INVESTIGATING THE ROLE OF HOME ENVIRONMENT IN BILINGUAL LANGUAGE DEVELOPMENT: A STUDY ON YOUNG TURKISH CHILDREN IN ENGLAND



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ABSTRACT

This thesis presents the results of a cross-sectional, mixed-method study investigating the role of proximal and distal factors in the home environment that are associated with bilingual language development of 3- to 6-year-old Turkish children in England. In so doing, it addresses some of the gaps in the literature and becomes the first study to demonstrate the factors related to bilingual language skills of Turkish children in England. The findings from this study add to the literature by demonstrating the relative importance of the quality of language use in the home language and literacy environment of children with a focus on mother-child interactions and the role of language attitudes in children's language preferences and thereby language development drawing on the accounts of children.

The main sample of the study is first-generation Turkish parents (N=168), and their 3- to 6-year-old children. All the parents participated in an interview concerning their life in England. During this interview, a structured questionnaire was administered to obtain information on the demographic and socioeconomic characteristics of the families and their home language and literacy environment. Then, a subgroup of mothers and children (N=67) was visited twice at home for observations of mother-child interactions and child assessments. During the home visits the interactions between the dyads were observed and recorded using a structured observation method. Children were assessed for their Turkish and English vocabulary; Turkish sentence repetition; and non-verbal abilities. Lastly, a sub-group of children (N = 27) was interviewed about their attitudes towards the Turkish and English languages using a semi-structured interview method.

The study findings suggest that the home environments of children from first-generation Turkish families may be related to the family characteristics; further the home environment is likely to be associated with variations in children's language learning experiences. Among the components of the home language and literacy environment, language exposure at home and language quality in maternal speech were found to be the most significant predictor in statistical models of both Turkish and English language skills. This indicates that stimulating language and literacy experiences at home can facilitate gains in both Turkish and English and can buffer the effects of socioeconomic disadvantage. The interviews with children demonstrated that children's language attitudes informed their language preferences, and vice versa. Negative language attitudes towards a language or a culture were associated with children's avoidance of the language and had a negative emotional effect on children's language preferences and perceptions.

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TABLE OF CONTENTS

1. INTRODUCTION 10

1.1. Setting the Scene 10

1.2. Study Purpose 13

1.3. Rationale 15

1.4. History of Turkish Immigration to Europe 17

1.5. Thesis Terminology 20

1.6. Structure of the Thesis 21

2. LITERATURE REVIEW 23

2.1. Introduction 23

2.2. Theories of Language Acquisition and Child Development 23
2.2.1. This Study: An Interactionist View on Bilingual Language Development 28

2.3. Bilingual Language Acquisition 34

2.4. Child Characteristics Relating to Bilingual Language Development 39
2.4.1. Cognition 40
2.4.2. Language Attitudes 43

2.5. Micro-level Factors Relating to Bilingual Language Development: Home Language and Literacy Environment 46
2.5.1. Language Exposure 48
2.5.2. Language and Literacy Activities 51
2.5.3. Proximal Processes: Language Quality 55
2.5.4. Section Summary 58

2.6. Macro-level Factors Relating to Bilingual Language Development: Family Background Characteristics 58
2.6.1. Family Socioeconomic Status 59
2.6.2. Family Integration 62
2.6.3. Section Summary 65

2.7. Review of Study Variables 65
2.7.1. Child Characteristics 66
2.7.2. Microsystem: Home Language and Literacy Environment 70
2.7.3. Macrosystem: Family Background Characteristics 74

2.8. Summary of the Literature Review 76

3. METHODOLOGY 79

3.1. Research Questions 79

3.2. Study Design 80

3.3. Access to the Community, Sampling, and Participants 85
3.3.1. Turkish-speaking Population in the United Kingdom 85
3.3.2. Access to the Turkish-speaking Community 86
3.3.3. Sampling Criteria and Recruitment 87

3.4. Participants 89
3.4.1. Phase 1 89
3.4.2. Phase 2 90
3.4.3. Phase 3 91

3.5. Research Instruments 91
3.5.1. Parent Questionnaire 92
3.5.2. Language Quality in Maternal Speech 96
3.5.3. Turkish Vocabulary Test 97

3.5.4. Turkish Sentence Repetition Test 99
3.5.5. English Vocabulary Test 99
3.5.6. Non-verbal Abilities Test 100
3.5.7. Child Interviews 101

3.6. General Procedures 103
3.6.1. Piloting Phase 103
3.6.2. Phase 1 105
3.6.3. Phase 2 107
3.6.4. Phase 3 112
3.6.5. Doing research with children 113

3.7. Ethical Considerations 114

3.8. Data Storage and Protection 116

3.9. Analysis Plan 117
3.9.1. Research Question 1 117
3.9.2. Research Question 2 119
3.9.3. Research Question 3 121

4. BILINGUAL LANGUAGE DEVELOPMENT AND LANGUAGE AND LITERACY RESOURCES 123

4.1. Introduction 123

4.2. Analytical Strategy 125
4.2.1. Hierarchical Regression Analysis and Its Use 126

4.3. Stages of Analysis 131
4.3.1. Data Screening 132
4.3.2. Organising Data into Variables 134
4.3.3. Preliminary Analyses 136
4.3.4. Regression Analyses 137

4.4. Macro-system: Family Background Characteristics 139
4.4.1. Parent's Education 139
4.4.2. Material Well-being 140
4.4.3. Social Integration of Parents 147

4.5. Microsystem: Home Language and Literacy Environment 153
4.5.1. Home Language and Literacy Activities 153
4.5.2. Home Language Use 160

4.6. Proximal Processes: Language Quality in Maternal Speech 164
4.6.1. Language Quality in Maternal Speech 165
4.6.2. Data Reduction 166
4.6.3. Distribution and Outliers 167

4.7. Child Skills 168
4.7.1. Turkish Vocabulary 168
4.7.2. Turkish Sentence Repetition 170
4.7.3. English Vocabulary 172
4.7.4. Non-verbal Abilities 173

4.8. Summary I 175

4.9. Findings I: Explaining the home language and literacy environment through the macrosystem 177
4.9.1. Parametric Assumptions 177
4.9.2. Pearson's Correlations 179
4.9.3. Hierarchical Regression Analysis 181
4.9.4. Summary 186

4.10. Findings II: Explaining the bilingual language skills of children through the microsystem 187
4.10.1. Parametric Assumptions 188
4.10.2. Pearson's Correlations 189
4.10.3. Hierarchical Regression Analysis 192

4.10.4. Summary 199
4.11. Summary of the Findings I and II *199*
4.12. Chapter Summary *201*
5. BILINGUAL LANGUAGE DEVELOPMENT AND LANGUAGE ATTITUDES 202
5.1. Introduction *202*
5.2. Analytical Strategy *204*
5.2.1. Thematic Analysis and Its Use 205
5.2.2. Stages of Analysis 209
5.2.3. Trustworthiness in Qualitative Research 214
5.2.4. Summary 220
5.3. Findings I: Language preferences and attitudes as perceived through the self *221*
5.3.1. Language Competence 222
5.3.2. Cultural Identity 229
5.4. Findings II: Language preferences as perceived through social interactions *236*
5.4.1. Social Connections and Activities 236
5.4.2. Socially Assumed or Imposed Language Expectations 241
5.5. Synthesis and Conclusion *247*
5.6. Summary *249*
6. DISCUSSION AND CONCLUSION 250
6.1. Introduction *250*
6.2. Home Language and Literacy Environment of Turkish Families in England *253*
6.3. Bilingual Language Skills of Turkish-English Speaking Children in England *258*
6.3.1. Turkish Language Skills 259
6.3.2. English Language Skills 264
6.4. Children's Language Attitudes Explaining Bilingual Language Development *268*
6.5. Understanding the Process-Person-Context-Time (PPCT) Model of Bilingual Language Development *273*
6.6. Key findings *279*
6.7. Limitations *281*
6.8. Policy and Research Implications *283*
6.9. Concluding Remarks *284*
APPENDIX 1. Information letter and consent form for study phase 1 301
APPENDIX 2. Invitation to participate in the study phase 2 305
APPENDIX 3. Phone call for study phase 2 307
APPENDIX 4: Information letter and consent form for study phase 2 308
APPENDIX 5: Information letter and consent form for study phase 3 310
APPENDIX 6: Parent Questionnaire 311
APPENDIX 7: Video prompts 322
APPENDIX 8: Observation protocol 324
APPENDIX 9. Sentence repetition test protocol 328

APPENDIX 10: Morpho-syntax of sentence repetition test items.....330

APPENDIX 11. Ethics application.....332

APPENDIX 12. Ethics Approval.....341

APPENDIX 13: Education data recategorization syntax.....342

APPENDIX 14. Correlations between language outcomes and language and literacy activities.....347

APPENDIX 15. Alternative variable for home language and literacy activities.....348

APPENDIX 16. Example use of quanteda package in R.....349

APPENDIX 17. Boxplots and outliers.....351

APPENDIX 18. Normal probability plots and residual scatterplots.....356

Appendix 18.1. Regression plots for language and literacy activities.....356

Appendix 18.2. Regression plots for home language use.....358

Appendix 18.3. Regression plots for lexical diversity in maternal speech.....360

Appendix 18.4. Regression plots for Turkish Vocabulary.....362

Appendix 18.5. Regression plots for English Vocabulary.....366

Appendix 18.6. Regression plots for vocabulary-controlled scores of Turkish sentence repetition.....370

APPENDIX 19. Binary logistics regression analysis predicting language and literacy activities.....374

Appendix 19.1. High frequency language and literacy activities as the outcome.....374

Appendix 19.2. Medium frequency language and literacy activities as the outcome.....374

Appendix 19.3. Low frequency language and literacy activities as the outcome.....374

LIST OF TABLES

Table 2.1. Representation of the Bio-ecological Theory of Human Development 30
Table 3.1. Turkish, Turkish-Cypriot and Kurdish population in Britain 85
Table 3.2. Demographic characteristics of the parents in study phase 1 90
Table 3.3. Demographic characteristics of the parents in study phase 2 90
Table 3.4. Questionnaire components 93
Table 3.5. Questionnaire items for material resources 94
Table 3.6. Questions on home language and literacy environment 96
Table 3.7. Guideline for the interview questions and visuals 103
Table 4.1. Fit indices and acceptable thresholds 136
Table 4.2. Descriptive statistics of parent's education level 140
Table 4.3. Descriptive statistics of family monthly income as in British pounds 142
Table 4.4. Descriptive statistics of imputed monthly income data as in British pounds 144
Table 4.5. Descriptive statistics of material deprivation 145
Table 4.6. Descriptive statistics of material well-being 146
Table 4.7. Descriptive statistics of parent's migration history 148
Table 4.8. Descriptive statistics of parent's English skills 150
Table 4.9. Factor loadings of principal component analysis for social integration variable 151
Table 4.10. Descriptive statistics of social integration scores 152
Table 4.11. Descriptive statistics of conversation activities 155
Table 4.12. Descriptive statistics of literacy activities 156
Table 4.13. Descriptive statistics of storytelling activities 158
Table 4.14. Descriptive statistics of the language and literacy activities 160
Table 4.15. Descriptive statistics of language use in conversation activities 161
Table 4.16. Descriptive statistics of home language use in literacy activities 162
Table 4.17. Descriptive statistics of home language use 164
Table 4.18. Descriptive statistics of lexical input characteristics in maternal speech 166
Table 4.19. Descriptive statistics of language quality in maternal speech 167
Table 4.20. Descriptive statistics of raw scores for Turkish vocabulary 169
Table 4.21. Descriptive statistics of raw and vocabulary-adjusted scores for Turkish sentence repetition 171
Table 4.22. Descriptive statistics of English vocabulary 173
Table 4.23. Descriptive statistics of non-verbal ability scores 175
Table 4.24. Summary of the Study Variables 176
Table 4.25. Pearson correlations between the variables of macro- and micro-system variables 179
Table 4.26. Hierarchical regression analysis predicting home language and literacy activities 182
Table 4.27. Hierarchical regression analysis predicting home language use 184
Table 4.28. Hierarchical regression analysis predicting language quality in maternal speech 186
Table 4.29. Pearson's correlations between child skills and the variables of the study 190
Table 4.30. Hierarchical regression analysis predicting Turkish vocabulary 194
Table 4.31. Hierarchical regression analysis predicting Turkish sentence repetition scores 196
Table 4.32. Hierarchical regression analysis predicting English vocabulary 198
Table 5.1. Recurrence of themes and sub-themes in the interviews 213

LIST OF FIGURES

Figure 3.1. Research Design 84
Figure 3.2. Example item from TIFALDI 98
Figure 3.3. Example item from the BPVS-III 100
Figure 3.4. Example items from Raven's sets A, AB, and B 101
Figure 3.5. Visual materials for the interviews 102
Figure 3.6. Sample interface of LimeSurvey Questionnaire 106
Figure 3.7. Example of questionnaire showcard 107
Figure 3.8. Activity cards for boys and girls 108
Figure 3.9. Family Investment Model 118
Figure 3.10. Diagram depicting the blocks of hierarchical regression analysis 120
Figure 4.1. The Venn Diagram for the regression analysis 137
Figure 4.2. Comparison of imputed and non-imputed data of monthly income as in British pounds 143
Figure 4.3. Distribution of material well-being scores in phase 1 147
Figure 4.4. Distribution of social integration scores in Phase 1 152
Figure 4.5. Distribution of scores for home language and literacy activities in Phase 1 159
Figure 4.6. Distribution of scores for home language use in Phase 1 164
Figure 4.7. Distribution of scores for language quality in maternal speech 168
Figure 4.8. Distribution of raw scores for Turkish vocabulary 169
Figure 4.9. Distribution of raw scores for Turkish sentence repetition 170
Figure 4.10. Distribution of vocabulary-adjusted scores for sentence repetition 171
Figure 4.11. Distribution of raw scores for English vocabulary 172
Figure 4.12. Distribution of non-verbal ability scores 173
Figure 4.13. Distribution of age-adjusted non-verbal ability scores 174
Figure 5.1. Mind map prepared and used during inductive and deductive analysis cycles 212
Figure 5.2. Child drawing depicting dual identity 234

1. INTRODUCTION

1.1. Setting the Scene

England has been experiencing an increasing level of immigration since the 1970s (Comte, 2018). In the last two decades, the proportion of children who speak English as an additional language (EAL) rose from 7.6 percent to 16.2 percent (Strand, Malmberg, & Hall, 2015). The increasing number of immigrant families has introduced new challenges to educators and to educational research regarding the linguistic and educational integration of ethnic minority pupils in England (Hackett, 2013). Poor educational attainment of immigrant children is an issue of integration for many European countries (Becker & Tuppat, 2013). Research from the last decade has shown that there is a persistent attainment gap between pupils with and without immigrant backgrounds (OECD, 2012; 2015). These educational disadvantages experienced by many ethnic minority children start in early childhood, with language difficulties and limited access to learning resources that are likely to lead to cyclical inequalities in later stages of life (Becker & Tuppat, 2013; Biedinger, Becker, & Rohling, 2008).

In England, the educational disadvantages of pupils who speak English as an additional language has been found to peak during the early years of schooling and narrow to a non-significant level only by the age of 16 (Strand, 2015). Achievement gaps, however, continue to persist during secondary school years for pupils who come from particular racial, ethnic, and religious backgrounds. For example, evidence from the 2001 UK Census shows that individuals from Muslim backgrounds form the majority in the lowest percentile of educational and occupational attainment in the United Kingdom (UK) (Khattab, 2009). Country of origin has also been identified as a risk factor for low attainment. Pupils from Bangladeshi, Somali, and Turkish backgrounds demonstrated similar patterns of low educational attainment until Key Stage 4 (age 16), which continued to persist for Turkish pupils in Key stage 5 (age 18) (Strand et al., 2010). Lower attainment of the Turkish pupils was linked to factors such as poverty,

social deprivation, and, most importantly, language problems experienced both by children and their parents (Strand et al., 2010).

