CHAPTER 4

CASE STUDY

4.1 INTRODUCTION

This project is an extension of studies carried out in Germany and England and, as in these two places, this study focuses on children between the ages of 7 and 11 and adolescents between the ages of 11 and 15. It explores their travel patterns and levels of personal autonomy, as well as the connections that this behaviour has with their parents’ ideas on whether to allow children the freedom to make unaccompanied journeys (Hilman et al., 1990). The methodology outlined in the previous chapter will be applied, and the questionnaires from the studies carried out in England and Germany will be used.

4.2 APPLYING THE PROPOSED METHODOLOGY

This research will investigate the independent mobility of children between the ages of 7 and 11 and adolescents between the ages of 11 and 15. Adhering to the sequential stages shown in Figure 3.1, the following describes the case study undertaken in five regions of Brazil between April and July 2010.

- Stage 1: Identifying the issue and objectives

Field research is undertaken with the aim of obtaining data to explain, understand and, sometimes, predict phenomena. With this in mind, the research in this case study attempts to provide a response to the following question: How can we characterise the independent mobility of 7 to 11 year old children and 11 to 15 year old adolescents in several Brazilian cities? To answer this question it is necessary to gather relevant information from the field. Consequently, the aim of this research is: to collect data pertaining to elements that characterise the independent mobility granted to 7 to 11 year old children and 11 to 15 year old adolescents by their parents, in order to understand the motives behind the granting or refusal of permissions.
• Stage 2: Delimiting the area of study

During the original study England was divided into five regions in order that the research could be carried out in different areas, from a London suburb to a rural town. Germany, with similar characteristics to England, was also divided into five regions for the purposes of the project.

According to IBGE (2009), Brazil has a land area of 8,514,876 km² and a population of 193,733,395 inhabitants, whilst Germany has a land area of 356,733 km² and a population of 82,166,671 inhabitants, and finally the United Kingdom has a land area of 244,100 km² and a population of 61,565,422 inhabitants.

In comparison Brazil is approximately 24 times larger than Germany and 35 times larger than the United Kingdom. Brazil’s population is 2.5 times the population of Germany and 3 times that of the UK. This means that Brazil’s population is more scattered and found across a much larger area.

Brazil is a country marked by deep inequalities and by enormous socio-spatial diversity. These characteristics are evident on every level: between the country’s different regions; between the 27 federal states; between each of the 5,561 municipalities and; felt with intensity, internally within each of the state entities that represent local power (Brazil 2004).

Therefore, to divide Brazil into five regions and, within each region, to carry out the research in just one primary and one secondary school in one town will not give results that are representative of the entire region. However, due to the resources available, namely the time and people to carry out the project, it is not possible to use a sample of greater size.

Table 4.1 contains a list of the towns and schools in which this research was carried out:
The choice of towns was made according to convenience and not by technical selection. The University of Brasilia carried out a national review and, as a result of their representativeness, a number of towns from different regions of Brazil were considered to help achieve the project’s objectives. Following this, several towns were selected to take part in the independent mobility study. The research was carried out in one town from each region of Brazil shown in Table 4.1, and these locations are described below:
a) Mangaratiba – RJ

The town of Mangaratiba is located in the Metropolitan meso-region\(^1\) of Rio de Janeiro, and in the micro-region of Itaguai. It has a land area of 352 km\(^2\) and an estimated population of 32,533 inhabitants (IBGE, 2009), 79.76% of which is urban (CNM, 2010). The distance to the state capital is 85.483 km (CNM, 2010). The town has 7,125 registered students, 528 teaching staff and 31 elementary schools\(^2\) (IBGE, 2008).

The primary economic activities in the town are tourism, industry, trade, agriculture, civil construction, fishing, farming and mineral exports. The town is split into the administrative districts of Itacuruça, Muriquí, Praia Grande, Mangaratiba – the administrative centre, Conceição de Jacareí and Serra do Piloto (Prefeitura de Mangaratiba, 2007). Its location can be seen in Figure 4.1.

![Figure 4.1: Map showing the town of Mangaratiba (Image by Raphael Lorenzeto de Abreu).](image)

b) Castro – PR

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\(^1\) Translator’s note: A subdivision of Brazilian states that groups together proximate municipalities, but that has no administrative purpose.

\(^2\) Translator’s note: Attended up to the age of 14.
The town of Castro is located in the meso-region of Centro Oriental Paranaense and in the micro-region of Ponta Grossa. It has a land area of 2,532 km² and an estimated population of 68,071 inhabitants (IBGE, 2009), of which 68.02% is urban (CNM, 2010). Its distance from the state capital is 102.66 km (CNM, 2010). The town has 13,452 registered students, 690 teaching staff and 49 elementary schools (IBGE, 2008).

In the past Castro was a German/Dutch colony. In the 18th Century it became a resting area for the cattle dealers who brought animals to the southeast of Brazil. The foundation of its economic activity is farming, and it is considered to be one of the largest producers in the state of Paraná. Castro has earned the title of the largest agricultural limestone producer in Latin America due to its mineral exploration and extraction. The town is also home to a broad range of commerce including service providers, as well as food, furniture and brush manufacturing (Prefeitura de Castro). Its location can be seen in Figure 4.2.

