & Muskin, P. H. (1989). The roots of prosocial behavior in childhood. Cambridge: Cambridge Univ. Press.
- Eisenberg-Berg, N., Haake, R. J. & Barlett, K. (1981). The effects of possession and ownership on the sharing and proprietary behaviors of preschool children. Merrill-Palmer Quarterly, 27(1), 61-68.
- Erikson, E.H. (1950). Childhood and Society. New York: Norton.
- Fein, G.G. (1981). Pretend play: An integrative review. Child Development, 52, 1095-1118.
- Field, T. (1979). Handicapped preschool children: Self, teacher, toy and peer-directed behaviors. (Report No. P.S. 011059). Miami, FL: University of Miami Medical School. (ERIC Document Reproduction Service No. ED 179-316).
- Forby, L. (1978). Sharing: Decisions and moral judgements about letting others use one's possessions. Psychological Reports, 43, 595-609.
- Freud, S. (1961). Beyond the pleasure principle. New York: Norton.
- Frost, J. L. & Campbell, S. (1977). Play and equipment choice of second grade children on two types of playgrounds. Unpublished research report: The University of Texas.
- Frost, J. L. & Klein, B. L. (1983). Children's play and playgrounds. Texas: Playscapes International.
- Frost, J. L. & Strickland, E. (1978). Equipment choices of young children during free play. Lutheran Education, 114, 34-46.
- Garvey, C. (1974). Some properties of social play. Merrill-Palmer Quarterly, 20, 163-180.
- Garvey, C. (1977). Play. Massachusetts: Cambridge University Press.

- Gelman, R. & Spelke, E. (1981). Thoughts about animate and inanimate objects. In J. H. Flavell & L. Ross (Eds.), Social cognitive development (pp. 43-66). Cambridge: Cambridge Univ. Press.
- Gentry, B. (1983). Does mainstreaming insure integration? Lawrence, K.S.: Kansas University, Early Childhood Institute. (ERIC Document Reproduction Service No. ED 231 108).
- Gilligan, C., Ward, J. V. & Taylor, J. M. (1988). Mapping the moral domain. Cambridge, MA: Harvard Univ. Press.
- Good, H. G. (1960). A history of western education. New York: The MacMillan Company.
- Goodman, H., Gottlieb, J. & Harrison, R.H. (1972). Social acceptance of EMR's integrated into a nongraded elementary school. American Journal of Mental Deficiency, 76, 412-417.
- Gottlieb, J. (1981). Mainstreaming: Fulfilling the promise? American Journal of Mental Deficiency, 86(2), 115-126.
- Gottlieb, J. & Budoff, M. (1973). Social acceptability of retarded children in nongraded schools differing in architecture. American Journal of Mental Deficiency, 78, 15-19.
- Gottlieb, J., Semmel, M.I., & Veldman, D.J. (1978). Correlates of social status among mainstreamed mentally retarded children. Journal of Educational Psychology, 70, 396-405.
- Gottlieb, J. & Switzky, H. N. (1982). Development of school-age children's stereotypic attitudes toward mentally retarded children. American Journal of Mental Deficiency, 86(6), 596-600.
- Gresham, F. (1982). Misguided mainstreaming: The case for social skills training with handicapped children. Exceptional Children, 48 (5), 422-433.
- Grossman, H.J. (1983). Classification in mental retardation. Washington, D.C.: American Association on Mental Deficiency.
- Guinagh, B. (1980). The social interaction of handicapped children. Phi Delta Kappan, 62 (1), 27-29.