Language competence of immigrant pupils is an important predictor of their school attainment (OECD, 2012). Research evidence shows that children from immigrant backgrounds tend to struggle at school as a result of the language discrepancy between the home and school environments (Becker, Klein, & Biedinger, 2013). Many children from minority families learn the language of instruction at the same time as the school curriculum (Leung, Harris, & Rampton, 1997). Children with inadequate English skills experience difficulties at school when learning the language and the curriculum subject matter simultaneously, and when communicating with their teachers and socialising with their peers (Toohey, 2000). When children become competent in the language of instruction, they then may lose fluency in their heritage language (Luo & Wiseman, 2000; Michel, Titzmann, & Silbereisen, 2012). Although immigrant parents actively try to maintain their heritage language at home, evidence shows that second-generation children usually shift to the national language as they start to spend more time at school (Caldas & Caron-Caldas, 2002; Michel et al., 2012; Soehl, 2016). Loss of a heritage language can cause communication problems between family members of different generations and also lead to intergenerational conflicts (Gold & Rumbaut, 2016). These family problems can harm children's well-being, as well as their relationship with their heritage culture. For example, language loss can lead to disengagement from one's culture and weaken an individuals' sense of belonging in their community (Czubinska, 2017; Little, 2017; 2020). On the other hand, positive relationship with ethnic identity can facilitate children's social adjustment in society, especially when it is maintained alongside the national identity (Nguyen & Benet-Martinez, 2013).

The heritage language may also provide foundational language skills for immigrant children when learning another language at school and support their self-esteem during their language transition at school

(Cummins, 1986; Nusche, 2009). Cummins (1986) argued that heritage language skills of minority children function as a cognitive and linguistic base that is necessary for second language acquisition and thereby school attainment. Recent case studies on heritage language programmes show that supporting minority children's heritage language skills can have several benefits for socio-emotional development, known to be associated with children's school attainment (for a review of literature see Seals & Peyton, 2017). However, studies from around the globe show that children growing up in ethnic-minority families tend to lose their heritage language skills as they get older (Finland: Haque, 2011; Germany: Michel et al., 2012; United Kingdom: Rasinger, 2013).

As a result of the disadvantages experienced by minority children, researchers and policymakers are now focusing on the factors associated with potentially reducing the achievement gap and supporting immigrant children's home-to-school language transition while maintaining their heritage language. Policy responses have highlighted the importance of stimulating home environments, including better learning resources and beneficial parenting practices (for a review of literature see Janta & Hate, 2016). The home environment is the context in which families provide lifetime skills for their children that are important for pupils' school attainment (Melhuish, Sylva, Sammons, Siraj-Blatchford, & Taggart, 2001; Melhuish et al., 2008). In fact, it is one of the most prominent contexts in early childhood to support the integration of minority children and to attenuate educational disparities in the early years (Janta & Hate, 2016). Stimulating home environments that utilise cultural and linguistic resources available to minority families can also support bilingual language development of children and buffer the disadvantages of home-school language disparities (Jung, Fuller, & Calindo, 2012). To identify the factors related to the language and literacy development of immigrant children, research has underlined the importance of learning resources and activities such as shared book-reading, storytelling, and literacy teaching, as well as the quality of language interactions at home (for a review of literature see Dixon & Wu, 2014). Quality home language and literacy environments including these resources can bolster children's language development and

buffer the effects of socioeconomic disadvantage (Ebert, Lehrl, & Weinert, 2020). However, the availability of stimulating language and literacy resources is affected by socioeconomic disadvantages such as poverty, low parental educational qualifications and unemployment (Conger & Donnellan, 2007), especially in immigrant households (Klein, Biedinger, & Becker, 2014; Prevoo et al., 2014). Immigration can exacerbate the effects of socioeconomic disadvantage and parents might disengage from the learning activities at home as they struggle with the language of education in the new country (Strand et al., 2010). Drawing on these issues experienced by immigrant pupils and the growing evidence on the importance of home environment, this study investigates factors related to the bilingual language experiences and skills of young Turkish children in England. The next section demonstrates the purposes of the study in relation to its goals and implications.

1.2. Study Purpose

The overarching aim of this study is to demonstrate whether experiences in the home environment can contribute to enhanced bilingual language development of Turkish children in England through stimulating learning experiences, quality language exposure, and positive language attitudes. In doing so, the study focuses on the home language and literacy environment of 3- to 6-year-old Turkish children and its role in the bilingual language skills of children, drawing on the Bio-Ecological Theory of Human Development (Bronfenbrenner & Morris, 2006). To achieve this goal, the current study first investigates the associations between family background characteristics and the home language and literacy environment of children. After depicting the family characteristics relevant to the language resources of children, it then examines the role of language and literacy resources at home in explaining the bilingual language skills of children. In addressing the role of home environment in these skills, the study further examines the role of children's language attitudes and experiences in explaining their language preferences.

The first objective of this study is to examine the learning resources and experiences in the home language and literacy environment and to outline the risk and resilience factors related to the family background characteristics of children. In order to understand the roots of language problems and educational disparities experienced by immigrant children, this study focuses on the extent to which family background characteristics are associated with the learning resources and early childhood experiences of children known to be important for their bilingual language development. Drawing on quantitative evidence from parent interviews, this component of the study provides information on the relevance of socioeconomic and cultural disadvantages experienced by immigrant families for future intervention programmes and policies targeting children from immigrant families.

The second objective of this study is to depict the resources in the home language and literacy environment likely to contribute to the bilingual language skills of children. After taking into account the child and family characteristics, this study identifies the aspects of the home language and literacy environment that are most likely to facilitate children's language development. In particular it examines the potential role of quality and quantity of language interactions in the home environment to support bilingual language development of minority children. Drawing on mixed-method evidence from home visits, this component of the research provides information on areas for future family training programmes that can help immigrant parents in scaffolding their children's language development.

The third objective of this study is to explore how language attitudes in early childhood may be related to children's language preferences and preferences in their social interactions. This part of the research explores the psychosocial aspects of bilingual language development and captures how children interpret their bilingual identity drawing on their experiences with the languages. For this objective the study draws on accounts from the children of their own experiences, to understand how social interactions of children may be related to their language choice and behaviour in their social environments. Based on

semi-structured interviews with children, this component of the research complements the study's inquiry into bilingual language development by including the psychosocial aspect of human development; it provides insights into the potential role of social interactions in early childhood for the language development of minority children.

The overarching focus of this study is the microsystem of human development, which entails the learning resources and experiences in the home environment of children. In studying the microsystem, however, the study underlines the interconnectedness of children's environments drawing on the growing evidence on child development and bilingual language acquisition presented in the next section.

1.3. Rationale

This research enquiry focuses on the home environment of young Turkish children, drawing on the evidence that has repeatedly demonstrated the importance of early childhood experiences for later child development and educational attainment. Research evidence has shown that experiences in early childhood, particularly during the first five years of life, have the potential to drastically change various aspects of human development relating to physical growth, cognition, language, and socioemotional well-being (Grantham-McGregor et al., 2007). Delays in these areas of development predict poor school performance, higher rates of school dropout, and lower socioeconomic status in later adulthood (Glewwe, Jacoby, and King 2001; Heckman & Masterov, 2007; Vegas & Santibáñez, 2010). Evidence from the evaluation of welfare policies has shown that identification of risk and resilience factors in early childhood can have the most potential to improve the lives of individuals in a society (Heckman & Masterov, 2007; Heckman, 2008; Heckman, Moon, Pinto, Savalyev, & Yavitz, 2009). Children are likely to spend substantial parts of their early childhood at home with their families, even if they also attend early education and care settings. Early experiences in a stimulating home environment can improve skills in language and literacy (Bradley, Corwyn, Burchinal, Pipes McAdoo & García-Coll, 2001), school readiness

(Horm, Norris, Perry, Chazan-Cohen, & Halle, 2016), and socio-cognitive development (Anders et al., 2012; Hindman & Morrison, 2012). Early childhood experiences, however, are strongly associated with family characteristics, which depend on parents' socioeconomic background and well-being (Conger & Donnellan, 2007). This study investigates the home environment to demonstrate which aspects are the most strongly associated with bilingual language skills in early childhood of Turkish children and how the family background characteristics interact with these aspects. During the conduct of this study, the home environment has become even more pivotal for child development as a result of the Covid-19 outbreak in early 2020. For these reasons, the rationale of this research is timely as well as scientifically significant.

A growing body of evidence demonstrates the developmental and educational importance of the home environments of bilingual children from disadvantaged backgrounds (for a review of literature see Nag, Vagh, Dulay, & Snowling, 2018). Most studies of bilingual children, however, focus either on the environmental or the individualistic differences that explain the language skills of children, but not both. These studies tend to pay less attention to the cross-cultural aspects of child-rearing in the immigration context, they are methodologically limited to quantitative approaches, and they do not include the agency of young children in understanding their learning experiences. In order to address these issues in the literature as reviewed in Chapter 2, this thesis draws on the Bio-Ecological Theory of Human Development (Bronfenbrenner & Morris, 2006) in investigating the role of the home environment in bilingual language development. Lastly, there is a dearth of research on the experiences of the Turkish community in the UK in comparison to those from other European countries where the majority of Turkish immigrants previously settled (King, Thomas, Mai, & Keles, 2008). Existing literature shows that the Turkish community in the UK differs politically from the majority of those in other European countries such as Germany and the Netherlands. The communities in the Netherlands and Germany are known for their strong affiliation with conservative political parties in Turkey with a nationalistic Turkish identity, whereas the majority of the community in the UK supports the left-wing political parties with unitary politics regarding the minority issues in Turkey (Sirkeci et al., 2016). The literature on the Turkish

community in the UK has underlined some issues faced by the community (Enneli, Modood, & Bradley, 2005; King et al., 2008; Strand et al., 2010). To date, there is no literature on the language development experiences of Turkish children in the UK. However, there is emerging evidence to suggest that Turkish children are among the most vulnerable, likely to experience low academic achievement, mental health problems, and violence, as demonstrated by the reports produced for the Department of Health and Social Care[1], Department for Children, Schools, and Families[2], and the news media[3].

As the substantial portion of the literature presented on the Turkish-speaking bilingual children in Chapter 2 comes from studies on Turkish populations of mainland Europe, the next section first outlines the history of Turkish immigration to Europe in the post-war era, then, focuses on the immigration patterns and characteristics of the Turkish population in the UK and specifically in England.

1.4. History of Turkish Immigration to Europe

Turkish immigration in post-war Europe dates back to the 1960s, with varying patterns for different countries in mainland Europe as a result of the political changes. Following the Second World War, many countries in Western Europe including West Germany (Federal Republic of Germany), the Netherlands and France experienced a relative economic growth, which led to an increase in demand for labour (see for the review of literature Comte, 2018). Labour immigration was a source of rebuilding these societies in Western Europe after the destruction of the war, whereas for countries such as Turkey, Italy, and Greece, emigration was a source of fostering economic development and balancing demographic growth within these countries. This mutual interest led to a series of labour agreements between countries in the early 1960s and Western Europe started to receive 'guest workers' (*Gastarbeiter*) as a result. West

[1] http://derman.org.uk/wp-content/uploads/2020/01/Voice-of-Men-Erkeklerin-Sesi_compressed.pdf (accessed 23 Feb. 2020).
[2] https://dera.ioe.ac.uk/828/1/DCSF-RR226.pdf (accessed 23 Feb. 2020).
[3] https://www.bbc.co.uk/news/uk-21592288 (accessed 23 Feb. 2020).

Germany was one of the first countries in Europe to welcome the first influx of immigrant workers from Turkey. The agreement between West Germany and Turkey in 1961 was followed by a series of bilateral agreements, labelled as the Ankara Agreement, and including other European countries such as Austria, Belgium, the Netherlands, France, and Sweden.

By the early 1970s, countries in Europe started to change their immigration policies following the economic stagnation caused by the energy crisis. During this phase, many had restricted immigration of 'unskilled guest workers' from countries including Turkey. By the time these governments had changed their policies, however, many of the 'guest workers' had been living in these countries for many years with a settled status. Hence, in this period the Turkish population in Europe continued to grow through family reunification and births. By 1980, the number of Turkish people in West Germany, for instance, reached 1,462,000, becoming the largest ethnic minority in the country. Although West Germany was home to the largest Turkish community in Europe, many other European countries including Austria, Belgium, France, the Netherlands, and Sweden experienced similar patterns of Turkish immigration during these years.

During the 1970s Western Europe also received an influx of asylum seekers, initially from Eastern Europe and later from non-European countries including Turkey following the Geneva Refugee Convention in 1951. The presence of Kurdish asylum seekers from Turkey led to another increase in the Turkish-speaking population in Europe by the 1980s. The majority of the immigrants in West Germany, the Netherlands, and the United Kingdom (85%) came from outside the European continent, and the majority of them originated from Turkey and the Maghreb. These changes, however, were followed by a period of shift in European migration policies. European economies started to stagnate in the late 1970s and unemployment rates peaked. During this period, countries declined immigration requests even from

within the European continent. Immigrant populations became the most affected by the economic crisis and unemployment.

In the 1990s, many European countries started to revise their policies. Following the Schengen agreements, states imposed more restrictive and selective procedures for immigration, which shaped the modern migration regime of the European Union (OECD, 2012). Led by a coalition of the UK, France, and Germany, the new migration regime precipitated a change in the socioeconomic profile of the immigrants (Comte, 2018). During this phase, in comparison to early phases which encouraged unskilled workers, Europe experienced an influx of highly educated immigrants.

The characteristics of the Turkish-speaking population in the UK differ from populations in mainland Europe, mainly due to the country's particular colonial history and response to labour agreements in Europe. In the UK, the Turkish-speaking population started to form earlier due to colonial ties with Cyprus. Turkish-Cypriots started to migrate to the UK between 1945 and 1955 (Sirkeci et al., 2016). One of the main reasons was the tension between the Greek and Turkish Cypriots on the island (Enneli et al., 2005). The UK's colonial history with Cyprus and its post-war labour demand made it an appealing destination for migration.

The patterns of migration from Turkey were more similar to those in Western Europe. Following the UK's accession to the European Communities (later European Union) in 1973, the labour agreements between the European countries and Turkey also included the UK. Starting from the 1970s, Turkish people mostly from the rural areas of Turkey started to emigrate to England seeking better economic conditions (Mehmet Ali, 2001). In the following decades the Turkish population continued to grow in a similar way as was the case in West Germany, through family reunifications and births. In the 1980s and 1990s, a new wave of immigration occurred through an influx of asylum seekers from Turkey due to the heightened political conflict between the Turkish government and the Kurdish people (Enneli et al.,

2005). In 1994, the UK introduced new immigration regulations for the Ankara Agreement with Turkey, which necessitated high English language proficiency and a proposal of business investment. In 2004, following the successful result of a court case brought forward by two Turkish persons against the new immigration regulation, immigration from Turkey dramatically increased (Sirkeci et al., 2016). Since its withdrawal from the European Union in 2020, however, the UK has left the Ankara Agreement and is now using a 'points-based immigration system', which allows for immigration of highly skilled individuals with job offers or potential business investments[4].

As the literature on bilingual children from Turkish immigrant families in Europe come from studies of varying migration and linguistic backgrounds, the review of these studies refers to these samples by using a set of linguistic and sociological terms. To clarify the terms used throughout the manuscript of this thesis, the next section reviews the terminology used.

1.5. Thesis Terminology

A growing body of research has led to attempts to agreed terminology regarding experiences in relation to migration and immigration. In an attempt to clarify terms, Lucassen and Lucassen (2014), for instance, made a distinction between the people moving within a community connected through a language, a region, or a state (e.g., migration within the European Union), and people moving between cross-communities with no such connection. In this differentiation, the latter movement is referred as 'cross-cultural migration' and expected to have transformative effects on individuals. Drawing on this differentiation, 'immigration' in this thesis refers to individuals permanently moving into a different territory crossing a cultural boundary with a significant shift in language, religion, political systems, and social rules and values, whereas 'emigration' describes the act of moving out of one's territory. 'First-generation immigrant' refers to individuals who were not born in the country of residence, whereas

[4] https://www.gov.uk/guidance/new-immigration-system-what-you-need-to-know (accessed 23 Feb. 2020).

'second-generation immigrant' is used to describe individuals who were born into a household of first-generation immigrants (OECD, 2012). 'Minority' is another term that is used to describe immigrant populations within any specific country or region. Although the term itself can draw on a broad range of characteristics, which entail the numerical depiction of a community as well as their socioeconomic, cultural, and political status in relation to the official language of a country (Ramaga, 1992), in this thesis the term is used to define a community with a history of migration or linguistic oppression, whereas the term 'immigrant' is used to refer to first-generation immigrants in the country.