![Figure 4.2: Map showing the town of Castro (Image by Raphel de Lorenzeto Abreu).](image)
The town of Santa Rita can be found in the meso-region of Norte Maranhense and in the micro-region of Rosário. It has a land area of 786 km² and an estimated population of 32,872 inhabitants (IBGE, 2009), of which 38.79% is urban (CNM, 2010). Its distance from the state capital is 68.275 km (CNM, 2010). The town has 5,651 registered students, 317 teaching staff and 54 elementary schools (IBGE, 2008).

For half a century the village of Santa Rita grew slowly due to its lack of access and unfavourable position with regard to immigration flow. As the population increased, the townspeople began to penetrate the region’s forests resulting in the appearance of small villages formed by the families of fishermen, farm labourers, and artisans, amongst others (Santa Rita Town Hall). The primary economic activities in the town are centred on manioc, the extraction of firewood, and poultry rearing (CNM, 2010). Its location can be seen in Figure 4.3.

![Figure 4.3: Map showing the town of Santa Rita (Image by Raphael Lorenzeto de Abreu).](image)

*d) Marabá – PA*
The town of Marabá is located in the meso-region of Sudeste Paraense and in the micro-region of Marabá. It has a land area of 15,092 km² and an estimated population of 203,049 inhabitants (IBGE, 2009), of which 79.97% is urban (CNM, 2010). It is a distance of 440.11 km from the state capital (CNM, 2010). The town has 46,318 registered students, 1,583 teaching staff and 228 elementary schools (IBGE, 2008).

Marabá is located between two large rivers, the Itacaiúnas and Tocantins. Viewed from above, the centre of Velha Marabá takes on the shape of a ‘Y’. The city is divided into five distinct urban centres: Marabá Pioneira, or Velha Marabá, found on the banks of the rivers; Cidade Nova where the airport can be found; Nova Marabá where the neighbourhoods are named by numbered folhas; São Felix I and II, both situated over the bridge that crosses the River Tocantins; and Morada Nova, located 20 km from Marabá. Today, Marabá is the economic and administrative hub of a vast region on the ‘Amazon agricultural frontier’. The agricultural industry here deals with the processing of fruit pulps, manioc flour, rice, milk and palm heart (Marabá Town Hall). Its location is shown in Figure 4.4.

Figure 4.4: Map showing the town of Marabá (Image by Raphael Lorenzeto de Abreu).

e) Taguatinga – DF

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3 Translator’s note: Literally ‘sheets’. So, the neighbourhoods are named Folha 15, Folha 35 etc.
Taguatinga is a satellite town of the Federal District (Brasilia). It is bordered to the north by the Administrative Regions of Brasilia and Brazlândia, to the south by Riacho Fundo, to the east by Guará and Núcleo Bandeirante, and to the west by Ceilândia and Samambaia. It has a land area of 121.34 km² and an estimated population of 243,575 inhabitants (IBGE Census, 2000), of which 99.93% is urban (IBGE Census, 2000). It is a distance of 20.9 km from the state capital (Administração Regional de Taguatinga).

The establishment of Taguatinga as a city occurred when the huge influx of people driven by the construction of Brasilia settled in the Planalto Central region. This workforce migrated to the region with the intention of working and setting up home there (Administração Regional de Taguatinga). Its location can be seen in Figure 4.5.

![Figure 4.5: Map showing the town of Taguatinga (Image by Raphael Lorenzeto de Abreu).](image)

- **Stage 3: Defining the sample**

This stage is subdivided into: (i) defining the participants; (ii) sampling methods; and (iii) quantifying the sample.

*a) Defining the participants*
The participants in this research are: (i) school pupils between the ages of 7 and 15; (ii) the parents of the respective pupils. As the parents’ questionnaires are to be taken home by the children and collected at school the following day, it is expected that fewer of these will be returned in comparison to the number of completed pupils’ questionnaires.

\[b) \text{Sampling methods}\]

In this research the sampling method used was judgemental and purposive non-probability sampling.

\[c) \text{Quantifying the sample}\]

As previously mentioned, this research is an extension of studies carried out in Germany and England. As in these two countries, Brazil was divided into five regions and in each region the researchers selected a suitable town. In each town one primary school and one secondary school were selected as judged appropriate by the researcher. In each school the questionnaires were handed out to classes from 2nd to 9th Year, with each class containing 30 pupils on average.

\[\text{Stage 4: Planning the study}\]

This section concerns data collection and was divided into three parts, as follows:

- Stage 4.1: Development of research tools
  Two different questionnaires will be used: one to be completed by the students (Questionnaire A) and another to be completed by their parents (Questionnaire B). These questionnaires can be found in the appendix.

- Stage 4.2: Carrying out a pilot study
  In March, a pilot study was undertaken at the Centro de Ensino Fundamental Carlos Ramos Mota, located in Lago Oeste.
Stage 4.3: Amendment of the research tools
During the pilot study the research tools were tested and, following this, the necessary alterations were made to ensure their fitness for use in the field.