- Guralnick, M. J. (1976). The value of integrating handicapped and nonhandicapped children. American Journal of Orthopsychiatry, 46(2), 236-245.
- Guralnick, M. J. (1981). The efficacy of integrating handicapped children in early education settings: Research implications. Topics in Early Childhood Special Education, 1(1), 57-71.
- Guralnick, M.J. (1986). The peer relations of young handicapped and nonhandicapped children. In P.S. Strain, M.J. Guralnick & H.M. Walker (Eds.) Children's social behavior. New York: Academic Press.
- Guralnick, M.J. & Weinhouse, E. (1984). Peer related social interactions of developmentally delayed young children: Development and characteristics. Developmental Psychology, 20, 815-827.
- Hart, R. (1979). Children's experience of place. New York: Irvington Publishers, Inc.
- Hart, R.A. (1986). The changing city of childhood: Implications for play and learning. The Catherine Molony Memorial Lecture. New York: The City College Workshop Center.
- Hartup, W. W. (1975). Peer relations. In E. M. Hetherington (Ed.), Reviews of child development research (pp. 104-196). Chicago: Univ. of Chicago Press.
- Hartup, W. W. (1978). Peer interaction and the process of socialization. In M. J. Guralnick (Ed.), Early intervention and the integration of handicapped and nonhandicapped children (pp. 27-51). Baltimore: University Park Press.
- Hartup, W.W. (1983). Peer relations. In: C.P. Mussen (ed.), Manual of Child Psychology. Vol 4: Socialization, personality, and social development pp. 103-196, (E.M. Herrington, Ed.) New York: John Wiley & Sons.
- Hayward, D., Rothenberg, M. & Beasley, R. (1974). Children's play and urban playground environments: A comparison of traditional, contemporary and adventure playground types. Environment and Behavior, 6(2), 131-168.
- Heider, F. (1958). The psychology of interpersonal relations. New York: John Wiley & Sons.

- Hendrickson, J.M., Strain, P., Tremblay, A. & Shores, R.E. (1981). Relationship between toy and material use and the occurrence of social interactive behaviors by normally developing preschool children. Psychology in the Schools, 18, 500-504.
- Henniger, M.L. (1977). Free play behaviors of nursery school children in an indoor and outdoor environment. Unpublished doctoral dissertation, The University of Texas, Austin.
- Herink, N. & Lee, P.C. (1985). Patterns of social interaction of mainstreamed pre-school children: Hopeful news from the field, Exceptional Children, 32, 191-199.
- Hewitt, K. & Roomet, L. (1979). Introduction. In K. Hewitt & L. Roomet (Eds.) Educational toys in America: 1800 to the present. Vermont: The Robert Hull Fleming Museum.
- Hoffman, M. (1981). Perspectives on the difference between understanding people and understanding things: The role of affect. In J. H. Flavell & L. Ross (Eds.), Social cognitive development (pp. 67-81). Cambridge: Cambridge Univ. Press.
- Hoffman, M. L. (1981). Is altruism part of human nature? Journal of Personality and Social Psychology, 40(1), 121-137.
- Hudson, A. & Clinics-Ross, G. (1984). A study of the integration of children with intellectual handicaps into regular schools. Australian and New Zealand Journal of Developmental Disabilities, 10, 165-177.
- Hulson, M. (1930). An analysis of the free play of ten four-year-old children through consecutive observations. Journal of Juvenile Research, 14, 188-208.
- Iano, R.P., Ayers, D., Heller, H.B., McGettigan, T.F., & Walker, V.S. (1974). Sociometric status of retarded children in an integrative program. Exceptional Children, 40, 267-271.
- Ispa, J. (1981). Social interactions among teachers, handicapped children, and nonhandicapped children in a mainstreamed preschool. Journal of Applied Developmental Psychology, 1, 231-250.
- Ittelson, W.H., Rivlin, L.G., & Proshansky, H.M. (1976). The use of behavioral maps in environmental psychology. In H.M. Proshansky, W.H.

- Ittelson & L.G. Rivlin (Eds.), Environmental Psychology: 2nd Edition. New York: Holt, Rinehart & Winston.
- Jambor, T. & Gargiulo, R. (Oct., 1987). The playground: A social entity for mainstreaming. Journal of Physical Education, Recreation and Dance, 18-23.
- Johnson, M. V. (1935). The effect on behavior of variation in the amount of play and equipment. Child Development, 6, 56-68.
- Johnson, R. & Johnson, D.W. (1981). Building friendships between handicapped and nonhandicapped students: Effects of cooperative and individualistic instruction. American Education Research Journal, 18, 415-424.
- Johnson, R., Rynders, J., Johnson, D.W., Schmidt, B. & Haider, S. (1979). Interaction between handicapped and nonhandicapped teenagers as a function of situational goal structuring: Implications for mainstreaming. American Educational Research Journal, 16 (2), 161-167.
- Kagan, S. & Madsen, M. C. (1971). Cooperation and competition of Mexican, Mexican-American, and Anglo-American children of two ages under four instructional sets. Developmental Psychology, 5(1), 32-39.
- Kawin, E. (1934). The function of toys in relation to child development. Childhood Education, 11, 122-124.
- Kitano, M. & Chan, K.S. (1978). Taking the role of retarded children: Effects of familiarity and similarity. American Journal of Mental Deficiency, 83 (1), 37-39.
- Klein, M. (1932). The psychoanalysis of children. London: Hogarth.
- Laosa, L. M. (1989). Social competence in childhood: Toward a developmental, socioculturally relativistic paradigm. Journal of Applied Developmental Psychology, 10, 447-468.
- Leeb-Rundberg, K. (1984). The block builder mathematician. In E. S. Hirsch (Ed.), The block book (pp. 63-102). Washington, D.C.: National Assoc. for the Educ. of Young Children.