In reference to language of origin, the term 'heritage language' is used to define the languages inherited as a first language through one's country of origin, family, and ethnicity, whereas heritage languages that are spoken by ethnic minority groups in a country are defined as 'minority languages' to refer to a broader category. In order to define the language profiles of children, the terms 'bilingual' and 'dual language learner' are used. While 'bilingual' broadly refers to the individuals who are 'able to use two languages equally well', the term 'dual language learner' depicts young children who are in the process of becoming 'bilingual' (see Hammer, Hoff, Uchikoshi, Gillanders, Castro, & Sandilos, 2014).

1.6. Structure of the Thesis

The thesis is presented in six chapters. Following the introduction, Chapter 2, 'Literature Review', demonstrates the relevant evidence on bilingual language development with a focus on ethnic minority children. Chapter 3, 'Methodology', introduces the research methods and measures used. Next, Chapter 4, 'Bilingual Language Development and Language and Literacy Resources', presents the findings on the factors associated with language and literacy resources at home and their potential relevance for bilingual language development. Chapter 5, 'Bilingual Language Development and Language Attitudes', then presents the findings on the relevance of language attitudes in the language preferences of children.

Lastly, Chapter 6, 'Discussion and Conclusion,' brings together the findings from the previous two chapters and discusses the ways that this research can contribute to the understanding of the development of bilingual children, and to ways to support them most effectively.

2. LITERATURE REVIEW

2.1. Introduction

This chapter presents a critical review of the literature on bilingual language acquisition in early childhood. The chapter, first, introduces the theories guiding the research questions of the study. Then, it offers an overview of the factors that are most likely to explain the language proficiency of bilingual children relating to child characteristics, home environment, and family background. Following that, the chapter presents an overview of the literature on the assessment of variables used in the study. The chapter ends with a summary of key arguments in the literature relating to bilingual language acquisition and maintenance, underlining the gaps in the literature that this study aims to address.

The literature review presented in this chapter draws on a wide range of studies of bilingual children from diverse backgrounds. These include children who learnt to speak two languages simultaneously as well as those who are dual language learners. Although the review draws on a diverse population of bilingual children from various cultural and linguistic backgrounds (e.g., Spanish-English, Chinese-English, Welsh-English, Turkish-German, and Turkish-Dutch), for the purposes of this study, the review focuses in particular on evidence regarding Turkish-speaking bilingual children in Europe. Finally, the majority of the evidence presented in this chapter draws on studies of first- and second-generation immigrant families, although some evidence is available to support the knowledge of bilingual experience of children growing up with a heritage language (e.g., Welsh in the UK and Catalan in Spain).

2.2. Theories of Language Acquisition and Child Development

Theoretical frameworks in the study of language development in early childhood have evolved over time with increasing evidence from interdisciplinary studies including perspectives in psychology, linguistics, neurology, cognitive science, sociology and anthropology (Chapman, 2000). These changes have mainly

occurred over the course of the 20th century with the advances in research methods and an expanding focus on culture in developmental psychology (see Kagitcibasi, 2017). This section introduces the major theories in the field of language development by drawing on the works of Piaget, Vygotsky, Bruner as well as Ochs and Schieffelin in understanding the role of cognition, social interaction, culture and child agency.

A preliminary theoretical framework for language acquisition was developed by Piaget (1945/1962). His work on language acquisition was ground-breaking and provided preliminary evidence on the interconnectedness of language and cognition. According to Piaget (1945/1962), children learns language as they progress in cognition and advance in language through their progressing sensorimotor skills. Drawing on his observations, he argued that children demonstrate an agency to act on and manipulate their environment, which provides them the necessary skills to acquire language. In that sense, Piaget's theory lays a greater emphasis on the role of sensorimotor development in language acquisition, while acknowledging the physical environment as a source of experience for the development of children's sensorimotor skills (Tomasello, 1996). His theory, for instance, posits that language acquisition is supported by organisational skills such as object permanence, a sensorimotor achievement in which the child learns that objects continue to exist beyond perception (Piaget, 1937/1954). According to this, children acquire language skills as part of completing the stages of sensorimotor development, as one aspect of their cognitive development. In this regard, Piaget's theory suggests a universal pathway. His perspective on language acquisition views physical environment as a context for a child to act on from an egocentric purpose not from a social purpose. For instance, he argued that language serves a purpose for children that facilitates their actions in the physical world, which, according to him, initially occurs through a monologue. However, as demonstrated in Section 2.4.1., the contemporary evidence pertaining to Piaget's theory, demonstrates a more complex relationship between language and cognition, suggesting that understanding language development requires attention to the contextual factors that influence children's interactions with the physical world.

As an alternative to Piaget's theoretical framework, the theoretical approaches of both Vygotsky and Bruner highlight the importance of social interactions in language acquisition. Vygotsky's (1978) theory of language acquisition underlines language as the primary tool of socialisation and a fundamental resource for the cognitive development of children. In his work on the *Zone of Proximal Development* (ZPD), Vygotsky (1978) argued that children acquire language through social interactions with a more able individual (generally an adult), who provides the necessary support and guidance that advances the child's skills. In this interaction, the adult first needs to understand the ZPD of the child to recognise the support that is needed to make progress in their language skills. This process, then, is mediated by the language used in interaction with the child. According to Vygotsky, the adult's interactions with the child and their language use in these interactions is critical for their learning and language development. Vygotsky also emphasised that through language and social interaction with a more able adult or a peer, children acquire higher psychological and cognitive skills in understanding their environment. In his work on language acquisition, Vygotsky can be differentiated from Piaget for introducing the role of social interactions in supporting children in their learning potential underpinned by their existing skills in language and higher order skills.

Similarly, Bruner, in his work on *Language Acquisition Support System* (Bruner, 1983) emphasised the agency of the child in social interactions and the role of the adult in guiding children's learning experience. According to Bruner, the adult plays a crucial role in identifying the abilities of the child and *scaffolding* them to the next level. *Scaffolding* is similar to the support from adults in developing the ZPD in Vygotsky's view, in recognising the level of child's existing skills and the guidance needed from a more skilled adult in progressing them. In these interactions, the joint attention between the child and the adult is said to become a vital source for guiding the child in their learning. For instance, Bruner (1983) argued that, when the child pauses their speech and looks at the adult to request the right word, the adult can

attend to this need by providing the possible words to facilitate the child's speech. This interaction becomes possible via joint attention, whereby the adult is present and understands the children's needs. In this way the social interaction becomes transactional and the child receives the support that is needed for their learning. Bruner (1981) further accentuates the transactional nature of the social interactions between children and their environment by pointing out the agency of the child in their learning. Agency, according to Bruner, is necessary for the child in order to be able to express their needs as part of their learning experience. Bruner (1981, p.161) notes that, in this interactive learning process, the child has to "learn a good deal about the possible vicissitudes of action carried out jointly with another if he is to meet the conditions on making his intentions clear by conventional communicative means". Bruner's approach to language acquisition not only consolidated Vygotsky's view on social interactions but also underlined the contribution that the child can make to their learning experiences through social interactions.

Bruner's emphasis on the transactional nature of children's interactions with their environments aligns with the premises of the Language Socialisation Theory (Ochs & Schieffelin, 2011). Language Socialisation Theory acknowledges the interactional processes that require the active involvement of the child and the recurring interactions that take place in their social environments (Schieffelin & Ochs, 1986). According to Language Socialisation Theory, the social interactions between children and other individuals occur bi-directionally and influence all the participants in the interactions (Rogoff, 1995). In these interactions, children play an active role in their learning by manipulating the expectations in their social environments, while also being affected by existing rules and norms (Paugh, 2005). Language socialisation theory not only acknowledges the agency of the child in their communicative interactions but also challenges the 'asymmetry of knowledge and power' (Ochs & Schieffelin 2011, p.6), which has been ascribed to parents in the traditional study of language acquisition. According to this view, children can assess their language environment, request change or intentionally alter it as an active agent (Kuczynski & Parkin, 2007).

Vygotsky's and Bruner's theories regarding language acquisition not only emphasise the role of social interaction but also highlight the cultural elements in it. In his theory on social constructivism, Vygotsky (1978) emphasised the influence of culture on children's interactions with their environment. His stance on culture, however, contrasts with Piaget's (1962) view of language acquisition. Contrary to Piaget's approach towards the universal role of cognition in language acquisition, Vygotsky emphasised the importance of cultural elements in a social context, which shapes the interactions that support language acquisition. In this process, culturally defined tools and practices of socialisation guide children's interactions within their social environments. In this regard, children's learning experiences become by-products of their culture and their cultural interactions with the other members of the community. As Vygotsky underlines, "every function in the child's cultural development appears twice: first, between people (inter-psychological), and then inside the child (intra-psychological). This applies equally to voluntary attention, to logical memory, and to formation of concepts. All the higher functions originate as actual relations between human individuals" (Vygotsky, 1978, p.48). In this passage, Vygotsky defines social interaction as a tool that serves child development including their skills in language, cognition and cultural identity. Thus, Vygotsky's theory of language acquisition differs from Piaget's universal view as demonstrated in the passage from Language and Thought by Vygotsky (1986/2012; p. 100):

> "Thought development is determined by language, i.e., by the linguistic tools of thought and by the sociocultural experience of the child. Essentially, the development of inner speech depends on outside factors; the development of logic in the child, as Piaget's studies have shown, is a direct function of his socialized speech. The child's intellectual growth is contingent on his mastering the social means of thought, that is, language."

Similarly, Bruner (1981, 1983) emphasizes the interconnection between culture and language. According to Bruner, language acquisition cannot be separated from culture as the child acquires language and social norms together through culturally and linguistically structured activities such as eating, bathing, and dressing. Such activities are delivered in a 'format', which denotes a culturally mediated script for the

interactions between parents and children. The script sets the characteristics of the interaction including qualities such as use of objects, sequences, vocalizations, joint-attention, agency, and the flow of the interaction (Bruner, 1975). The child is said to make sense of this linguistic script through their social understanding and cognitive skills, which contributes to their language learning.

The aforementioned theories on language acquisition describe language development as a complex phenomenon involving various underlying factors that influence children's experiences with language learning (Bruner, 1975, 1981, 1983; Ochs & Schieffelin, 2011; Piaget, 1945/1962; Vygotsky, 1978, 1986/2012). In utilising these theories in language acquisition, the current study draws on *The Bio-Ecological Model of Human Development* (Bronfenbrenner, 1977; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 2006) to incorporate the key concepts from the aforementioned theories on language development with a focus on the role of child and family characteristics that shape children's learning environments. The next section introduces the bioecological theory and its use in the study of child development.

2.2.1. This Study: An Interactionist View on Bilingual Language Development

The Bio-Ecological Model of Human Development (Bronfenbrenner & Ceci, 1994) offers a unique theoretical and methodological framework allowing researchers to study the role of interpersonal interactions in relation to individual and contextual factors in child development. The theory has been influential in developmental psychology with its emphasis on the proximal and distal factors that may influence children's learning experiences (for a review see Tudge, Payir, Mercon-Vargas, Cao, Liang, & O'Brien, 2016). Although the model has been used for various areas of child development, many researchers have paid little attention to the modifications that the model has undergone (Tudge et al., 2016). As a result of this, many studies have not fully utilised the guidance offered by the model (Tudge, Mokrova, Hatfield, & Karnik, 2009). The current study adopts the process-person-context-time (PPCT) model offered by the bioecological theory (see Bronfenbrenner & Morris, 2006) in its theoretical and

methodological approach to the study of bilingual language development. This section presents an overview of the theory and its operationalisation in research.

The initial theory of *The Ecology of Human Development*, which led to the development of the PPCT model, depicts the developmental outcomes of children through the interactions between the interconnected ecological systems (Bronfenbrenner, 1981). In this theoretical model, each layer emphasizes a different contextual factor that influences the child whether directly or indirectly (see Figure 2.1.). The innermost domain is the 'microsystem', which involves the primary settings of the child such as home, school, and playground environments (Bronfenbrenner, 1977). These settings are said to provide the resources for the early learning experiences including physical (e.g., books), and interactional resources (e.g., parent-child activities) that are important for child development. Interactions between different microsystems forms the 'mesosystem', which captures the ways in which different contexts of child development can support one another. The mesosystem is enveloped by the 'exosystem' depicting the factors that do not directly involve the child but mediates the interactions in the microsystem by affecting the social characters in children's proximal environments (e.g., parental well-being). The outer layer of the model forms the 'macrosystem' involving the influences of broader contextual factors including social, cultural and ideological values. Bronfenbrenner (1999) later added the 'chronosystem' to the model as the outermost layer to account for the personal (e.g., parents' divorce) or socio-historical (e.g., Brexit) life events that influence the life trajectories of the individuals.

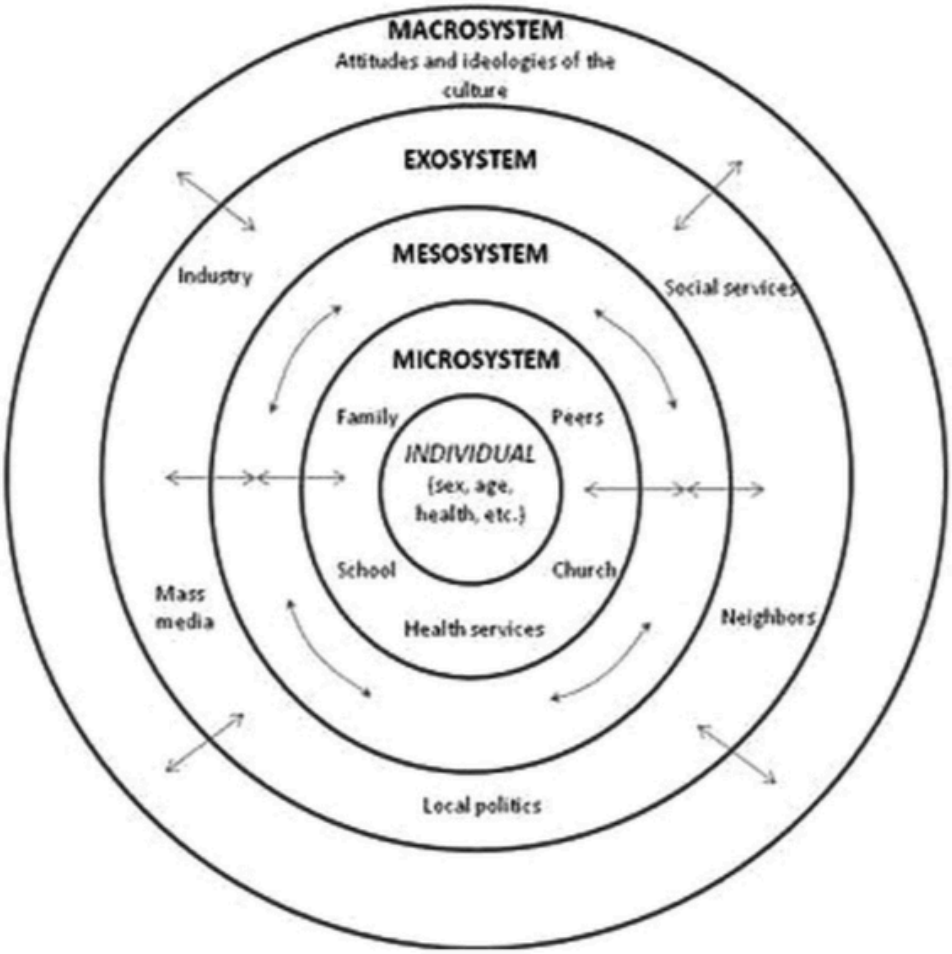


Table 2.1. Representation of the Bio-ecological Theory of Human Development[5]

In the final version of the model, Bronfenbrenner and Morris (2006) introduced *the process-person-context-time (PPCT)* model to study child development with a focus on 'proximal processes', which they described as "the engines of development" (Bronfenbrenner & Morris, 2006, p. 822). This new model highlights the role of social and cultural values of the wider community, as well as the characteristics of the child in the proximal processes of child development (Bronfenbrenner & Ceci, 1994). According to this model, the outcome of the interactions between the person and their environment depends on "the synergetic interconnections among proximal processes, person characteristics, context, and time" (Tudge

[5] Taken from Velez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & Garcia-Coll, 2017

et al., 2016, p. 428). By conceptualising human development through a set of dynamic interactions between the child and their environments, the PPCT model allows researchers to capture the complexity of children's learning experiences (Bronfenbrenner & Ceci, 1994).