Stage 5.1 – Outline of the research schedule and timeline
The research took place on the dates shown in Table 4.3:

<table>
<thead>
<tr>
<th>Research Date</th>
<th>Region</th>
<th>Town</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th and 6th April</td>
<td>Southwest</td>
<td>Mangaratiba – Muriqui District – RJ</td>
<td>Colégio Municipal Nossa Senhora Das Graças</td>
</tr>
<tr>
<td>19th and 20th April</td>
<td>South</td>
<td>Castro – PR</td>
<td>Antonio e Marcos Cavanis Colégio Estadual de Ensino Fundamental e Médio</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vicente Machado Escola Colégio Municipal de Ensino Fundamental</td>
</tr>
<tr>
<td>17th and 18th May</td>
<td>Northeast</td>
<td>Santa Rita – MA</td>
<td>Orlando Gasileu de Carvalho Colégio Municipal de Ensino Fundamental</td>
</tr>
<tr>
<td>31st May and 1st June</td>
<td>North</td>
<td>Marabá – PA</td>
<td>Prof. Acy J N B Pereira Colégio Estadual de Ensino Fundamental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Basílio Miguel dos Santos Colégio Municipal de Ensino Fundamental</td>
</tr>
<tr>
<td>6th and 7th July</td>
<td>Central - East</td>
<td>Taguatinga - DF</td>
<td>CEF 03 Centro de Ensino Fundamental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CEF 09 Centro de Ensino Fundamental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CE 11 Centro de Ensino</td>
</tr>
</tbody>
</table>
In all of the towns the research was carried out over the course of two days. Each day it began at the start of morning classes, and concluded at the end of afternoon classes. The respective head teachers of each school nominated the classes that would take part in the questionnaire.

- Stage 5.2: Logistics of travelling to the area of study

With the exception of Taguatinga, travel to all of the towns was by air. Contact was made with the head teachers of the schools a few days before the researcher’s arrival. Formal contact was made the day after the team’s arrival in each city.

- Stage 5.3: Data collection

At all of the schools, questionnaires were given to the pupils and also sent home with them to their parents in order to be collected the following day. The number of questionnaires distributed varied in each school due to the differing number of pupils.

A total of 1629 questionnaires were collected, 993 of which were completed by pupils, and 636 by their parents. With the cooperation of the heads of the schools and the teachers of each participating class, it was possible to obtain a 100% completion rate from students. The completion rate for parents of 2nd to 5th Year was 68.4%, and 60.1% for 6th to 9th year. Table 4.4 contains a brief outline of the sample.

<table>
<thead>
<tr>
<th>Town</th>
<th>Year 2 to 5</th>
<th>Year 6 to 9</th>
<th>Total</th>
<th>Year 2 to 5</th>
<th>Year 6 to 9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangaratiba</td>
<td>82</td>
<td>88</td>
<td>170</td>
<td>47</td>
<td>47</td>
<td>94</td>
</tr>
<tr>
<td>Castro</td>
<td>88</td>
<td>135</td>
<td>223</td>
<td>78</td>
<td>103</td>
<td>181</td>
</tr>
<tr>
<td>Santa Rita</td>
<td>102</td>
<td>106</td>
<td>208</td>
<td>78</td>
<td>92</td>
<td>170</td>
</tr>
<tr>
<td>Marabá</td>
<td>75</td>
<td>107</td>
<td>182</td>
<td>50</td>
<td>66</td>
<td>116</td>
</tr>
<tr>
<td>Taguatinga</td>
<td>77</td>
<td>133</td>
<td>210</td>
<td>37</td>
<td>38</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>993</strong></td>
<td></td>
<td></td>
<td><strong>636</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Stage 6: Data management

The collected questionnaires were organised and digitised in an Excel spreadsheet and
then analysed.

- **Stage 7: Data analysis**

  a) *Data organisation*

  Following the collection of the data, the questionnaires and the information contained in them were transcribed into an Excel spreadsheet.

  b) *Data analysis*

  With the database complete, several elements were selected for study in both the pupil and adult questionnaires. For several of these elements a comparison was made between the Brazilian situation and that in England and Germany. These were:

  a) *Pupil Questionnaire*

     - Independent mobility
     - Journey patterns
     - Gender influence
     - Pupil perceptions of safety

  b) *Parent Questionnaire*

     - Independent mobility
     - Worries about road accidents
     - Permission for children to go out at night
     - Technology and mobility
     - Age influence
CHAPTER 5

INDEPENDENT MOBILITY ANALYSIS

5.1 INTRODUCTION

This analysis looks at understanding pupil mobility and the level of autonomy or independence that they possess when travelling. This opportunity will also be taken to compare their level of independent mobility with pupils in England and Germany. Finally, the report will investigate the relationship between the “permissions” that parents grant their children and worries about their safety.

5.2 PUPIL QUESTIONNAIRE

The results analysed here are based on the collected data displayed in Table 5.1, which contains a brief description of the sample.