- Lewis, M. (1972). Sex differences in play behavior of the very young. Journal of Health, Physical education and Recreation, 43, 38-39.
- Maccoby, E. E. & Jacklin, C. N. (1974). The psychology of the sexes. Stanford, CA: Stanford Univ. Press.
- Markey, F. V. (1983). Imaginative behavior of preschool children. Monographs of the Society for Research in Child Development, 18.
- Maudry, M. & Nekula, M. (1939). Social relations between children of the same age during the first two years of life. Journal of Genetic Psychology, 54, 193-215.
- Meece, J. L. & Wang, M. C. (1982, March). A comparative study of the social attitudes and behaviors of mildly handicapped children in the two mainstreaming programs. Paper presented at the meeting of the American Educational Research Association, New York, NY.
- Moore, G. T., Cohen, V., Oertel, J. & van Ryzin, L. (1979). Designing environments for handicapped children. New York: Editorial Facilities Laboratory.
- Moore, N. V., Evertson, C. M. & Brophy, J. E. (1974). Solitary play: some functional considerations. Developmental Psychology, 10(6), 830-834.
- Moore, R. (1987). Plant parts as play props. Playworld Journal, 1, 3-6.
- Mosbacher, B.J., Gruen, G.E., & Rychlak, J.F. (1985). Incentive value: The over-looked dimension in childhood sharing. Journal of Genetic Psychology, 146, 197-204.
- Mueller, E. & Bergstrom, J. (1982). Foster peer relations in young normal and handicapped children. In K. M. Bormon (Ed.), The social life of children in a changing society. New Jersey: Lawrence Erlbaum Assoc.
- Mueller, E. & Brenner, J. (1977). The origins of social skills and interaction among playgroup toddlers. Child Development, 48, 854-861.
- Murphy, L.B. (1937). Social behavior and child personality. New York: Columbia Univ. Press.

- Musselwhite, C. R. (1956). Adaptive play for special needs children. Massachusetts: College-Hill Press.
- Newcomb, T.M. (1943). The acquaintance process. New York: Holt.
- Newman, D. (1978). Ownership and permission among nursery school children. In J. Glick & K. A. Clarke-Stewart (Eds.), The development of social understanding. New York: Gardner Press.
- Nicholson, S. (1971). How not to cheat children: the theory of loose parts. Landscape Architecture, 62, 30-33.
- Parten, M.B. (1932). Social participation among preschool children. Journal of Abnormal and Social Psychology, 27(3), 243-269.
- Parten, M.B. (1933). Social play among preschool children. Journal of Abnormal Social Psychology, 28, 136-147.
- Peterson, N. (1982). Social integration of handicapped and nonhandicapped preschoolers: A study of playmate preferences. Topics In Early Childhood Education, 2 (2), 56-69.
- Peterson, N.L. & Haralick, J.G. (1977). Integration of handicapped and nonhandicapped preschoolers: An analysis of play behavior and social interaction. Education and Training of the Mentally Retarded, 12, 235-245.
- Phillips, E.L., Shenker, S., & Revitz, P. (1951). The assimilation of the new child into the group. Psychiatry, 14, 319-325.
- Phyfe-Perkins, E. (1980). Childrens's behavior in preschool settings- A review of research concerning the influence of the physical environment. In L.G. Katz (Ed.), Current topics in early childhood education, 3 (pp. 91-125). Norwood, NJ: Ablex.
- Piaget, J. (1965). The moral judgement of the child. New York: The Free Press.
- Piaget, J. & Inhelder, B. (1969). The psychology of the child. New York: Basic Books.
- Poresky, R.H. & Hooper, D.J. (1984). Enhancing prosocial play between handicapped and nonhandicapped preschool children. Psychological Reports, 54, 391-402.