As a guide to the study of child development, the bioecological theory draws attention to the interconnectedness of the interactions between the child and their environments (Bronfenbrenner, 2005). The theoretical and methodological application of the theory, however, has been problematic in research (Tudge et al., 2016). To provide a thorough understanding of the framework offered by the model, researchers have developed a guide for the application of the model in the future studies on child development (Xia, Li, & Tudge, 2020). In this review of the model, Xia et al. (2020) discuss the inclusion of study variables and research methods in the study of child development drawing on the PPCT model. According to Xia et al. (2020), the decision on the proximal processes to include in a study should be made by drawing on their relevance to the outcome variable. Then, the research needs to consider at least one child characteristic in examining the contribution of proximal processes in child development. The outcomes of the proximal processes should also take the contextual factors into account to allow for comparisons to be made between different groups of children. Lastly, research operationalising the PPCT model is advised to adopt a longitudinal approach to examine the long-term outcomes of the interactions between the child and their environments.

In the PPCT model, proximal processes refer to the reciprocal interactions that take place between the child and the actors of a microsystem that support the acquisition of age-related skills and foster learning experiences of children (Bronfenbrenner & Morris, 1998). However, in the study of child development from a cultural-ecological approach, "rather than comprehensively considering all actors or aspects of culture that might influence child development, attention is directed to the actual proximal envelope of conditions and experiences that children in a population would expectably encounter, framed in probabilistic terms (by gender, age, social status, etc.)" (Worthman, 2010, p. 550). According to this

approach, the study of interpersonal interactions should focus on the most relevant person and activities that influence the learning experiences of the child.

The second component of the model is 'person', which refers to the characteristics of the child that are likely to be related to the proximal processes in development through 'force' (e.g., curiosity), 'resource' (e.g., biological dispositions), and 'demand' (e.g., physical features) (Bronfenbrenner & Morris, 1998). These characteristics can influence the proximal processes by enhancing or disrupting the interactions between the child and their environments. The outcomes of these interactions depend on the characteristics of the child and other individuals as well as wider contextual factors that are related to the microsystem (Bronfenbrenner, 1979). According to the PPCT model, children can have an impact on their environments as much as the environments can affect their development (Bronfenbrenner & Ceci, 1994). Thus, PPCT model advises that the research on child development should pay attention to the child characteristics to understand the outcomes of the person-environment interactions.

The next component of the model is 'context', which refers to the environmental factors that are likely to be relevant to child development directly (e.g., home environment) or indirectly (e.g., culture, socioeconomic status) through interconnected ecological systems in the model. Increasingly studies on child development started to focus on the role of culture and social class in family life and parenting practices (Kagitcibasi, 2017). In a revised version of the bioecological theory, for instance, culture is depicted as an omnipresent component of the context in human development that permeates into the microsystem and mediates the interactions in the most proximal environments of children (Velez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & Garcia-Coll, 2017). Similarly, social class has been depicted as an overarching component of culture in family life. In her work on cross-cultural perspectives in child development, Kagitcibasi (2017; p. 48), for instance, argues that "social class creates its own culture, and it's always there". In line with these changes in research perspectives, the operationalisation of the PPCT model requires the inclusion of the most relevant contextual factor(s)

within the ecological systems that influence the proximal processes in child development (Tudge et al., 2016; Xia et al., 2020).

The final component of the model is 'time', which entails the temporal characteristics of the ecological systems and proximal processes. At the micro level, temporal characteristics of proximal processes refer to the duration of interactions between the child and others; whereas at the macro level it refers to life events that lead to personal or historical changes in life trajectories. Methodologically, the PPCT model endorses the use of longitudinal study designs in the study of 'time' in child development (Bronfenbrenner & Morris, 1998). Researchers, however, have suggested that the use of research methods such as questionnaires or observations can provide information on the temporal characteristics of the proximal processes by examining the duration, continuity, and frequency of the interactions (Xia et al., 2020).

In the current study, the PPCT model is applied to the study of bilingual language development to capture the synergistic relations between the characteristics of the child, family and home environment that affect language acquisition and to demonstrate how different levels of the bioecological model contribute to bilingual language development in early childhood. To understand how children's language environments influence their language skills, this study investigates the language interactions at home as the 'proximal processes'. However, as demonstrated in the previous section on the theories of language acquisition, language development of children is influenced by various factors that are related to children's environment as well as their individual characteristics. Thus, investigating how language environments affect children's bilingual language skills cannot be separated from these mediating factors. To truly understand how the 'context' shapes the 'proximal processes' for bilingual children, this study investigates the role of family characteristics in understanding the language and literacy experiences at home. In so doing, the study aims to inform the literature on the role of contextual influences in bilingual language development as well as their influence on the temporal characteristics of the proximal processes relating to language and literacy practices at home, such as relative language exposure or the frequency of literacy

activities. Additionally, to account for the individual differences that lead to diverse language outcomes for bilingual children, the study draws on the role of non-verbal abilities and language attitudes as the 'person' characteristics. This allows for an in-depth understanding of the language experiences in bilingual contexts from a multifaceted perspective that depicts the role of individual characteristics as well as the family background that influence the proximal processes that are important for language acquisition. The application of the PPCT model in this study also focuses on the role of 'time' in bilingual language development by focusing on a home-to-school transition phase in early childhood, which is marked by its significant effects on bilingual language development in ethnic minority contexts. Lastly, drawing on the PPCT model, the evidence from the different components of this study and the interactions between the study variables are discussed in relation to one another to allow for a versatile and holistic outlook in the interpretation of the study findings and to account for the synergistic relations between the components of the PPCT model. In that regard, the PPCT model used in this study provides an example for the theoretical and methodological application of the model in the study of bilingual language development.

The following sections present a critical analysis of the contemporary research evidence regarding the PPCT components of the present study. First, an overview of the literature on bilingual language acquisition is presented. Then, a critical review of the factors relating to bilingual language development are described through three sections on child characteristics, micro- and macro-level factors relating to bilingual language development. A short summary of the chapter follows these sections. Lastly, a section on the outcome variables of the study presents the current evidence on the approaches to the assessment of these variables.

2.3. Bilingual Language Acquisition

In the past few decades, the study of bilingual language acquisition has expanded to academic fields including psychology, linguistics, education, neurology, cognitive science, sociology and anthropology (Chapman, 2000). The evidence from the interdisciplinary studies has shown that bilingualism is, in fact,

a multi-faceted area of study that requires a thorough and inter-disciplinary understanding of children's early life experiences (Genesee, 2016). Although the term bilingualism broadly encompasses individuals who can speak two languages fluently, the path to becoming bilingual is a diverse route that involves various social, cultural, and linguistic factors. Valdes and Figueroa (1994) conceptualize bilingual individuals under two categories drawing on their pathways in becoming bilingual. In his categorization, he classifies individuals from immigrant backgrounds who learn a second language due to home/school language discrepancy as 'circumstantial bilinguals'. His second category of 'elective bilingualism' describes individuals who are taught a second language through education. He argues that the experiences of circumstantial bilinguals are different to elective bilinguals. He describes the circumstantial bilinguals as being from a minority background that is culturally and linguistically different than the majority in a society. According to Valdes and Figueroa (1994), this dynamic requires them to acclimate and adapt to the society, which influences their experiences of language learning. Elective bilinguals, on the other hand, are typically part of the majority background, who choose to learn a second language through educational institutions or contexts, where they receive instruction. According to this classification, elective bilinguals experience 'additive bilingualism' as they remain in a position where their native language is the dominant one in the society and holds a cultural value, whereas circumstantial bilinguals usually experience 'subtractive bilingualism' due to cultural and practical dominance of their second language over the heritage one.

Bilingual children have been classified according to the order in which they learn the languages. For instance, children who learn two languages concurrently are labelled as 'simultaneous bilinguals', whereas children, who learn a second language after the 'structural foundations of the first language are in place' as 'sequential bilinguals' (Montrul, 2008, p.97). The structural foundations of a language are usually acquired by the age of three, which has been set as a cut-off point for the age of second language acquisition in sequential bilingualism (Genesee, Paradis, & Krago, 2004). The differentiation between the two, however, does not adequately take account of the variations in bilingual language acquisition (Yip &

Matthews, 2007). For instance, in sequential bilingual acquisition, children are likely to be exposed to the second language at an earlier age through other channels (e.g., playgroups), even when the language is not used in the home environment. In his work on bilingualism, Houwer (2009) suggests that language acquisition in dual language environments should be classified as 'bilingual first language acquisition' and 'early second language acquisition' depending on children's experiences. Although the order of the language does not necessarily lead to the dominance of one language over the other, research has shown that language skills in the first language tend to weaken for circumstantial bilinguals as a result of the immersion in the national language at school. This phenomenon usually occurs among immigrant families when one or both parents do not know the national language of the country and the child learns that language when they start school (for a review of literature see Montrul, 2016). This experience usually leads to either 'language attrition', in which the child stops using the heritage language, or 'incomplete language acquisition', in which the child does not become fully proficient in their first language due to limited use and exposure (Montrul, 2008). The literature shows that children's heritage language use at home starts to diminish as they start school and receive more language exposure in their second language (Hammer, Lawrence, & Miccio, 2008). Thus, there is a risk of language attrition or incomplete acquisition in early second language acquisition if a child does not receive additional support in their heritage language while being immersed in another language at school (for a review of literature see Montrul, 2008). The evidence from the literature on immigrant populations shows that the use of heritage language is often almost lost by the third generation with some exceptions (Bezcioglu-Goktolga, 2016; Rasinger, 2013; Michel et al., 2012).

Child characteristics can play an important role in bilingual language acquisition. Studies on bilingual children from diverse backgrounds have shown that non-verbal abilities (Barbosa, Jiang, & Nicoladis, 2019; Nicoladis & Jiang, 2018; Paradis, 2011) and socio-emotional attitudes (Houwer; 2009) can have an effect on children's learning experiences and bilingual proficiency. For instance, in a study of 4- to 6-year-old bilingual and monolingual speakers of English, non-verbal abilities including working and

short-term memory skills were found to be a stronger predictor of vocabulary skills for bilinguals than monolingual children (Barbosa et al., 2019). Individual characteristics that influence the language learning experiences and bilingual proficiency of children are not limited to the cognitive skills. Reviews have concluded that children's positive attitude toward their heritage language was an influential factor in their language preference and bilingual language maintenance in early childhood (Eilers et al., 2006; Houwer; 2009). Drawing on the literature, factors relating to non-verbal abilities and language attitudes of children are further examined and discussed in Section 2.4.

The language skills of bilingual children can vary depending on their language environments. Some bilingual children demonstrate 'balanced' language skills with language maintenance through their adulthood, whereas others may demonstrate 'unbalanced' language skills leading to a dominant language in the adulthood (for a review of literature see Silva-Corvalán & Treffers-Daller, 2015). Montrul (2008, p.18), however, notes that "most bilinguals are linguistically unbalanced, both functionally (in their language use) and representationally (in their linguistic knowledge)". For children to acquire balanced language skills, language exposure of equal amounts is necessary. Research shows that for a bilingual child to have balanced language skills, child's exposure to each language should be more or less 40% to 60% of time for each language (Thordardottir, 2011). There are various factors that lead to 'unbalanced' bilingual input in early childhood. Reviews on bilingual proficiency have concluded that characteristics of children's language environments are amongst the most important factors in language maintenance and usage (see Nicoladis & Montanari, 2016). During the early years, various contextual factors influence the experiences of bilingual children in language learning and maintenance. For instance, family characteristics is an important component of bilingual language development. Research shows that children are more likely to learn and retain a heritage language when both parents use it at home (De Houwer, 2007). Similarly, having an older sibling has been shown to influence the language environment at home as older siblings introduce the national language to home (Bridges & Hoff, 2014; Jia, Chen, Kim, Chan, and Jeung, 2014; Place & Hoff, 2011). These factors, then, can interact with children's language proficiency and fluency in

their languages (Gathercole, 2016), as well as their language experiences in the home environment (Sebastian-Galles, 2010). Drawing on the review of the literature, factors relating to the bilingual language proficiency of children are further examined and discussed in Section 2.5.

The language environment of bilingual children can vary depending on the family's socioeconomic background, family structure, and the language skills of the family members (for reviews of literature see Unsworth, 2016; Dixon & Wu, 2014). Children from households where parents speak both languages can experience a larger variation in their language exposure compared to bilingual children from monolingual households, where family members only communicate via a heritage language (for a review of literature see Gathercole, 2016). The family sociodemographic characteristics, however, are not the only source of variation that leads to diversity in the language experiences of bilingual children. Factors related to families cultural and linguistic aspirations can influence the language environment of children through active involvement in the language learning of their children. For instance, children, who receive support from their parents for their heritage language learning connected to a wider community of their heritage culture can benefit from having an additional source of language exposure that support their heritage language development (e.g., Dixon, Zhao, Quiroz, & Shin, 2012). Drawing on the review of the literature, factors relating to the family characteristics that lead to variations in the home language environment of children are further examined and discussed in Section 2.6.

The linguistic characteristics of the language can also play an important role in learning experiences and bilingual proficiency. Studies of cross-linguistic transfer between the language skills of children have shown the influence on children of linguistic, cognitive, metalinguistic/cognitive interactions between the languages learnt by the child (Gathercole et al., 2014). There is some evidence that cross-linguistic interaction between the languages tends to occur in the phonological skills of children, especially when the languages demonstrate a shared phonological structure (Italian-English: D'Angiulli, Siegel, & Serra; 2001; Spanish-English: Durgunoglu, Nagy, & Hancin-Bhatt, 1993). The interaction

between more complex skills such as vocabulary has been shown to be more difficult to transfer (for a meta-analysis see Melby-Lervag & Lervag, 2011), although there is some evidence for a semantic interaction between the languages of bilinguals (e.g., Gathercole & Moawad, 2010). While the question of how much influence the linguistic characteristics of Turkish and English have over bilingual language acquisition of children is not the focus of this study, the findings of this research may be useful in guiding future studies on this matter.

The overview of bilingual language acquisition in this section demonstrated that the learning experiences of bilingual children can vary according to their linguistic, socioeconomic and cultural backgrounds. These variations across the language environments of bilingual children make it difficult to formulate a generalizable argument including all the factors which are likely to contribute to bilingual language development. For this reason, the literature requires more evidence from child populations growing up in dual language environments in diverse linguistic and cultural contexts. The following section presents the evidence on the child characteristics relating to language proficiency of bilingual children.

2.4. Child Characteristics Relating to Bilingual Language Development

As summarized in the previous section, bilingual children receive language exposure from diverse sources. As a result of diversity in language exposure, language skills of bilingual children are likely to vary depending on the characteristics of their language environments. Research, however, suggests that individual characteristics play an important role in the learning experiences of bilingual children and how they interact with their environments (for a review of literature see Wilson, 2020). The literature on bilingualism has long established the role of cognitive skills in language acquisition, code-switching, and linguistic awareness across diverse populations (for a review of literature see Nicoladis & Montanari, 2016). There is an ongoing debate regarding whether bilingual children have better cognition as a result

of their bilingual upbringing or if their advance cognition serves them in their bilingual language learning, maintenance, and use (for a review of literature see Arizmendi et al., 2018). This debate involves studies that bring together and compare the individual- and contextual-level differences in bilingual language acquisition. In this nature versus nurture debate, however, child agency in language learning has received less attention. Growing evidence on subtractive bilingualism suggests that immigrant children tend to suppress their heritage language use to assimilate into the majority culture (for a review of literature see Ecke, 2004). This section provides an overview of the literature on the characteristics of children pertaining to cognition and language attitudes and demonstrate how they may be relevant for bilingual language acquisition in early childhood.

2.4.1. Cognition

Literature on monolingual language acquisition has long demonstrated the relationship between children's language skills and cognition (Gooch, Thompson, Nash, Snowling, & Hulme, 2016; Kuhn, Willoughby, Wilbourn, Vernon-Feagans, & Blair, 2014). Studies have found that language-related developmental deficits are associated with impairments in the areas of executive functioning including attention control, behavioural regulation, and working memory (Gooch, Hulme, Nash, & Snowling, 2014; Kronenberger, Xu, & Pisoni, 2020). Although the literature suggests that cognition plays an important role in language acquisition and development, the direction of the relationship between the two remains unclear. Evidence from longitudinal studies of pre-school aged children has shown that executive functioning appears not to have a causal effect on language acquisition and language-related problems (Gooch et al., 2016; Kuhn et al., 2014).