<table>
<thead>
<tr>
<th>Class</th>
<th>Total Pupil Questionnaires</th>
<th>Average Pupil Age (Years)</th>
<th>Pupil Gender</th>
<th>Total Parent Questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>2\textsuperscript{nd} to 5\textsuperscript{th} Year</td>
<td>424</td>
<td>8.83</td>
<td>Feminine</td>
<td>48% Masculine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Response</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>6\textsuperscript{th} to 9\textsuperscript{th} Year</td>
<td>569</td>
<td>12.83</td>
<td>Feminine</td>
<td>49% Masculine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Response</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9%</td>
</tr>
</tbody>
</table>

The research undertaken using the pupil questionnaires is focused on determining levels of independent mobility and travel patterns of pupils in the 7 to 15 age group. As no previous data exists to assess changes to mobility in Brazil it will be compared to that of pupils in England and Germany, where the same research was carried out in 1990. It is understood that this comparison is not exact in terms of actual differences, which has been noted previously, but it provides useful parameters for evaluation.
5.2.1 Independent mobility

Two aspects of the research were selected to measure the children’s independent mobility. The first concerns the ‘permission’ or ‘consent’ that the children obtain from their parents to travel on foot by themselves, cross roads, and make the journey from home to school unaccompanied. The second aspect concerns mechanised travel and the ‘permission’ or ‘consent’ given to children younger than 16 years old to travel by bicycle on public roads and to use the bus. It is expected that the number of ‘permissions’ granted to pupils will increase with age. According to Hilman et al (1990), adolescents between the ages of 11 and 15 enjoy far greater independence than children from 2nd to 5th Year. These results are displayed in Table 5.2 and compared with those obtained in England and Germany by Hilman et al (1990).

<table>
<thead>
<tr>
<th>Country</th>
<th>Class</th>
<th>Travel on foot predominantly by themselves</th>
<th>Mechanised travel for children younger than 16 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cross roads by themselves (%)</td>
<td>Travel from home to school alone (%)</td>
</tr>
<tr>
<td>Brazil</td>
<td>2nd to 5th Year</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>England</td>
<td></td>
<td>51</td>
<td>35</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>75</td>
<td>91</td>
</tr>
<tr>
<td>Brazil</td>
<td>6th to 9th Year</td>
<td>71</td>
<td>41</td>
</tr>
<tr>
<td>England</td>
<td></td>
<td>97</td>
<td>87</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>96</td>
<td>99</td>
</tr>
</tbody>
</table>

* Percentage of pupils that already owns bicycles and can use them on public roads.

As expected, the ‘permissions’ or ‘consent’ granted to the pupils increase with age, the pupils in classes 6 to 9 enjoying more independence than those in classes 2 to 5. In both age groups the Brazilian results show the greatest restriction in relation to crossing roads, with just 31% of the pupils interviewed in classes 2 to 5 having permission for this. It can also be observed that the percentage rate of ‘consent’ in practically all of the categories is lower in Brazil than in the other countries, except for travelling by bicycle on public roads.
In England these percentages are almost always lower than those in Germany, with the Brazilian figures being lower still. This shows that travelling on foot unaccompanied, which represents autonomy and independence in a child’s mobility, is much greater in Germany for children in 2nd to 5th Year. The results presented are the consequences of decisions taken by parents and their judgment regarding their child’s maturity and environment.

Another section of the pupil questionnaire asked whether he or she would like to have permission to cross busy streets, roads and highways by themselves, if they do not already do so. It was found that 36% of 2nd to 5th Year and 8% of 6th to 9th Year pupils that did not already have permission to cross streets unaccompanied did not desire permission to do so. This could be interpreted as resulting from insecurity amongst the pupils, or even that they do not feel capable of crossing streets unaccompanied.

5.2.2 Journey patterns

The journey patterns of each of the pupils on the way to school were examined. In accordance with the pupils’ questionnaire responses, the modes of transport most frequently used by them on their journey to school can be seen in Figure 5.1.

![Figure 5.1: Modes of travel used by the pupils on their journey to school.](image-url)
X-axis, from left to right:

- Walking the majority or all of the journey
- Car
- Motorbike
- School bus
- Other
- Public Transport
- Van
- Bicycle
- No response

Blue column: 2\textsuperscript{nd} to 5\textsuperscript{th} Year
Green Column: 6\textsuperscript{th} to 9\textsuperscript{th} Year

Children in Brazil predominantly travel to school on foot, with 47\% and 51\% of 2\textsuperscript{nd} to 5\textsuperscript{th} Year and 6\textsuperscript{th} to 9\textsuperscript{th} Year pupils doing so respectively. Of the pupils that walk to school, half of the 2\textsuperscript{nd} to 5\textsuperscript{th} Year pupils and 82\% of the 6\textsuperscript{th} to 9\textsuperscript{th} Year pupils travel alone. Taking the other modes of transport into consideration, around 20\% of the 2\textsuperscript{nd} to 5\textsuperscript{th} Year pupils travel by school bus and 13\% travel by car. It is also interesting to note that 7\% travel on bicycles, 4\% go by van and 3\% on motorbikes. For the most part, the vans are school transport paid for by the parents, most probably with the belief that their children will be safer this way. For the 6\textsuperscript{th} to 9\textsuperscript{th} Year pupils, 14\% travel by car, 12\% travel by public transport and 10\% travel on the school bus. Around 5\% travel by van and bicycle.