- Provenzo, E.F. & Brett, A. (1983). The complete block book. Syracuse: Syracuse Univ. Press.
- Putallaz, M. (1983). Predicting children's sociometric status from their behavior. Child Development, 54, 1417-1426.
- Putallaz, M. & Gottman, J.M. (1981). An interactional model of children's entry into peer groups. Child Development, 52, 986-994.
- Radke-Yarrow, M., Zahn-Waxler, C. & Chapman, M. (1983). Children's prosocial dispositions and behavior. In P. Mussen (Ed.), Manual of child psychology: Vol. 4. Socialization, personality, and social development (pp. 469-545). New York: John Wiley & Sons.
- Ramey, C. T., Finkelstein, N. W., & O'Brien, C. (1976). Toys and infant behavior in the first year of life. The Journal of Genetic Psychology, 129, 341-342.
- Reeves, M. (1949). Play materials for difficult ages. Play and Mental Health (Monograph 3), London: The Publication Press for the New Education Fellowship.
- Rheingold, H.L., Hay, D.F., West, M.J. (1976). Sharing in the second year of life. Child Development, 47, 1148-1158.
- Riddick, B. (1982). Toys and play for the handicapped child. London: Croom Helm.
- Roberts, C., Pratt, C. & Leach, D. (1991). Classroom and playground interaction of students with and without disabilities. Exceptional Children, 38, 212-224.
- Rothenberg, M. S. (1977). The social and spatial organization of boys and girls in an open classroom. Unpublished doctoral dissertation, City University of New York, New York.
- Rubin, K.H. (1976). Relation between social participation and role-taking skills in preschool children. Psychological Reports, 39, 823-826.
- Rubin, K.H. (1977). The social and cognitive value of preschool toys and activities. Canadian Journal of Behavioral Science/Review of Canadian Sciences, 9, 382-385.

- Rubin, K.H., Fein, G. G. & Vandenberg, B. (1983). Play. In P. H. Mussen (Ed.), Manual of child psychology: Vol. 4. Socialization, personality, and social development (pp. 694-774) (E. M. Hetherington, Ed.). New York: John Wiley & Sons.
- Rubin, K.H. & Krasnor, L. R. (1980). Changes in the play behaviors of preschoolers: A short-term longitudinal investigation. Canadian Journal of Behavioral Science, 12(3), 278-282.
- Rubin, K.H., Maioni, T. L. & Hornung, M. (1976). Free play behaviors in middle-and-lower-class preschoolers: Parten and Piaget revisited. Child Development, 47, 414-419.
- Rubin, K.H. & Peplar, D. J. (1980). The relationship of child's play to social-cognitive growth and development. In H. C. Foot, A. J. Chapman & J. R. Smith (Eds.), Friendship and social relations in children. New York: John Wiley & Sons.
- Rubin, K.H. & Ross, H. (1982). Some reflections on the state of the art. In K. Rubin & H. Ross (Eds.), Peer relationships and social skills in childhood (pp. 1-8). New York: Springer Verlag.
- Rubin, K.H. & Schneider, F.W. (1973). The relationship between moral judgement, egocentrism, and altruistic behavior. Child Development, 44, 661-665.
- Rubin, K.H., Watson, K. S. & Jambor, T. W. (1978). Free-play Behaviors in preschool and kindergarten children. Child development, 49, 534-536.
- Scarlett, W.G. (1980). Social isolation from agemates among nursery school children. Journal of Child Psychology and Psychiatry, 21, 231-240.
- Schwartzman, J. I. (1988). A comparison of teacher-child interactions in mentally retarded and nondisabled groups. Unpublished doctoral dissertation, City University of New York, New York.
- Semmel, M. I., Gottlieb, J. & Robinson, N. M. (1979). Mainstreaming: Perspectives on educating handicapped children in public school. In D. Berliner (Ed.), Review of research in education, 7, Washington, D. C.: American Educational Research Assoc.