In bilingual contexts, where children are expected to switch between languages, language processing requires more complex cognitive skills such as inhibition control and attention shift (Bialystok, 2001). This aspect of bilingualism provides an experimental ground for the study of language and

cognition. Researchers working on bilingual language acquisition have been interested in the connection between bilingual language development and cognitive skills of children for decades (e.g., Bialystok & Martin, 2004; Diaz, 1985; Peal & Lambert, 1962). Bilingual advantage in cognition is one of the topics that has been at the centre of the literature (e.g., Poulin-Dubois, Blaye, Coutya, & Bialystok, 2011; Hilchey & Klein, 2011). Researchers advocating for the bilingual advantage hypothesis have argued that bilingual children have an overall advantage in cognition including the domains of executive function such as inhibition, abstract thinking, and cognitive flexibility (Arizmendi et al., 2018). Some of the studies have shown supporting evidence for the bilingual advantage in one or more domains of executive function (e.g., Barac, Moreno, & Bialystok, 2016; Bialystok & Viswanthan, 2009; Morales, Calvo, & Bialystok, 2013), whereas others did not find a significant difference in any domain of executive functioning between bilingual and monolingual children (e.g., Dunabeitia et al., 2014; Engel de Abreu et al., 2012). Some recent evidence, however, suggests that the bilingual advantage in cognition might result from other unexplained factors (e.g., Naeem, Filippi, Periche-Tomas, Papageorgiou, & Bright, 2018). Factors relating to family socioeconomic background, migration, and cultural differences can lead to changes in children's bilingual language acquisition and cognitive development (for a review of literature see Paap, Johnson, & Sawi, 2015). Researchers argued that the studies positing a cognitive advantage for bilingual children and vice versa have undermined the possible confounding effects of contextual factors. For instance, different aspects of executive functioning and self-regulation of 7- to 11-year-old Chinese children in the US have been predicted by their Chinese proficiency might be linked to their "adherence to traditional Chinese values of behavioral control and self-restraint" (Chen, Zhou, Uchikoshi, & Bunge, 2014, p. 9). Similarly, another study examining the role of family socioeconomic background in understanding the differences in executive functioning of bilinguals and monolinguals has shown that bilingual children from higher socioeconomic backgrounds were better at cognitive control than their monolingual peers, whereas the same cognitive advantage was not found for bilingual children from disadvantaged backgrounds (Morton & Harper, 2007).

There is some evidence in the literature on bilingual language acquisition to support the idea that cognitive skills can support the language learning experiences of bilingual children, and vice versa (Kormos & Safar, 2008). For instance, longitudinal studies have shown that working memory skills facilitated the second language acquisition of school-aged children (Paradis, 2011), although the associations between cognition and language weakened as children got older (Gathercole, 2006). In a study of Turkish-Dutch speaking school-aged children, researchers argued that the interactions between working memory skills of children and bilingual language skills were reciprocal (Bossman & Jansen, 2017). The results of this study demonstrated that children with better language skills also displayed better performance in the working memory test. In fact, in comparison to Turkish-Dutch speaking children, the working memory skills of Dutch-speaking monolingual children were not correlated with their language skills. Authors argued that, as children became more proficient in the language, the cognitive load of language processing diminished, which led to weaker associations between language and cognitive skills of monolingual children.

The studies reviewed in this section shows that there is likely to be a close relationship between the cognitive skills and language development of bilingual children, especially during the language acquisition period in early years (e.g., Bossman & Jansen, 2017). Although the direction of the interaction between children's language skills and cognition is not clear, the literature suggests that there might be a reciprocal influence as children become proficient in a language, which might be influenced by other contextual factors (Paap et al., 2015). The overview of the literature suggests that cognition is an important part of language acquisition and understanding the complex relationship between the two and other contextual factors could provide critical information on the language issues experienced by circumstantial bilinguals.

2.4.2. Language Attitudes

As briefly discussed in this section, psychosocial aspects of language learning play an important role in language maintenance and bilingual language acquisition. Bilingual children's attitudes towards a language can influence their language practices such as inhibition and language repression, which are important for their language maintenance (Ecke, 2004). Although child agency has been underlined in the literature of bilingual language acquisition, the evidence remains scarce regarding which experiences lead to positive or negative language attitudes in early childhood or how these attitudes might affect children's language practices in their day-to-day interactions (see Almer, 2017). Previously in the literature, attitudes towards language learning have been defined by motivation, learning expectations and experiences (e.g., Gardner & Macintyre, 1992). Studies have shown that individuals' attitudes towards a language or the culture identified with it may interact with their language preferences and compromise their learning experiences (Ubalde, Alarcon, & Lapresta, 2017).

In bilingual language acquisition, children's attitudes can be important for their language development and heritage language maintenance (Cummins, 1986). Research has shown that encouraging school-aged children's cultural identity and heritage language use could strengthen their self-esteem and reinforce their motivation to learn and speak their heritage language (Seals & Peyton, 2017). The research on bilingual children, however, mostly focused on how family practices affect the language environment at home and how parents may influence children's language preferences (see p.48). Studies on how children respond to these language practices are still growing (for a review of literature see Wilson, 2020). In the preface of her recently published book, Wilson (2020, p. vii) unpacks this issue succinctly:

> "While the field of FLP *(family language policy)* has seen an increasing number of publications examining the efficiency of given parental language management strategies, the impact of such language strategies and their concomitant expectations has rarely been studied (Piller 2002). More importantly, and in order to support multilingual families, the effects of these language planning choices on the bilingual experiences of children must be investigated."

The current evidence on child agency in bilingualism usually comes from studies on school-aged children and adolescents. These studies show that children, indeed, play an active role in the language practices around them (Caldas & Caron-Caldas, 2002; Zhang & Slaughter-Defoe, 2009; Palviainen & Boyd, 2013). A case-study of young adolescents, for instance, showed that children could refuse or actively disobey the language policies exerted by their parents (Caldas & Caron-Caldas, 2002). Along the same lines, another study demonstrated that children in Swedish-Finnish speaking families had the agency to manipulate the language practices of their parents with their active refusal of the language (Palviainen & Boyd, 2013). These interactions, however, occur transactionally. For instance, as a child's heritage language skills weakens, it may influence their parents' language practices, which may further dissuade the child from speaking the language. In a study of Russian-speaking families in the US, for example, parents reported to adjust their language use and expectations at home according to the changing language skills and behaviours of their child (Nesteruk, 2010). In fact, in another study, researchers have shown that children's diminishing heritage language skills led to decreased support in the language from parents (Park, Tsai, Liu, & Lau, 2012).

Children's language attitudes can have a significant effect on their language preferences. For instance, ethnic minority children tend to devalue their ethnic culture and language and even reject to speak their heritage language with their parents (Agirdag, 2010; Caldas & Caron-Caldas, 2002). An autobiographical study on experiences with heritage language maintenance, for instance, shows that ethnic minority individuals tend to experience a dislike towards their heritage culture and language during childhood and early adolescence stemming from a desire to fit into the mainstream society (Hsieh, Kim, & Protzel, 2020). Researchers identified that experiences of discrimination and ridicule plays an important role in children's negative attitudes towards their heritage language (Hsieh et al., 2020; Shin, 2010). In a study of experiences of growing up as an ethnic minority, for instance, Shin (2010) captured how children's attempts to blend in went hand in hand with their refusal to speak their heritage language:

> "People called me Chinese, Chinese boy. … At first it was confusing. I just wanted to be White … I tried opening my eyes wider. … Eventually I learned that it didn't matter. … [My mother] had tried to [teach me Korean]. And I've always been like a real goofball. I made fun of her and stuff, and didn't want to learn. I was just really annoying I guess and she pretty much gave up. But I've learned some basic things … all the bad words, you know, baby talk, things like that. But to actually speak, no I, I kind of put her off to it…." (Shin, 2010, p. 213).

Building a new social life in the school environment may affect children's attitudes towards their heritage language. Researchers have argued that, as ethnic minority children start their education life, they go through a cultural and linguistic shift in their identity (Michel et al., 2012). These changes can affect their perceptions of their heritage culture and language. For instance, a study on Russian-German speaking adolescents reported that spending more time with German-speaking friends and increased use of German were associated with a decrease in pupils' self-identification as Russian and an increase in their motivation to speak German (Michel et al., 2012).

Children's language attitudes are also related to their identity perception. Some of the studies on bilingual language development, for instance, emphasizes that identity perceptions and group belonging play an important role in the formation of language attitudes (Jones, 2007; Ubalde et al., 2017). For instance, a study of Catalan adolescents in Spain found that adolescents were more likely to maintain both languages when they experienced a positive attitude towards Catalan and Spanish (Ubalde et al., 2017). Similarly, in a group interview of Welsh-English speaking adolescent girls, the interviewees emphasized that speaking Welsh would make them "more Welsh" and contribute to building a "pure Welsh" identity (Jones, 2007, p.43). Researchers argued that having positive attitudes towards the heritage culture was pivotal for heritage language maintenance, which would be supported by a multicultural environment promoting ethnolinguistic vitality for the youth.

Language attitudes and experiences are also important for the second language acquisition of ethnic minority children. Environments where minority children learn a second language can influence their perceptions of the new language and affect their perceptions of it (Carhill-Poza, 2015; Medvedeva, 2010). A study on adolescent bilinguals from immigrant families in the USA, for instance, reported that experience of discrimination at school was associated with lower levels of English competence (Medvedeva, 2010). Language competence, in turn, played an important role in the language attitudes of children. In an interview study with ethnic minority pupils in Canada, children were found to express more negative attitudes toward a language if they experienced communication difficulties in the language (Jean, 2011). Researchers argued that positive experiences in a second language environment, which reward the learner are more likely to increase the use of and the preference for the second language during childhood (Dekeyser & Agirdag, 2018).

The literature on the language attitudes of bilingual children reviewed in this section represent the complexities of learning experiences in bilingual language acquisition. One main conclusion arises from this review is that understanding the interactions between language attitudes and experiences can inform research and practice on the factors that influence children's bilingual language development and heritage language maintenance. Although the findings presented in this section have diverse implications for research in bilingualism, the key argument suggests that positive language attitudes in bilingual language learning can play a protective role in heritage language maintenance.

2.5. Micro-level Factors Relating to Bilingual Language Development: Home Language and Literacy Environment

As summarized in Section 2.3., bilingual children receive language exposure from diverse sources. As a result of the diversity in language exposure, language skills of bilingual children may vary depending on the characteristics of their language environments. One of the main contexts of language acquisition in

early childhood is the home environment, where children receive the majority of language exposure. The research on bilingual language acquisition has shown that the characteristics of home environment are particularly important for the first language development of bilingual children, especially when the language exposure is limited to home as in the case for ethnic minority children (for a review of literature, see Hoff & Shatz, 2007). The literature offers a variety of examples in the study of bilingual language skills of children in relation to their home environment. These studies mainly draw on interviews with parents and/or observations of interactions between family members and children to predict or compare the language skills of children in relation to the language characteristics of their home environment.

Studies of the home environment predicting the language outcomes of bilingual children underline the multifaceted nature of interactions between parents and children facilitating the language learning in early childhood (Akyuz & Dogan, 2017; Nag et al., 2019; Relyea, Zhang, Liu, & Wui, 2019). Components of home environment that provide language-rich learning experiences to children that are particularly important for bilingual language acquisition include daily talk, literacy activities, and a diverse use of language (Howard, Paez, August, Barr, Kenyon, & Malabonga, 2014; Demir-Vegter, Aarts, & Kurvers, 2014; Quiroz, Snow, & Zhao, 2010). However, the majority of the literature remains focused on specific literacy activities such as shared book-reading (for a meta-analysis of studies on home literacy environment see Mol & Bus, 2011). More recently, studies on bilingual language development have started to incorporate other aspects of home environment including oral language activities, daily talk, and language richness in the home environment to bring a multi-dimensional understanding of the factors facilitating language learning in diverse cultural and socio-economic settings (Nag et al., 2019; Relyea et al., 2019). Studies that have looked at the home language and literacy environment included an array of activities and language support available to children in their home environments. The following sections outline the components of the home environment identified in the literature that support the bilingual language skills of children in three subsections on language exposure, language and literacy activities, and language quality.

2.5.1. Language Exposure

Research investigating the diverse outcomes in bilingual language skills of children has long identified the home environment as the most plausible source of variety in language proficiency (for a review of literature see De Houwer, 2011; Nicoladis and Montanari, 2016). The evidence shows that the language input in the home environments of circumstantial bilinguals can vary across culturally and linguistically diverse populations depending on external factors (e.g., Paradis, 2011). As a result of the variations in language exposure, children growing up in dual language environments are exposed to two languages in various proportions, usually unequal (De Houwer, 2009). Although it is difficult to study the patterns of interaction between language exposure and proficiency across diverse populations, evidence has started to capture the nuances in language exposure and how it might influence children's language learning in early childhood (Buac, Gross, & Kaushanskaya, 2014; Duursma et al., 2007; Scheele, Leseman, & Mayo, 2010; Thordardottir, 2011). This section reviews the evidence on the language outcomes of circumstantial bilingual children drawing on the characteristics of language exposure at home.

The studies on circumstantial bilingual children in the UK shows that increased exposure to the heritage language at home is associated with better productive and receptive vocabulary in the given language (e.g., Welsh-English: Gathercole & Thomas, 2009). Supporting evidence also comes from the studies of children growing up in other ethnic minority families (Spanish-English: Quiroz et al., 2010; Mandarin-English: Chan & Nicoladis, 2010). These studies have found that the relative quantity of each language exposure in the home environment is associated with the language outcomes of pre-school children in their first language. Along the same lines, evidence from over 1,400 Spanish-speaking pre-school children in the US suggests that increased use of first language in the home environments of minority children can contribute to heritage language maintenance of ethnic minority (Cha & Goldenberg, 2015). Although the literature does not provide any evidence on the Turkish-English speaking children in

the UK, studies of Turkish minority groups in Europe have provided some supporting evidence (Turkish-German: Budde-Spengler, Sachse, & Rinker, 2018; Ertanir, Kratzmann, Frank, Jahreiss, & Sachse, 2018; Willard, Agache, Jakel, Gluck & Leyendecker, 2015; Biedinger, Becker, & Klein, 2015; Turkish-Dutch: Scheele et al., 2010). The studies have shown that the relative language exposure at home (e.g., conversations in Turkish or Turkish skills of parents) is positively associated with children's Turkish vocabulary (Biedinger et al., 2015; Budde-Spengler et al., 2018; Willard et al., 2015; Scheele et al., 2010). Researchers argued that parents' Turkish use at home was the most important predictor of children's heritage language skills in comparison to other sources of language exposure (Biedinger et al., 2015; Budde et al., 2018). Turkish parents in Germany and the Netherlands, for instance, predominantly used Turkish at home, which contributed to heritage language maintenance across the Turkish community (Biedinger et al., 2015; Budde et al., 2018).

The interaction between language exposure at home and second language development of bilingual children varies among different groups of circumstantial bilinguals. Although second language (L2) exposure at home is a predictor of the L2 skills in early childhood, the school environment is likely to become more important for the L2 development in later childhood (Cantonese-English: Cheung, Kan, Winicour, & Yang, 2018; Welsh-English: Gathercole & Thomas, 2009). For instance, a study of Welsh-English speaking school-aged children demonstrated that the contribution of second language exposure at school replaced the home language exposure by the age of eight as a significant predictor of second language skills of children (Gathercole & Thomas, 2009). Researchers argued that the school environment was a more important setting for the second language acquisition as children progressed in the language (Branum-Martin, Mehta, Carlson, Francis, & Goldenber, 2014). In early childhood, most circumstantial bilinguals tend to receive limited exposure in their second language, and they begin to learn the language when they enter school (Branum-Martin et al., 2014; Biedinger et al., 2015; Budde et al., 2018). For that reason, the school environment is likely to become more relevant for second language acquisition of circumstantial bilinguals in later childhood. However, it is important to note that second language use in

the home environments may still contribute to the bilingual language skills of children in early childhood. In fact, a follow-up study of Turkish-Dutch learning bilingual children in the Netherlands found that Dutch exposure at home was a positive correlate of children's Dutch vocabulary at the age of three and a significant predictor of their Dutch vocabulary knowledge at the age of four (Leseman, 2000). This evidence has been supported by the other studies of Turkish-speaking bilingual children across Europe, suggesting that second language use at home also contributes to language acquisition of circumstantial bilinguals (Budde-Spengler et al., 2018; Ertanir et al., 2018; Scheele et al., 2010). These studies suggest that although the majority of the families tend to speak mostly in Turkish, the amount of second language exposure at home is still a relevant factor to consider.