In Figures 5.2a and 5.2b we can see bicycles parked in the school playground, and the bus parked in the road alongside the school respectively.
In England, almost 65% of children in 2nd to 5th Year travel to school on foot and around 30% travel to school by car. Very few travel by bus or bicycle, despite the high level of bicycle ownership. The study showed that the journeys to school undertaken by pupils from 6th to 9th year are normally longer, therefore making travel on foot more difficult. Schools attended by students in 6th to 9th year have a larger number of students compared to schools from 2nd to 5th year and have a far greater catchment area. Around 50% of these students travel to school on foot and less than 10% travel by car. Furthermore, more than 65% travel by bus, which is more than six times the percentage that travels by car. Therefore, it is clear that older pupils possess greater mobility than was expected, and when travelling longer distances they make use of the bus.

In Germany, the vast majority of journeys to school made by pupils in 2nd to 5th Year are made on foot. Just 10% of them travel by car, and very few travel by bus or bicycle – despite the high level of bicycle ownership. As in England, the majority of students in 6th to 9th Year usually have longer journeys to school and rarely make them on foot. This is reflected by the drop from around 80% of 2nd to 5th Year pupils to just over 30% of 6th to 9th year pupils walking to school. However, half of the 6th to 9th Year students travel by bus, which is five times more than the number of pupils that go by car. The increase in ‘permissions’ to use their bicycles does not result in a significant increase in the number of pupils cycling to school.
**Figure 5.3:** How the pupils travel to school.

X-axis from left to right:

- With an older brother, sister or schoolmate.
- With a brother, sister or schoolmate of the same age or younger
- With another adult
- With parents
- Alone
- No response

Blue column: 2nd to 5th Year
Green column: 6th to 9th Year

Figure 5.3 indicates with whom pupils normally travel to school. The vast majority of pupils travel to school alone, with approximately 30% and 40% of the 2nd to 5th Year and 6th to 9th Year pupils doing so respectively. As in England and Germany, the level of pupils accompanied on their journey to school is strongly linked with the use of cars and, specifically in Brazil, motorbikes. All of those who go to school using either of these modes of transport are accompanied by their parents or another adult.

Students from 6th to 9th Year are much more independent, with 19% accompanied by their parents and 9% by another adult. In England, nearly 75% travel to school by themselves or with someone of the same age, and very few are escorted by an adult. More than half walk home from school, the vast majority of them unaccompanied or with someone of the same age.

In Germany just 10% of pupils in 2nd to 5th Year are accompanied by an adult on their school journey, and the vast majority of those pupils travel to school by car. Older pupils are more independent. Just less than 40% of pupils in 6th to 9th Year travel on foot, half go by bus and hardly any are accompanied by an adult on their route.

**5.2.3 Gender influence**

There exist some marked differences between genders in independent mobility and journey patterns, and in the attitudes of their parents. Figures 5.4 and 5.5 show the percentage of activities that each group may undertake alone.
Figure 5.4: Difference between genders in 2nd to 5th Year

X-axis from left to right:

- Travelling to school
- Crossing busy roads
- Cycling on busy roads
- Cycling to other places
- Travelling by bus

Blue column: Girls
Green column: Boys
Figure 5.5: Difference between genders in 6th to 9th Year

X-axis, from left to right:

- Travelling to school
- Crossing busy roads
- Cycling on busy roads
- Cycling to other places
- Travelling by bus

Blue column: Girls
Green column: Boys

As Figure 5.5 shows, the categories relating to ‘cycling on busy roads’ and ‘cycling to other places’ are linked to the total number of pupils that own a bicycle, as displayed in table 5.3.

Table 5.3: Number of pupils that own a bicycle

<table>
<thead>
<tr>
<th>Class</th>
<th>Total Pupil Questionnaires</th>
<th>Pupil Gender</th>
<th>Own Bicycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd to 5th Year</td>
<td>424</td>
<td>Feminine</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masculine</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No response</td>
<td>8%</td>
</tr>
<tr>
<td>6th to 9th Year</td>
<td>569</td>
<td>Feminine</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masculine</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No response</td>
<td>9%</td>
</tr>
</tbody>
</table>
In addition to demonstrating that those pupils from 6th to 9th Year enjoy more independent mobility, it is clear that boys enjoy far more independence than girls in both age groups. In England, 40% of girls and 60% of boys said that they have permission to cross roads by themselves. Whereas a third of boys who own bicycles are permitted to use them on roads, only around 10% of girls have permission to do the same.

In Germany there was little difference between the levels of independent mobility for boys and girls, except in two respects. Firstly, more boys own a bicycle and can use them on roads, amongst both older and younger pupils. Secondly, the parents of the male group are more permissive with regard to letting them go out after dark.