- Selman, R. L. (1980). The growth of interpersonal understanding. Development and clinical analysis. New York: Academic Press.
- Shaw, L. G. (1982). Adventure play environments for disabled children. Gainesville, FL: Florida Architecture and Building Research Center, College of Architecture, Univ. of Florida.
- Shaw, L. G. (1987). Designing playgrounds for able and disabled children. In C. S. Weinstein & T. E. David (Eds.), Spaces for Children (pp. 205-213). New York: Plenum Press.
- Shaw, L. G. & Williams, K. S. (1984). The use of toys and other loose parts on playgrounds for disabled children. Children's Environments Quarterly, 1(2), 17-22.
- Shure, M.B. (1963). The psychological ecology of a nursery school. Child Development, 34, 979-992.
- Siperstein, G.N. Bopp, M. & Bak, L. (1978). Social status of learning disabled children. Journal of Learning Disabilities, 11, 98-102.
- Siperstein, G.N. & Chatillon, A.C. (1982). Importance of perceived similarity in improving children's attitudes toward mentally retarded peers. American Journal of Mental Deficiency, 86 (5), 453-458.
- Smith, P.K. (1974). Aspects of the playground environment. In D. Carter & T. Lee (Eds.), Psychology and the built environment. (pp. 56-62). England: Architectural Press.
- Smith, P. K. (1978). A longitudinal study of social participation in preschool children: Solitary and parallel play reexamined. Developmental Psychology, 14, 517-523.
- Smith, P. K. & Connolly, K. (1972). Patterns of play and social interaction in preschool children. In N. B. Jones (Ed.), Ethological studies of child behavior (pp. 65-95). London: Cambridge Press.
- Smith, P.K. & Connolly, K.J. (1973). Toys, space and children. British Psychological Society Bulletin, 26, 167.
- Smith, P.K. & Connolly, K.J. (1976). Social and aggressive behavior in preschool children as a function of crowding. Social Science Information, 16, 601-620.

- Staub, E. & Noerneberg, H. (1981). Property rights, deservingness, reciprocity, friendship: The transactional character of children's sharing behavior. Journal of Personality and Social Psychology, 40, 271-289.
- Stoneman, Z., Cantrell, M.L., & Hoover-Dempsey, K. (1983). The association between play materials and social behavior in a mainstreamed preschool: A naturalistic investigation. Journal of Applied Developmental Psychology, 4, 163-174.
- Sutton-Smith, B. (1986). Toys for object and role mastery. In K. Hewitt & L. Roomet (Eds.) Educational toys in America: 1800 to the present. Vermont: The Robert Hull Fleming Museum.
- Tawney, J. W. (1981). A cautious view of mainstreaming in early education. Topics in Early Childhood Special Education, 1(1), 25-36.
- Updegraff, R. & Herbst, E.K. (1933). An experimental study of the social behavior stimulated in young children by certain play materials. Journal of Genetic Psychology, 42, 372-391.
- Van Alstyne, D. (1932). Play behavior and choice of play materials of preschool children. Chicago: Univ. of Chicago Press.
- Vance, B. (1982). Adventure playground: The American experience. Parks and Recreation, 17(9), 67-70.
- Vandell, D. L., Wilson, K. S. & Buchanan, N. R. (1980). Peer interaction in the first year of life: An examination of its structure, content, and sensitivity to toys. Child Development, 51, 481-488.
- Vandenberg, B. (1981). Environment and cognitive factors in social play. Journal of Experimental Child Psychology, 31, 169-175.
- Vincent, L.J., Brown, L., & Getz-Sheftel, M. (1982). Integrating handicapped and typical children during the preschool years: The definition of best educational practice. Topics In Early Childhood Special Education, 1 (1), 17-24.
- Voetz, L. (1980). Children's attitudes toward handicapped peers. American Journal of Mental Deficiency, 84 (5), 455-464.

- Vygotsky, L.S. (1978). Mind in society: The development of higher mental processes. Cambridge, MA: Harvard University Press.
- Weber, E. (1979). Play materials in the curriculum of early childhood. In K. Hewitt & L. Roomet (Eds.), Educational toys in America: 1800 to the present. Vermont: The Robert Hull Fleming Museum.
- Wehman, P. (Ed.) (1979). Recreation Programming for developmentally disabled persons. Baltimore: Univ. Park Press.
- Winkel, G.H. & Sasanoff, R. (1976). An approach to an objective analysis of behavior in architectural space. In H.M. Proshansky, W.H. Ittelson & L.G. Rivlin (Eds.), Environmental Psychology: 2nd Edition. New York: Holt, Rinehart & Winston.
- Winsor, C. B. (1984). Blocks as a material for learning through play-The contribution of Caroline Pratt. In E. S. Hirsch (Ed.), The block book (pp. 5-14). Washington, D.C.: National Assoc. for the Educ. of Young Children.
- Zahn-Waxler, C., Iannotti, R. & Chapman, M. (1982). Peers and prosocial development. In K. H. Rubin & H. S. Ross (Eds.), Peer relationships and social skills in childhood. New York: Springer-Verlag.