There is also evidence supporting the cross-linguistic interaction between languages and language exposure in early second language acquisition of bilingual children. Some studies of Turkish children have shown that the contribution of language exposure can go beyond the language of interaction to facilitate children's second language acquisition (Scheele et al., 2010; Leseman, 2000). For instance, Scheele and her colleagues (2010) showed that conversations in Turkish positively correlated with children's Dutch and Turkish vocabulary. Similarly, Leseman's (2000) study of Turkish-Dutch speaking preschool children found that children's Turkish vocabulary was positively correlated with their Dutch vocabulary, although the effect size was small. Similarly, the evidence from Turkish-German speaking children is that increased use of German or balanced Turkish-German language exposure at home did not pose a risk for children's Turkish language skills or for the dual language development of children (Budde et al., 2018; Ertanir et al., 2018). Although researchers have suggested that balanced bilingual language proficiency is possible and increased exposure in one language or the other does not necessarily weaken the skills in the other language, a large body of evidence suggests otherwise. It has been argued that there tends to be a trade-off between the bilingual language skills of children as they start to receive more stimulation in one language over the other, especially when the language use at home shifts from the heritage language to the second language (Branum-Martin et al., 2014; Duursma et al., 2007). For instance, in a study of 1,115

Spanish-speaking preschool children in the USA, increased English use at home was negatively correlated with Spanish skills (e.g., Branum-Martin et al., 2014). This finding is reflected in some studies on Turkish-speaking children in Europe. For instance, increased second language exposure at home through media was found to be a negative predictor of Turkish skills of children in Germany (Biedinger et al., 2015). Other than the negative influence of second language exposure at home, studies have shown that pre-school attendance was negatively associated with children's Turkish language skills (Biedinger et al., 2015; Klein & Becker, 2017; Leseman; 2000).

The findings presented in this section underline the arguments discussed on balanced bilingualism in Section 2.3. Although the current evidence suggests that increased language exposure in one language does not necessarily interfere with the other language skills, the language skills in early childhood are sensitive to varying levels of exposure in the home environment (e.g., Thordardottir, 2011). Changes in the language exposure in daily life (e.g., through preschool attendance) are more likely to be detrimental for heritage language skills if the source of language stimulation remains limited to the home environment, whereas the settings for the second language use continues to expand (for a review see Montrul, 2008).

2.5.2. Language and Literacy Activities

Studies of language acquisition have long established the importance of language and literacy activities (for a review see Bus, van Ijzendoorn, & Pellegrini, 1995). Evidence suggests that parents are more likely to use richer language when they engage in language and literacy activities with their children (e.g., book reading), which can help to facilitate language acquisition in early childhood (Demir-Vegter Aarts, & Kurvers, 2014). Activities such as shared book-reading, storytelling, print materials at home, and library visits comprise an important part of the home language and literacy environment (Bus et al., 1995). These activities in turn have been shown to contribute to the language and emergent literacy skills of children (for a meta-analysis of studies see Mol & Bus, 2011). Although the importance of home language and

literacy activities in language acquisition have been well documented for English-speaking monolingual children, the evidence is still growing for bilingual populations (e.g., Relyea et al., 2019). The current body of evidence, however, suggests that home language and literacy environment contribute to the language learning experiences of bilingual children through supporting vocabulary growth, emergent literacy skills, and interest in the literacy activities (for a review see Dixon & Wu, 2014).

The literature on bilingual language acquisition demonstrates that language and literacy activities at home can be differentially relevant for the language skills of bilingual children growing up in immigrant contexts (Dixon & Wu, 2014). Some activities and resources have been identified that are associated with enhanced language skills of bilingual children growing up in minority families, although the characteristics of the activities and the languages vary (Spanish-English: Duursma et al., 2007; Quiroz et al., 2010; Lewis, Sandilos, Hammer, Sawyer, & Mendez, 2016; Relyea et al., 2019; Turkish-speaking: Becker, Boldin, & Klein, 2016; Klein, Biedinger, & Becker, 2014; Scheele et al., 2010; Williard et al., 2015). These studies have examined an array of language and literacy resources and practices at home that are associated with the bilingual proficiency such as the number of books at home, shared book-reading and storytelling activities, visits to the library and the language use during these activities. Some studies investigated the role of the language and literacy activities at home through a composite variable (e.g., home literacy environment) (Becker et al., 2016; Duursma et al., 2007; Relyea et al., 2019; Willard et al., 2015), whereas others examined the contribution of activities separately (e.g., storytelling) in explaining the language skills of children (Lewis et al., 2016; Scheele et al., 2010; Quiroz et al., 2010). Although the contribution and interaction effects of language and literacy activities at home varies depending on the study characteristics, the overall evidence suggests that language-rich home environments are important for the language learning experiences of bilingual children.

In a study of Spanish-English speaking preschool aged children, Quiroz et al. (2010) found that more shared-book reading activities were associated with better language skills in whichever language they were using, whereas more labelling questions in Spanish addressed by the mothers during the shared-book

reading were associated with better child vocabulary in both languages. The effect size of reading activities at home, however, was smaller for English vocabulary, suggesting the influence of distal factors relating to the language and literacy environment of children. Another study on Spanish-English speaking school-aged children in the USA reported that an enriched language and literacy environment was positively correlated only with English vocabulary, whereas it demonstrated a negative association with Spanish vocabulary (Duursma et al., 2007). The authors argued that increased use of English in the home language and literacy environment of children led to a trade-off in children's Spanish learning experiences. Along the same lines, a study of dual language learners from the USA found that the effect sizes for the language and literacy activities explaining bilingual language skills of children were small, although some activities made significant contributions to the model predicting children's language skills (Lewis et al., 2016). For instance, shared book-reading activities at home were significant in explaining both Spanish and English vocabulary of children, whereas storytelling activities was only significant in explaining oral comprehension in English. In this analysis, these factors were found to be significant after controlling for the language use in the home environment, suggesting that the language used in the activities is important for explaining the relationship between literacy activities and language outcomes. In a study of school-aged children, Relyea et al. (2019) have found that the home language and literacy environment had a small but significant indirect effect on children's English reading comprehension through other language skills including morphological awareness and vocabulary. The authors argued that children may have had less benefit from these activities partly due to a lack of collaboration between home and school and partly due to reduced parental involvement in language and literacy activities

Studies on Turkish-speaking bilingual children show similar patterns for the role of language and literacy activities in bilingual language acquisition. A study of Turkish-Dutch speaking 3-year-olds by Scheele and her colleagues (2010), for instance, found that while storytelling activities at home positively correlated with Turkish and Dutch vocabulary of children, the reading activities at home did not make a significant contribution to either language. The authors suggested that this finding could result from a low

engagement in reading activities by Turkish parents in comparison to native Dutch families. Another study of Turkish-German speaking preschool- and school-aged children (Willard et al., 2015) demonstrated that the language and literacy activities at home were only marginally significant in the model explaining the Turkish vocabulary for older children, whereas, for preschool-aged children, the activities at home showed a stronger effect in predicting children's Turkish vocabulary. Similarly, Becker et al.'s (2016) study of 3- to 4-year-old Turkish-German speaking children showed that learning activities, including shared book-reading, storytelling, and singing, significantly contributed to the model explaining German vocabulary skills of children along with preschool attendance and language instruction programme at school. The authors argued that parent-child interactions in early childhood held the utmost importance in facilitating the language development of bilingual children (Becker et al., 2016).

Although the literature does not demonstrate a clear pattern for the interactions between the home language and literacy activities and children's language skills, there are some key lessons that can be drawn. First, the evidence suggests that the language and literacy activities at home can be more beneficial for the language learning of children during early childhood (e.g., Becker et al., 2016). Their relevance may weaken or become diluted or possibly nonsignificant in later childhood with the increasing exposure to formal education settings (Relyea et al., 2019; Willard et al., 2015). Second, the interaction between activities and children's language skills can vary depending on the activities (e.g., Scheele et al., 2010) and the language used at home (e.g., Lewis et al., 2016), although cross-linguistic transfer may also be possible depending on the characteristics of interaction (e.g., Quiroz et al., 2010). Lastly, a more coherent understanding of the interaction between language skills and home language and literacy environment of children may be established if the distal or intermediate factors altering the quantity and quality of the activities at home are taken into account (e.g., Quiroz et al., 2010; Willard et al., 2015). Hence, the following section presents an overview of studies demonstrating how the characteristics of language use by parents in language and literacy activities may help explain the language skills of children.

2.5.3. Proximal Processes: Language Quality

The literature on bilingual acquisition has focused on the sources of language exposure that lead to variations in the language skills of bilingual children. The evidence, as presented in previous sections, has accumulated under the topics of relative language exposure and language and literacy activities at home. The growing evidence on language acquisition and dual language learning, however, shows that variations of language exposure in home environments are not limited to language exposure and the frequency of language and literacy activities at home. As a result, studies on bilingual and monolingual children started to focus on other aspects of language exposure that have been shown to play an important role in language acquisition and show greater variance across the households. As shown by the studies of early childhood, the language diversity at home has been the most important aspect of learning for the development of foundational language skills of children (e.g., Rowe, 2012). For instance, in a study of the role of home literacy environment in the language skills of monolingual English-speaking children, it was found that the positive association between the two resulted from a mediation of mothers' language skills (Puglisi, Hulme, Hamilton, & Snowling, 2017). The authors concluded that the home literacy environment was only a correlate of children's language skills, and that the main predictor was the language input received from the mother. Drawing on this evidence, this section provides an overview of the literature on the role of language diversity at home in children's language development.

The evidence on the role of language diversity in language acquisition primarily comes from studies of monolingual children. These have shown that the characteristics of language exposure at home relating to quality language use (e.g., lexical diversity and sophistication) are strongly associated with children's vocabulary growth and cognitive development in early childhood (Pan, Rowe, Singer, & Snow, 2005; Rowe, 2012; Song, Spier, & Tamis-Lemonda, 2014), as well as subsequent literacy skills (Chang & Monaghan, 2019). Most of these studies have focused on maternal language as the primary source of language exposure in order to assess the language diversity in the home environments of children (Hoff,

2003; Huttenlocher, Waterfall, Vasilyeva, Vevea & Hedges, 2010; Pan, Rowe, Singer & Snow, 2005; Rowe, 2008; Song, Spier, & Tamis-Lemonda, 2014). It has been found that characteristics of maternal speech including frequency of interaction (e.g., Hoff, 2003), lexical richness (Pan et al., 2005; Rowe, 2008; Song et al., 2014), syntactic complexity (e.g., Huttenlocher et al., 2010; Rowe, 2008) were all significant in explaining variations in preschool-aged children's language skills. One study reported that, although language exposure by mothers did not predict the language outcomes of children, the amount of exposure was associated with the lexical diversity in maternal speech (Pan et al., 2005). The authors argued that the measure of language diversity in maternal speech, then, would be a more robust predictor of language outcomes of children in comparison to the relative language exposure alone. In fact, another study depicted maternal language as the primary source of language and cognitive growth drawing on the characteristics of maternal speech in parent-child interactions (Song et al., 2014). It has been argued that maternal language is an important factor in language acquisition as mothers were more likely to accommodate to their children's learning needs and facilitate their language learning through scaffolding (see Bruner, 1983).

Although the majority of the evidence on language diversity comes from the studies of maternal speech observed in English-speaking mother-child dyads, there is some evidence from the bilingual samples (For a review see Hoff, Welsh, Place, & Ribot, 2014). A study of Spanish-English speaking 2-year-old children, for instance, found that sources for English exposure at home accounted for the variations in English vocabulary of children when the amount of language exposure was controlled (Place & Hoff, 2011). However, the same effect was not found for children's Spanish vocabulary and the only significant variable to explain variations in Spanish was the amount of exposure to that language (Place & Hoff, 2011). Another study of 5- to 7-year-old Spanish-English speaking children found that parents' English vocabulary knowledge significantly explained children's English vocabulary, whereas parents' Spanish vocabulary knowledge was not a significant predictor of children's Spanish vocabulary (Buac, Gross, & Kaushanskaya, 2014).

There has been only one study on Turkish-speaking bilingual children providing insight into the role of language diversity in bilingual language acquisition of Turkish-speaking children (Demir-Vegter, Aarts, & Kurvers, 2014). This longitudinal study on Turkish-Dutch speaking preschool children investigated the relationship between the lexical richness in maternal input in Turkish and children's Turkish and Dutch vocabulary over the course of two years (Demir-Vegter et al., 2014). The lexical richness of maternal input was measured in three different settings (book reading, picture description, and block building) according to lexical diversity, sophistication, and density (Demir-Vegter et al., 2014). Parents were found to use a more diverse language when they engaged in a picture book-reading in comparison to the other activities, suggesting that such activities were important for the quality of language exposure at home (Demir-Vegter et al., 2014). Results on children's vocabulary knowledge were that the lexical richness in maternal language was related to Turkish vocabulary at the age of 3 and 4 (Dutch was not measured), and Dutch vocabulary at the age of 5 (Turkish was not measured) (Demir-Vegter et al., 2014). For Turkish vocabulary, lexical sophistication, the use of unique words, was the strongest predictor, whereas for Dutch vocabulary, lexical diversity in maternal speech was the strongest predictor for the Dutch vocabulary of children (Demir-Vegter et al., 2014).

The evidence from these studies suggests a strong association between bilingual children's language skills and the quality of language used at home. However, this association is especially evident for the second language skills of children (e.g., Place & Hoff, 2011; Buac et al., 2014), even when the interactions across languages are observed (e.g., Demir-Vegter et al., 2014). The authors ascribed the stronger associations for children's second language vocabulary to the lack of variability in the data for the first language exposure in maternal speech and child vocabulary. As the findings of Demir-Vegter's (2014) study show, the associations between the quality of language exposure and children's vocabulary can be captured for both languages with more comprehensive assessment methods for quality of language use at home. However, the nature of existing literature underlines that, in order to understand the differential

effects of quality of language exposure on the first and second languages of circumstantial bilinguals, more research is necessary.

2.5.4. Section Summary

The evidence from the literature to date has shown that the characteristics of language exposure at home varied according to the type of interactions between parents and children (e.g., book-reading), as well as other extraneous factors that influence the language environment at home (e.g., language skills of parents) (Demir-Vegter et al., 2014; Buac et al., 2014). However, the evidence also suggests that socioeconomic factors related to family background characteristics may influence the language and literacy resources in the home environment of children (e.g., Willard et al., 2015). Such factors are important for understanding the variations in the experiences of bilingual children. Hence, the following section reviews the studies on bilingual language acquisition with a focus on the role of distal and intermediate factors that lead to variations in the language environments of children.

2.6. Macro-level Factors Relating to Bilingual Language Development: Family Background Characteristics

Research has demonstrated that distal factors such as culture and social class can influence the structure of the home environments of children (for a review see Kagitcibasi, 2017). In his work on '*The Forms of Capital*', Bourdieu (1986) posits that individuals acquire social class through the resources of their families that come in different forms of capital. These resources permeate into the home environments of children through the forms of economic, cultural, and social resources and influence the early life experiences of children. The literature on bilingual language acquisition demonstrates that economic and cultural resources of families can explain the variations in the language environments of children (Becker, 2010). Immigration, however, may disrupt such family resources. Thus, to understand the home environments of children growing up in immigrant households, it is necessary to pay attention to the family resources and how migration affects them. The following sections of this chapter provide an overview of family

characteristics that explain the resources in the home environments of bilingual children growing up in immigrant families under the subsections of family socioeconomic background and family integration.

2.6.1. Family Socioeconomic Status

The Family Investment Model demonstrates how financial and educational resources of families can influence child-rearing practices at home drawing on the interactions between social class, parenting behaviours, and child development (Conger & Donnellan, 2007). In this model, the researchers posit that financial hardships and lower educational qualification of parents can negatively affect the parenting behaviours through lack of educational materials, knowledge, and resources. Poverty and financial stress, for instance, can have a negative effect on the home environment of children underpinning the areas of development in early childhood including language. To date, studies have shown that families from disadvantaged backgrounds are less likely to provide stimulating home environments supporting the language development of children, although there remains variation across the families of similar socioeconomic backgrounds (for a review see Bus et al., 1995).