5.2.4 Perception of pupil safety

In an attempt to understand parent reactions, several questions were developed to gauge the pupils’ perception of their safety. The pupils were asked how they feel with regard to their safety when alone in their neighbourhood. In accordance with the responses of pupils in 2nd to 9th Year, the results can be seen in Figure 5.6.
Figure 5.6: Pupils’ perception of safety

Key:

- Very safe (17%)
- Safe (24%)
- Not very safe (21%)
- Not safe at all (7%)
- I’m not allowed to leave the house alone (23%)
- Extremely unsafe (1%)
- Blank (7%)

We can see that 23% of pupils do not have permission to leave their house alone, whilst 24% of them feel ‘safe’ and 21% ‘not very safe’. Another question put to the pupils concerned their worries when outside alone or with friends. The results can be seen in Figure 5.8 below:
Figure 5.7 shows the number of responses for each question, however each pupil could mark as many options as they considered appropriate. We can see that in first place is the fear of strangers, with traffic identified as the second highest cause of worry.

### 5.3 PARENT QUESTIONNAIRE

The objective of the parent questionnaire was to compare parents’ decisions to their perceptions and ideas of safety and, since they are responsible for the children, thereby identify the reasons behind the children’s behaviour. Accordingly, the parent questionnaire focused on investigating the parents’ restrictions on the independent mobility of their children, why these were imposed, and to what extent the parents are
involved in their children’s transportation.

5.3.1 Independent Mobility

Independent mobility was analysed by investigating whether parents allow their children to travel to school unaccompanied, and by looking at the average age that they allow, or will allow, their child to make the journey alone. As a comparison, the average age at which the parents had permission to travel to school unaccompanied when they were children is also shown. The results are displayed in Table 5.4:

Table 5.4: Independent Mobility

<table>
<thead>
<tr>
<th>Class</th>
<th>Parents that allow their children to travel to school unaccompanied (%)</th>
<th>Average age at which they allow this</th>
<th>Parents that do not allow their children to travel to school unaccompanied (%)</th>
<th>Average age at which they will allow this</th>
<th>Parents that did not answer this question (%)</th>
<th>Age at which the parents had permission to travel to school unaccompanied when they were children</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd to 9th Year</td>
<td>60</td>
<td>10.13</td>
<td>35</td>
<td>13.68</td>
<td>5</td>
<td>9.79</td>
</tr>
</tbody>
</table>

The parents who participated in this research had permission to travel to school unaccompanied, on average, when they were slightly younger. The results of this research are indicative of relatively small cities from the *interior*\(^4\), which are quieter and safer than larger cities. There would most probably be a greater contrast between these numbers in large cities, since statistics show that urban centres are increasingly violent, causing families to be more protective of their children.

5.3.2 Concerns about road accidents

Another section of the questionnaire asked parents whether their children were usually allowed to cross streets, roads and highways alone, and at what age they were, or will be, permitted to do so. The results are displayed in Table 5.5.

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\(^4\) Translator’s note: The *interior* is not a strictly defined region, but generally refers to those areas further inland from the urbanised coast, and other semi-rural areas. The closest approximation would be ‘hinterland’.
### Table 5.5: Permission to cross busy streets, roads and highways

<table>
<thead>
<tr>
<th>Class</th>
<th>Parents that allow their children to cross streets, roads and highways alone (%)</th>
<th>Average age at which they allow this</th>
<th>Parents that do not allow their children to cross busy streets, roads and highways alone (%)</th>
<th>Average age at which they will allow this</th>
<th>Parents that did not answer this question (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd to 9th Year</td>
<td>50</td>
<td>10.43</td>
<td>41</td>
<td>13.67</td>
<td>9</td>
</tr>
</tbody>
</table>

The parents’ fears about road safety are also evident in their responses to the question asking how many of them worry about their children getting injured in a road accident whilst crossing a street, road or highway. The results are shown in Figure 5.8.

![Figure 5.8: Parent’s concerns](image)

**Key:**
• Very worried (73%)
• A little bit worried (11%)
• Not very worried (2%)
• Left blank (10%)
• I don’t know (3%)
• Not worried at all (1%)

We can see that the majority of parents, 73%, are ‘very worried’ about the risk of their child being injured in a road accident. This could mean that up to 77% and 71% of parents of the pupils in 2nd to 5th year and 6th to 9th Year are worried about the risk of their child being injured in a road accident. It can also be noted that just 1% of the parents of pupils in 2nd to 5th Year and 4% of the parents of pupils in 6th to 9th Year claim that they are ‘not very’ or ‘not at all’ worried, a worryingly low figure for small cities in the interior.

The English results are not much different. Half of the parents of pupils from 2nd to 5th Year and a third of the parents of pupils from 6th to 9th Year are ‘very worried’ and just 10% and 25% of the parents of pupils from 2nd to 5th Year and 6th to 9th Year respectively said they are ‘not very’ or ‘not at all’ worried. These numbers are higher than those in Brazil.

In Germany, half of the parents of 2nd to 5th Year pupils and 40% of the parents of 6th to 9th Year pupils state that they are ‘very worried’ about road safety, whilst just 20% and close to 30% of the parents of 2nd to 5th Year and 6th to 9th Year pupils respectively are ‘not very’ or ‘not at all’ worried. However, these fears are not reflected in how the pupils travel to school, as around 10% of 2nd to 9th Year pupils and almost none of the 6th to 9th Year students are accompanied on their journey to school.