Studies of language acquisition have shown that family socioeconomic background predicts various factors that influence the language learning experiences of children (e.g., Rowe, 2008). One of the well-demonstrated effects of family socioeconomic background on the home environment of bilingual children from immigrant families is language use at home. Evidence shows that ethnic minority families from higher socioeconomic backgrounds are more likely to use the national language at home (Cha & Goldenberg, 2015; Pearson, 2007). A review of literature on the Spanish-speaking parents in the US, for instance, demonstrated that parents from higher socio-economic backgrounds spoke in English with their children, even if they valued their heritage language (Pearson, 2007). Studies on bilingual children confirm this finding by showing the effects of the interaction between socioeconomic background and parental language on children's language skills. Evidence from these studies invariably shows that children from higher socio-

economic backgrounds demonstrate better second language skills than those from lower socioeconomic backgrounds (Buac et al., 2014; Duursma et al., 2007; Quiroz et al., 2010).

Studies on Turkish-speaking children in Europe, for instance, show that family socioeconomic background predicts children's bilingual vocabulary through the mediation of language use at home (Prevoo et al., 2014; Scheele et al., 2010; Westeren, Halberg, Ledesma, Wold, & Oppedal, 2018). In a study of Turkish-Dutch speaking 6-year-old children, Prevoo and her colleagues (2014) demonstrated that mothers from higher socioeconomic backgrounds used Dutch more when communicating and reading with their children. Children of parents, who used Dutch more frequently, then had a larger Dutch vocabulary (Prevoo et al., 2014). For Turkish language skills, however, the researchers found a reverse interaction between mother's education level and vocabulary. Mothers from higher socioeconomic backgrounds tended to use Turkish less often, which predicted a lower Turkish vocabulary for children (Prevoo et al., 2014). The relevance of maternal behaviour was highlighted in another study of Turkish-German speaking pre-schoolers, which found that mother's education level was a predictor of children's Turkish vocabulary through the home language use, whereas the same did not apply to father's education (Willard et al., 2015). This study also reported that mothers with lower education levels used more Turkish at home, which mediated the relationship between mother's education and children's Turkish vocabulary. Researchers argued that mother's education background was a stronger predictor for children's home language environment as a result of the Turkish gender roles requiring mothers in the domestic life and child-rearing responsibilities (see Westeren et al.,2018).

The literature demonstrates that family background characteristics not only predict the language environment at home, but also parents' engagement in activities that support the bilingual language development. For example, studies of circumstantial bilinguals have shown that children from disadvantaged families participated in language and literacy activities less often (Aikens & Barbarin, 2008; Willard et al., 2015) and had fewer literacy resources such as books, media, and other written materials

(Scheele et al., 2010). The researchers, then, ascribed poor language skills of ethnic minority children to a lack of language and literacy resources at home (Howard et al., 2014; Scheele et al., 2010; Willard et al., 2015). For instance, studies of Turkish families in Europe have shown that Turkish parents engaged in language and literacy activities less frequently compared to the native parents in the country, especially if they came from disadvantaged backgrounds (Klein et al., 2014; Leseman, 2000; Prevoo et al., 2014; Scheele et al., 2010; Willard et al., 2015). In some studies, the language and literacy sources at home mediated the relationship between family background and language outcomes (e.g., Willard et al., 2015). Researchers, however, underlined that a large proportion of the variance in parental engagement still remained unexplained after taking the family socioeconomic background into account (Scheele et al., 2010; van Steensel, 2006). This suggests that language and literacy resources at home can vary across the households of similar socioeconomic status and influence the language experiences of children regardless of their family background.

There is a dearth of evidence on the interactions between family background characteristics and language quality at home, especially for bilingual children. One study on Turkish-Dutch speaking pre-schoolers suggests that the quality of language input provided in the home environments of children may be related to their socioeconomic background. In this study, researchers found that the lexical richness in maternal language was positively correlated with family socioeconomic background, as well as the literacy activities at home (Demir-Vegter et al., 2014). Other examples from the literature, mostly, come from monolingual samples. In a longitudinal study of 2- to 3-year-old children, Rowe (2008) has shown that the language quality at home, as measured by lexical and syntactic diversity in maternal speech, was associated with parental education and family income and it mediated the interaction between child vocabulary and family socioeconomic background (Rowe, 2008). These findings support the argument of Puglisi, Hulme, Hamilton, and Snowling (2017) suggesting that maternal language skills are the main influence in children's language outcomes, which outweighs the effects of family socioeconomic background and language and literacy activities on language development (Puglisi et al., 2017).

The review of the literature suggests that the resources available to bilingual children can vary according to their family characteristics. Family income and parents' education can account for variations in the home language and literacy environments of bilingual children. Although some studies have shown that stimulating home environments can buffer the negative effects of poverty, the overview of the literature underlines that the majority of bilingual children from disadvantaged households are less likely to experience stimulating home environments. In order to further explain why most circumstantial bilinguals, including Turkish-speaking children in Europe, come from disadvantaged backgrounds, the following section reviews the effects of migration on social and economic integration of families.

2.6.2. Family Integration

Many immigrant families experience financial hardships as they start a life in a new country (Ward, Bochner, & Furnham, 2001). Research shows that challenges associated with immigration, such as lack of language proficiency, impermanent residence, and unfamiliarity with the legal and healthcare systems can have negative psychological and economic effects on individuals (Luksyte, Spitzmueller, & Rivera-Minaya, 2014). These hardships can be detrimental for the home environment (e.g., literacy activities) and positive parenting behaviours (e.g., parental warmth) (Baydar et al., 2013; Chen et al., 2013; Gilbert, Brown; & Mistry, 2017). Even when parents have the capacity to support their children's learning, language barriers can become an impediment to their participation (Strand et al., 2010). As demonstrated in the previous section, the evidence shows that immigrant families from disadvantaged backgrounds are less likely to engage in home language and literacy activities that support the language development of their children (Kalia & Reese, 2009; Leseman & Van den Boom, 1999; Prevoo et al. 2014).

As immigrant families settle in a new country, they may experience changes in their day-to-day lives as a result of contact with a new culture, through readjustments in their lifestyles reflecting social and economic integration into society (Titzmann & Fuligni, 2015). One of the important components of

integration is language acculturation (Nguyen & Benet-Martinez, 2013). Language acculturation is especially important for immigrant parents as it can promote their engagement in the learning activities and thereby benefiting their parenting efficacy (Costigan & Koryzma, 2011). However, socioeconomic background of parents may intervene with their language acculturation. Lower educational qualifications and poor language skills can limit parents' access to high-income jobs (Dixon, Wu, & Daraghmeh, 2012) and reduce their interactions with the society (Arriagada, 2005). As a result, families may become more accustomed to speaking their heritage language at home (Zhang, 2008). Studies of bilingual children from Hispanic (e.g., Mexico, Puerto Rico, Cuba) and Asian (e.g., India, China, Japan) families in the US, for instance, has shown that factors such as lower parental educational qualifications and limited financial resources were associated with the increased use of ethnic language at home (Winsler et al., 2014). Similarly, Turkish parents with fewer years of education in Europe reported to use Turkish more frequently when speaking or performing language and literacy activities with their children (Turkish-Dutch: Prevoo et al., 2014; Turkish-German: Willard et al., 2015).

Time spent in the country is crucial for the integration of immigrant families. Studies have shown that extended time in the country can facilitate social and cultural adjustment and contribute to well-being of immigrant individuals (Markovizky & Samid, 2008). Generally, as immigrant families live in a country longer, they become more proficient in the national language and start communicating in the language more often (Spanish-English: Pease-Alvarez, 2002). This change may also have consequences for the home environment and may influence parents' interactions with their children (Quiroz et al., 2010; Becker; 2010; Willard et al., 2015; Westeren et al., 2018). Evidence from correlational studies shows that longer migration history is associated with the increased use of the national language at home (Pearson, 2007; Winsler et al., 2014). For instance, a study of Spanish-English speaking pre-schoolers found that the years spent in the country by mothers was negatively correlated with children's Spanish vocabulary, whereas it had a positive relationship with English vocabulary (Quiroz et al., 2010). These associations, however,

became nonsignificant when the mothers' language use was included in the model.

Research on Turkish families in Europe demonstrates similar results (Driessen, Van der Slik, & De Bot, 2002; Westeren et al., 2018; Willard et al., 2015; Westeren et al., 2018). A study of Turkish pre-schoolers in Norway, for instance, has shown that mothers' age at migration predicted children's Norwegian vocabulary (Westeren et al., 2018). Similarly, a study on Turkish-German speaking children demonstrated that children with first-generation mothers were more likely to have a larger Turkish vocabulary than children of second- and third-generation mothers (Willard et al., 2015). In another study, with Turkish-German speaking children parent's acculturation experiences (e.g., social network, language skills, German language use, and German citizenship) were found to be positively associated with children's cognitive skills, as well as their second language skills (Becker, 2011). Parents' language use at home, however, mediated the interactions between family acculturation and language outcomes of children. A study of Turkish immigrants in the Netherlands found that the language use at home mediated the effect of mothers' length of residence on children's Dutch vocabulary (Driessen et al., 2002). Willard et al. (2015) similarly reported that increased Turkish use at home mediated the relationship between mother's generational status in the country and children's Turkish vocabulary, whereas the same effect was not found for father's generational status.

The cultural experiences of immigrant parents may not only influence the bilingual language acquisition of their children through language use, but also their involvement in the language policy of the home. Literature shows that parents' views on their heritage culture can motivate them to monitor and supervise the language use in the home environment (for a review see Spolsky, 2012). For instance, a study of the Turkish community in London found that parents actively supported their children's Turkish learning through supplementary schools run by the community (Lytra, 2015). Another study in the Netherlands found that parents strived to maintain the Turkish language at home to conserve their cultural identity, although they continued to support their children in Dutch for educational reasons (Bezcioglu-Goktolga & Yagmur, 2018). Researchers suggest that in these interactions, mothers play a key role in

facilitating the language maintenance of their children as well as contributing to the language shift at home (for a review of literature see Okita, 2002).

The overview of the literature on parents' experiences with migration and its influences on their home environment suggests that there are a diverse range of factors that play a role in children's language experiences. These factors include, but are not limited to, family migration history, socioeconomic background, and parents' view on cultural maintenance and education. Such factors are likely to influence parents' experiences with social and economic integration in the country and can have an effect on the bilingual language acquisition of their children through their parenting practices.

2.6.3. Section Summary

The studies of Turkish-speaking bilingual children suggest three conclusions. First, mothers are, most likely to be the main source of language exposure for children growing up in Turkish households in Europe (Westeren et al., 2018; Willard et al., 2015), although fathers may influence the home environment of children in different ways (e.g., Willard et al., 2015). Second, socio-economic integration of immigrant families influences the bilingual language acquisition of children through the language and literacy resources in the home environments of families (Becker, 2011; Westeren et al., 2018; Willard et al., 2015). Lastly, acculturation experiences of families may lead to differences in the language use of parents and have an effect on the language experiences of their children.

2.7. Review of Study Variables

Before finalising the methods of the study, a review of literature was conducted to evaluate different methods in assessment and data collection to study the family background characteristics, home language and literacy environment, language and cognitive skills, and language attitudes of bilingual children. The

decisions were made drawing on the literature as well as the needs of the study sample as discussed further in Chapter 3. This section provides a review of the methods in assessment and data collection used in previous studies on bilingual language acquisition.

2.7.1. Child Characteristics

This section presents the variables assessed in this study pertaining to bilingual language skills and cognitive abilities of children. Then, the section introduces the methods used to assess children's attitudes towards language learning and speaking. The review of the literature draws mostly on young bilingual children that have been assessed for similar measures in previous research.

2.7.1.1. Bilingual Language Skills

The language interdependence theory posits that the first language skills of bilingual children play an important role in bilingual language acquisition (Cummins, 1979). In this theory, Cummins (1979) suggests that language skills of bilingual children may interact across languages. In this interaction, the first language of children can serve as a foundation for the acquisition of second language skills leading to what Cummins (1979) calls 'cross-linguistics transfer'. Cross-linguistic transfer between languages can facilitate or hinder children's bilingual language acquisition depending on the linguistic characteristics of the language-pair and the meta-linguistic abilities of children. This unique path in bilingual language development requires the assessment of both languages to address how one language may interact with the other one.

Studies have shown that bilingual children are more likely to experience divergent patterns in language growth in comparison to monolingual children as their language learning experience is divided between two languages (Unsworth, 2016). As a result of the variance in language exposure, bilingual children's language skills are not always comparable to their monolingual peers (Hoff et al., 2012; Scheele

et al., 2010). For instance, bilingual children tend to experience a slower vocabulary growth in comparison to their monolingual peers (Genesee & Nicoladis, 1995). These differences in language acquisition lead to issues in language assessment. As a result of the differential levels of progress in the areas of receptive and expressive language, for instance, bilingual children often demonstrate a larger gap between receptive and expressive language skills (Keller, Troesch & Grob, 2015; Yan and Nicoladis, 2009). This issue can lead to floor effects in bilingual language assessment and cause distress for some children (for a review of literature see Gathercole, 2013). Drawing on these issues, the current study focuses on the receptive vocabulary of children

Another important issue to consider in bilingual language assessment is which aspect of language is to be studied to understand overall language proficiency or predict language growth. Evidence from longitudinal studies suggest that the combination of skills in different linguistic areas including vocabulary, sentence repetition, and grammatical skills can serve as a robust model to predict language growth of children (e.g., Klem, Melby-Lervag, Hagtvet, Lyster, Gustafsson, & Hulme, 2015). The majority of studies focus on the vocabulary knowledge of children as it is an easy and reliable predictor of children's language growth, literacy development, and cognitive skills (e.g., Dickinson & Tabors, 2001; Morris, Bloodgood, & Perney, 2003; Sénéchal & LeFevre, 2002). The evidence from these studies suggests that vocabulary knowledge in early childhood can be a basis to the acquisition of various other skills both in language and other areas of child development. Drawing on this information, this study assesses vocabulary knowledge of children in both Turkish and English to have an overview of their language skills.

For the last two decades, the sentence repetition task has gained popularity as a measurement tool to evaluate language proficiency (Italian: Devescovi & Caselli, 2007; English: Komeili & Marshall, 2013; Spanish: Balladares, Marshall, & Griffiths, 2016). Sentence repetition, a task that requires the child to repeat given sentences back verbatim, allows researchers to have quick access to overall language proficiency in early childhood. Studies have shown that children's vocabulary knowledge (Balladares et al., 2016) and morpho-syntactic skills (Komeili & Marshall, 2013) influence their performance suggesting

that the task can evaluate both receptive and expressive language knowledge in language acquisition. Although some researchers have argued that working memory could have an effect on the test performance of children with language impairment (e.g., Ebert, 2014), evidence from other studies has shown that sentence repetition demonstrated results predicting the overall language competence of children rather than working memory skills (e.g., Klem et al., 2015). Drawing on the evidence and Cummins' (1979) language interdependence theory, this study assesses Turkish sentence repetition skills of children to have an overview of their first language skills.

2.7.1.2. Non-Verbal Abilities

As discussed in Section 2.4.1., children's non-verbal abilities such as executive functioning and working memory skills play an important role in language learning especially during the formative years. As a result of this, some studies investigating bilingual language acquisition tend to control for non-verbal abilities to rule out the language differences generated by individual differences (Blom, Kuntay, Messer, Verhagen, Leseman, 2014). These studies tend to use tasks including odd matrix and odd-one-out (see Blom et al., 2014), digit recall and non-word repetition (see Becker, 2011; Bosman & Janssen, 2017), object recognition (see Becker, 2011), inhibition and recognition tasks (Jaekel, Jaekel, Willard, & Leyendecker, 2019; Naeem, Filippi, Periche-Tomas, Papageorgiou, & Bright, 2018). The tasks used in the language acquisition studies target children's executive functioning skills including inhibitory control, processing speed and working memory skills such as visuo-spatial recall and phonological loop. Some studies use computer-based tasks (e.g., Blom et al., 2014; Jaekel et al., 2019; Naeem et al., 2018), whereas others apply standardised assessment batteries administered by researchers (e.g., Becker, 2011). Evidence shows that assessment of combined skills in non-verbal abilities provides a more robust prediction of child development than targeting a single aspect of executive functioning (Chalmers & Freeman, 2018). Similarly, assessment scales that combine different aspects of executive functioning have been found to be better predictors of general intelligence and reasoning skills (Rao & Baddeley, 2013). When choosing an assessment to evaluate non-verbal abilities, researchers need to consider the aspects of executive

functioning on which the test relies on. It is important to understand if the assessment scale is appropriate, depending on its demand on verbal processing skills and other areas of language that might influence the test performance of young children (Verguts & De Boeck, 2002). Drawing on this evidence, this study uses Raven's Progressive Matrices (Raven, Court, & Ravne, 1995) to assess children's overall cognitive skills.