5.3.3 Permission for children to go out after dark

In an attempt to understand the perceived safety of the environment in which they live, the research also looked at whether the parents allowed their children to go out after dark. It was discovered that 83% of parents do not allow their children to leave the house at night, whilst 14% do give permission. 3% of the responses were invalid or the question was left blank. The principal reasons given as to why they do not
allow this can be found in Figure 5.9.

![Figure 5.9: Principal reasons for parental restriction](image)

X-axis from left to right:

- It’s very dangerous
- The pupil is too young
- Violence
- Drugs
- Muggings/Assault
- Fear of strangers
- Traffic
- Thieves
- Lack of safety
- Safety/As a precaution
- Sexual abuse
- Worry
- Fear
- Bad company/friends
- Malicious people
- Kidnapping
- Fear of the pupil getting lost
- Other
- It is not advisable
- Pupil has to go to bed early

Figure 5.9 shows the number of responses, since the parents could give as many
justifications as they felt adequate. The vast majority answered that they thought it ‘very dangerous’, and that the pupil was ‘too young’ and did not have the maturity or judgement to be on the streets at night. They also gave fear of strangers, assaults, drugs, traffic, lack of safety, worrying, fear and sexual abuse as reasons. The parents of older children more frequently cite the fear of their children being attacked or harassed by an adult as a reason to restrict their children’s movements at night.

According to parents in England, the principal reason for not letting their children leave the house at night is fear of sexual abuse, primarily for 6th to 9th Year pupils. In Germany, fear of sexual abuse and aggression are the foremost reasons given to restrict the children’s movement. Around 65% of 6th to 9th Year pupils do not have permission to go out at night for these reasons.

5.3.4 Technology and mobility

One section of the questionnaire asked parents whether their children own a mobile phone and if this makes them happier to let their children go out unaccompanied. 36% of them said that their child owns a mobile phone, whilst 58% said they did not. 6% of the responses were either invalid or left blank. Of the parents who answered yes, Figure 5.10 below shows whether they feel happier letting their children leave the house alone knowing they have a mobile phone.

![Figure 5.10: Safety and mobile phone use](image)

X-axis from left to right:
- Yes
- No
- My child doesn’t go out alone
- No response/invalid

We can observe that using mobile phones leaves 45% of the parents feeling more secure about letting their children go out at night. In this way, technology can increasingly be used with the intention of improving safety and quality of life.

5.3.5. Age influence

The main variable that affects the degree of restriction to a child’s independent mobility is their age, insomuch as it was one of the primary reasons why parents would not allow their children to go out after dark. In fact, there is a progressive increase in ‘permissions’ with age. This can be seen in Figure 5.11, which shows the percentage of parents that allow their children to undertake the following activities unaccompanied.

![Figure 5.11: Independent mobility and age](image)

X-axis from left to right:

- Crossing streets, roads or highways
- Going to places other than school
- Going to and returning from school
- Going out after dark

- 29 -
• Cycling on streets, roads and highways
• Travelling on the bus

Blue column: 2\textsuperscript{nd} to 5\textsuperscript{th} Year
Green column: 6\textsuperscript{th} to 9\textsuperscript{th} Year

It can be observed that the greatest increase in ‘permissions’ relates to crossing roads unaccompanied, which just 30\% of 2\textsuperscript{nd} to 5\textsuperscript{th} Year pupils are allowed to do. The greatest parental restriction concerns going out at night.

In Germany and England the results are much the same. In England, the greatest increase in ‘permissions’ also pertains to crossing roads alone. There are few 6\textsuperscript{th} to 9\textsuperscript{th} Year pupils who do not have permission to do so. On the other hand, at this age the majority are still not allowed to use the bus alone.

In Germany, a little more than half of the younger pupils are allowed to cross roads by themselves. By the time they are 11 years old, all of them are permitted to do so. The largest increase in ‘permissions’ relates to use of the bus: whilst just 10\% of the 7 year olds are allowed to travel alone, the percentage increases to around 80\% at 11.

CHAPTER 6

FINAL CONSIDERATIONS

6.1 INTRODUCTION

In Chapter 1 the project was introduced, followed by a literature review in Chapter 2. Chapter 3 outlines the methodology for evaluating the independent mobility of 7 to 11 year olds and adolescents between 11 and 15 years old. Chapter 4 contains the case study in which both the results of the research and its analysis are presented, and in Chapter 5 the analysis of various sections of the pupil and parents questionnaires can be found. This chapter was written with the objective of presenting the study’s conclusions, as well as outlining the limitations that were encountered.

6.2 RESULTS
The literature review highlighted that the study of independent mobility is practically non-existent in Brazil, but that research on this topic has been undertaken in other countries. The present investigation used these foreign studies as its main reference point.

The objective of this project has been to investigate levels of independent mobility, with a focus on children between 7 and 11 years old and adolescents between 12 and 15 years old in several Brazilian cities. This behaviour was then compared to that of children in England and Germany. Specific objectives were outlined accordingly, for example:

- A comparison of children’s mobility today with that of their parents when they were young.

- A comparison of the situation of children in several Brazilian cities with those in European countries such as England and Germany.

- Identification of the home-school journey patterns of children and adolescents in several Brazilian cities.

First and foremost, it was observed that adolescents between the ages of 11 and 15 enjoy far greater independence than children from 2nd to 5th Year, and that the number of ‘permissions’ granted by their parents naturally increases with age. In comparison with England and Germany, in practically all of the categories investigated the Brazilian pupils are granted fewer ‘permissions’ on average when it comes to independent mobility. This is a consequence of the decisions taken by parents, and their judgements regarding the maturity of each child as well as their environment.

In all three countries the majority of children walk to school, and fewer of the older children are accompanied on the journey to school. Gender also influences the level of ‘permissions’ granted to the pupils. Boys enjoy far greater independence than girls, both in Brazil and England. In Germany there was little difference.
In Brazil, the parents were, on average, granted permission to travel to school unaccompanied at a slightly younger age than their children. This indicates that the independent mobility of children is decreasing. Also evident are the parents’ fears about road safety, in Brazil and in both of the other countries. A large proportion of the parents stated that they are very worried about the risk of their child getting injured in a road accident whilst crossing a street, road, or highway. This fear is reflected in their decisions concerning at what age they allow their children greater independent mobility.

The highest level of ‘permissions’ refused to the Brazilian children related to leaving the house after nightfall. For the parents who did not permit this, the most frequently used justifications were that they believed it to be too dangerous and that the pupil was ‘too young’ and did not have the maturity or judgement to be on the streets at night. This reflects fears about safety and the increasing presence of violence on the streets.

These results show that the social environment is not favourable to the physical and social development of these students. It is necessary to take action that facilitates the pupils’ growth and that makes their experiences outside the home safer.

6.3 POSITIVE AND NEGATIVE CONSIDERATIONS

The greatest difficulty encountered during this investigation concerned the accessibility of the questionnaire. Due to the poor quality of the majority of state-run schools, it was observed that pupils studying in 5th and 6th Year had difficulty reading and understanding the questionnaire. This compromised the results obtained during the research: for example there were inconsistencies and incoherence in some responses, which therefore reduced their usefulness. This also occurred in the parent questionnaires, which frequently contained incoherent responses and questions left blank. Some of the parents do not know how to read.
Validity and trustworthiness, or reliability, are essential requirements for a measurement. For a measurement to have validity it must be reliable; however, a reliable measurement may or may not be valid.

Another issue that should be highlighted is that Brazil is a country marked by deep inequalities and enormous socio-spatial diversity (Brasil, 2004). Therefore, to divide Brazil into five regions, and to carry out this research in a single town within each region will not provide data that is representative of that entire region. Nevertheless, it was possible to conclude that the parental ‘permissions’ granted to the children concerning freedom of movement are related to the parents’ worries about their children’s safety. Of course, parents are the ones principally responsible for determining the level of children’s independent mobility.

We must put some challenging questions to political decision-makers, and to society as a whole, with regard to how we can go about creating favourable environments for the physical and social development of children, improve their health prospects and quality of life and, consequently, look at contributing to the development of public policies.

According to Menezes (2006), in order to change this situation it is necessary that a city is well designed and reliable, allowing for easy, cheap, safe and comfortable mobility. As a result, it is necessary to develop pedestrian and cycle networks that are: continuous; safe and comfortable; free of architectural obstructions and; integrated with a network of easy-access public transport (with exclusive lanes where possible); with a good distribution of gardens and recreational spaces, with easy access, good visibility and surveillance, inserted into these public transport and pedestrian networks. They could also interconnect the areas between which families usually travel (residential, school and community services, work, local shops, leisure) with pedestrian / public transport / cycle networks, adequately separating or protecting these travel networks from general traffic. It would be advisable to incorporate a wide distribution of gardens and recreational spaces with easy access, good visibility and surveillance into these pedestrian and public transport networks.
The greatest challenge at present is the construction of increasingly inclusive cities, in which the interests of not just one sector of the population are taken into consideration, but the needs of families and citizens as a whole. This could be manifested in a less hostile urban environment, thereby improving autonomy and quality of life.

6.4 RECOMMENDATIONS FOR FUTURE RESEARCH

As a result of this investigation and its findings, a need for further research has been identified. The following suggestions are outlined as possible subjects for future investigations that would allow the continuation of this project:

- A more extensive study, with larger samples, would provide results that inform us about changes to children’s autonomy and their wider consequences.

- Identify more variables in order to equip us with a wider selection of evaluation tools. They may be related to the ‘permissions’ granted by the parents in relation to other activities in which their children take part.

- Extend the research regarding the pupils’ use of technology. Mobile phone use is already a factor that reassures parents concerned about their children’s safety.

Having reached an understanding of the independent mobility of pupils between the ages of 7 and 15, and how the relationship that exists between the parents’ ‘permissions’ and perception of their children’s safety out of the house contributes to its construction, the necessity for further research on this topic can clearly be identified.