2.7.1.3. Language Attitudes

When it comes to obtaining information on children's views, it has been argued that children are 'the best sources of information about themselves' (Docherty & Sandelowski, 1999: 177). In fact, studies of four- to six-year-old children investigating their perspectives or beliefs in bilingualism/multilingualism have shown that children were aware and able to speak of their multilingual skills and affiliations with their multiple linguistic and ethnic identities (Almer, 2017; Crump, 2014). However, it has been stressed that it is important to enable a friendly environment to encourage children to talk about themselves comfortably (Crump, 2014; Docherty & Sandelowski, 1999). In her doctoral research on children, for instance, Crump (2014) concluded that the use of engaging games and toys facilitated her interactions with the children. Others have emphasised that individual interviews were important for creating a comfortable research setting for interviewing children on sensitive matters (Eder & Fingerson, 2003). As young children from ethnic minority backgrounds may face various difficulties in their adjustment to a multi-cultural and -lingual life (Valls & Kyriakides, 2013), interviewing them on such matters requires sensitivity and awareness.

The research methods and paradigms used to study the language attitudes of children vary (for a review see, Barcelos, 2003). Although a large number of studies deploy quantitative research methods (e.g., structured questionnaires, see Horwitz, 1999), a growing number of studies have started to incorporate qualitative methods to explore language attitudes of children. Researchers have argued that

it is problematic to investigate complex and context-related phenomena such as attitudes with quantitative methods as they limit participants to static statements, as discussed below:

> "A construct as intellectually and affectively complex and rich as is one's personal belief system, cannot presume to be fully captured by people's responses to a set of normative statements" (Bernat & Gvozdenko, 2005: 7)

Qualitative research methods allow a holistic approach in which participants can express their unique views contextually (Kramsch, 2003). The qualitative approach facilitates the exploration of the nuances in experiences relating to their attitudes in different contexts and social environments. The literature, however, lacks in-depth insight into the use of qualitative methods of young children's language attitudes and their role in language acquisition. Although the preschool years are crucial for bilingual language development and maintenance, existing studies on the interaction between language attitudes and bilingual language acquisition have generally involved older children (e.g., Willard et al., 2015). It is important for future studies, including this one, to address these methodological and empirical gaps in the literature to provide a better understanding of children's language experiences as they go through a transition in their language environments. Drawing on this evidence, this study adopts a qualitative interview method by incorporating question prompts to understand children's language experiences and views.

2.7.2. Microsystem: Home Language and Literacy Environment

This section introduces the variables assessed pertaining to home language and literacy environment of Turkish families in this study. A review of literature presents the methods and approaches to the assessment of language exposure, language and literacy activities, and language quality in the home environments of children. The evidence derived from studies mostly on ethnic minority families with bilingual children that have been assessed for similar measures in previous research.

2.7.2.1. Language Exposure

One of the main factors influencing the language input received by bilingual children is the language(s) spoken at home and the amount of exposure received for each language. There is a large body of evidence confirming that relative language exposure predicts children's bilingual vocabulary knowledge (see Section 2.5.1.). The majority of these studies use self-reports of parents on their language preferences at home to assess the relative language exposure at home (e.g., Willard et al., 2015). To capture this, researchers often ask parents to report their daily language use on a scale or to keep a diary record. Such measures allow researchers to access and process the information easily and facilitates statistical comparisons between the households (e.g., Hurtado, Gruter, Marchman, & Fernald, 2014). However, this method has some disadvantages. Data collected through self-reported relative measures can lead to misleading information and lack valuable data regarding the variations in the language environments of children that are important for language acquisition. To avoid these issues in measurement, some researchers prefer to study absolute language exposure instead. In absolute language exposure, researchers assess different aspects of language interactions through direct observation of parent-child interactions (see Gruter, Hurtado, Marchman, & Fernald, 2014). Although the methods can differ, researchers usually capture the language use at home through structured records of parent-child talk. Such methods allow for an elaborate understanding of the language environment of the child and access valuable data that may be able to explain a greater degree of variance in children's language skills than parent reported data. Observational methods, however, bring challenges, including laborious work on transcribing and manipulation of the natural occurrence of interactions. Despite these challenges, the evidence suggests that a fragment (e.g., 12 minutes) of mother-child interactions recorded in a research setting can provide a valuable source of information on the characteristics of language exposure at home (e.g., Hurtardo, Marchman, & Fernald, 2008). Drawing on this evidence, this study assesses home language exposure through observations, as well as self-reports to evaluate the consistency between the two before the final analysis.

2.7.2.2. Language and Literacy Activities

The literature on bilingual language acquisition includes a large number of studies on the role of language and literacy activities in the home environments of children from diverse backgrounds (Nag et al., 2019; Umek, Podlese, & Fekonja, 2005). A majority of the studies adopt quantitative methods such as questionnaires and surveys to collect information from parents, although there is some evidence of the use of ethnographic research methods (see Nag et al., 2019). The results from the literature identify some activities and resources as particularly important for understanding the language experiences of bilingual children, including conversations about daily activities, shared book-reading, books at home, and adult literacy practices (Nag et al., 2019; Umek et al., 2005). Researchers have argued that asking parents to report their engagement in these activities, can lead to unreliable results due to desirability bias (Sénéchal, LeFevre, Thomas, & Daley, 1998). In fact, parents' answers usually tend towards the highest end of the scales and generate skewness in the data (Sénéchal et al., 1998; Umek et al., 2005). This issue also causes problems with the criterion validity of the measurements in predicting language outcomes of children. It has been proposed that observational data or ratings of parents' language use can be used to supplement and strengthen the information collected via questionnaires and surveys. In this way, researchers can have access to a wider range of information that can be used to evaluate the validity of self-reported measures on language and literacy activities (Umek et al., 2005). This study draws on the information from parents' reports of the language and literacy environment to allow for statistical comparisons between children.

2.7.2.3. Language Quality

Empirical evidence suggests that the quality of language input (e.g., lexical diversity) may be more important than language exposure in understanding the language development of bilingual children (Demir-Vegter et al., 2014; Puglisi et al., 2017). Drawing on this evidence, a number of studies have focussed on the quality of language input as a predictor of language skills in early childhood (Demir-Vegter

et al., 2014; Baker et al., 2015; Huttenlocher, et al., 2010; Pan, et al., 2005; Rowe, 2008; Song et al., 2014). The studies reviewed in this chapter examined the characteristics of language relating to diversity and complexity of lexicon and/or morphology in parental speech.

In order to assess the quality of parental speech, studies have evaluated the child-directed speech by mothers through the observations and recordings of parent-child interactions lasting from 10 minutes to 2 hours during activities such as daily conversations, book-reading, and pretend-play. The recordings are then analysed for the characteristics of language diversity through measures of language quality such as questions, lexicon, morphology, sophistication, and complexity. The evidence from these studies has shown that lexical diversity in maternal speech is likely to be a robust predictor of language development in early childhood (Pan et al., 2005; Puglisi et al., 2017; Rowe, 2008). Furthermore, it is also likely to be a significant correlate of directive utterances and sentence complexity in parental speech (Rowe, 2008). It has been found that lexical diversity can be captured during 10-minute recordings of mother-child interactions during an engaging activity (e.g., Pan et al., 2005). In a study on the language quality of Turkish-speaking mothers in the Netherlands, for instance, researchers compared the different measures of lexical richness including diversity (voc-d ratio), density (number of content morphemes/number of function morphemes ratio), and sophistication (ratings of Turkish speakers) as predictors of children's Turkish and Dutch vocabulary (Demir-Vegter et al., 2014). The results were that the average of correlations between lexical richness and bilingual vocabulary outcomes of children was higher for lexical diversity in comparison to the other indicators of lexical richness, which suggests that lexical diversity in child-directed speech is a good measure of language quality at home. In this study, the language quality is measured through the lexical diversity in maternal speech assessed through structured observations of mother-child interactions.

2.7.3. Macrosystem: Family Background Characteristics

This section presents the variables assessed in this study pertaining to family background characteristics regarding the socioeconomic status and socio-cultural integration. The review of the literature draws mostly on the studies on Turkish families in Europe that have used similar measures.

2.7.3.1. Socioeconomic Status

Almost all the studies of Turkish population in Europe assessed the socio-economic status of families through self-reports of educational qualification, employment status, family income, and material resources (e.g., Scheele et al., 2010; Willard et al., 2015; Westeren et al., 2018). These have shown that maternal educational qualifications were a better predictor of home language and literacy environment of children in comparison to paternal qualifications. Paternal qualifications, however, predicted the home environment through different interactions. While maternal education was associated with both home language use and home literacy environment, paternal education was only related to the literacy environment at home, which contributed to children's Turkish vocabulary (Willard et al., 2015). Although, including the information from both fathers and mothers would improve a statistical model predicting children's language outcomes (e.g., Westeren et al., 2018), it can have drawbacks on the statistical power of the analysis due to increased number of predictors (see Section 4.2.1.). For these reasons, this study focuses on maternal qualifications to account for the language and literacy environment in the home environment.

2.7.3.2. Family Integration

The studies examining the effects of migration on children's home environment and/or language development have also used similar indicators of family integration. Most of the studies of Turkish families in Europe have studied the migration history of parents as an indicator of their family integration (Klein et al., 2014; Willard et al., 2015; Westeren et al., 2018). Some assessed the generational status of the family (e.g., Klein et al., 2014), whereas others used the age at migration as an indicator (e.g., Westeren et al., 2018). To account for the sociocultural integration of families, the language skills of parents have been assessed through self-reported measures (e.g., Becker, 2011; Budde-Spengler et al., 2018). The evidence, however, shows that the language skills of parents and family migration history do not necessarily relate to the same aspects of integration. For instance, evidence from a study of the Turkish population in Norway demonstrated that the Norwegian language skills of Turkish immigrants were not associated with the years they spent in the country (Blom & Henriksen, 2008). Drawing on similar findings in the literature, researchers have argued that linguistic integrations of immigrants does not necessarily go hand in hand with their social integrations (Citrin, Lerman, Murakami, & Pearson, 2007; Gatbonton & Trofimovich, 2008; Westeren et al., 2018). For instance, some minority societies retain their cultural codes over generations while also demonstrating high levels of linguistic integration (e.g., Mexican community in the USA, Citrin et al., 2007), whereas in other minority communities, immigrants may refrain from socialising with the native community, which interferes with their socio-cultural integration (e.g., Gatbonton & Trofimovich, 2008). These variations in the experiences of immigrant families suggest that researchers should identify possible contextual differences before deciding the indicators of family integration in the target country. Drawing on the evidence, this study examines parent's integration via their language skills and migration history.

2.8. Summary of the Literature Review

As briefly discussed in Section 2.3., understanding bilingual language acquisition requires the examination of various factors that may influence the learning experiences of children. To demonstrate the relevance of child, micro-, and macro-level factors in bilingual language acquisition, this chapter reviewed the literature on bilingual language skills of children from ethnic minority backgrounds.

First, Section 2.4. included a review of literature on child-level factors with a focus on cognitive skills and language attitudes. Evidence suggests that child characteristics are likely to play an important role in the learning experiences of children, as well as later progress in language. There is a strong body of evidence suggesting that cognitive skills are important in the early stages of language acquisition, however the direction of interaction between cognition and language is not straightforward. Research suggests that other factors might intervene in the interactions between cognition and language such as language attitudes. The evidence on language attitudes of children and how they interact with their language experiences, however, is limited in the literature, especially for young children. Accounts from adolescents and adults with minority backgrounds suggest that negative attitudes towards a heritage culture/language may be one of the reasons for language attrition. Contextual factors, experiences of discrimination, language competence, and belonging have been identified as some of the important influences in bilinguals' language attitudes, although there is little evidence from dual language learners.

Next, Section 2.5. included a review of literature on micro-level factors with a focus on home language and literacy environment. The language environment of bilingual children is well researched. Evidence from bilingual children including Turkish-speaking children in Europe suggests that relative language exposure at home is a constant predictor of children's language skills in early childhood, especially for the heritage language. Longitudinal studies suggest that the importance of second language exposure at home may weaken as children get older. Evidence on the role of home language and literacy activities in language development of bilingual children is substantial and comes from diverse sources. Converging results from these studies suggest that ethnic minority parents engage in activities likely to

promote language development less often in comparison to native parents. Parents' language preference in these activities is likely to play an important role in the predictions of children's language skills. Activities contributing to children's language skills vary depending on the language and the context, but it seems that literacy activities are more likely to make a positive contribution to children's second language skills, as parents tend to prefer the school language in literacy activities. The evidence on language diversity largely comes from studies of monolingual children. These studies suggest that the quality language input can have an effect on language acquisition beyond other factors. The evidence on bilingual samples is scarce, but findings suggest that the diversity in maternal language makes a positive contribution to language development of bilingual children.

Lastly, Section 2.6. provided a review of literature on macro-level factors with a focus on socio-economic status and socio-economic integration of families. There is a substantial literature on the relevance of socio-economic resources of families for their parenting. Evidence from the studies on bilingual children and their home environment clearly show that family socio-economic status can in part explain how parents interact with their children. Studies of bilingual children including Turkish-speaking samples suggest that families from disadvantaged background are more likely to speak in their heritage language and are less likely to engage in stimulating language and literacy activities. The literature on how migration affects families shows that low socio-economic background is linked with low socio-economic integration, leading to a cycle in which many families are likely to only use their heritage language at home. Some evidence, although relatively small, suggests that this experience weakens their parental self-efficacy and may reduce the likelihood that that they take an active role in their child's learning. The summary of the literature demonstrates some gaps in the research on language experiences of bilingual children. To date, no studies have examined the associations between child-, micro-, and macro-level factors in understanding the language outcomes of bilingual children. The literature on bilingual language development in relation to the home environment has focused on the contribution of different factors separately. Only a few of the studies reviewed here have investigated children's language skills in both

languages in relation to a wide range of home environment factors. Studies examining different components of the home environment is scarce, especially for the study of language quality. Similarly, very little evidence exists demonstrating how children's attitudes may shape their language preferences and how these experiences can contribute to their bilingual language development. Lastly, although the literature provides evidence for the language development of Turkish-speaking children in various countries in Europe, no studies, to this date, have demonstrated the effects of migration on the Turkish families and the language development of their children in the UK. In order to provide insight into this gap in the literature and bridge the current information, the current study investigates the role of micro-level factors in explaining the bilingual language skills of children with a focus on interacting child-level and macro-level factors. The next chapter introduces the study methodology.

3. METHODOLOGY

This chapter presents the methodology of the current study. The first section presents the research questions addressed in the thesis. Then, the following sections demonstrate the characteristics of the study regarding its methodological framework, design, and sampling including information on access to the Turkish community, recruitment of participants and the study sample. Next, sections describe the study measures administered to collect data on family characteristics, the home environment, and child functioning. Following that, sections introduce the research procedures, ethical considerations, and data protection. The chapter ends with a section on the analysis plan to address the research questions of the thesis.

3.1. Research Questions

As briefly introduced in Chapter 1, the overarching aim of the thesis is to understand the proximal and distal factors in the home environments of Turkish families that may contribute to bilingual language development of children and how these factors interact with each other. To achieve this aim, the thesis investigates the following research questions:

(1) To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children?

(2) To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?

(3) What is the role of language experiences and attitudes in children's bilingual language preferences?

3.2. Study Design

Drawing on the PPCT model of the Bio-ecological Theory of Human Development, this research deployed a mixed-method study design. Mixed-method research has been argued to be beneficial in providing a thorough understanding of the factors relevant to the outcome variable of a study (Denscombe, 2008). By using a 'pragmatist approach' in research, mixed-method studies can incorporate necessary means of data collection that are important for the topic of interest (Cohen, Manion, & Morrison, 2017). Pragmatist approach in mixed-method research allows researchers to be more 'practice driven' by bringing together different epistemological perspectives in the study of an issue (Denscombe, 2008). In so doing, this approach enables researchers to benefit from methodological pluralism that enriches the data and provides a more rigorous understanding of an issue while also surpassing the shortfalls of a singular approach in research (Cohen et al., 2017).

The first question investigates the interactions between different ecological systems that may be important for bilingual language development. To investigate the interactions between macro- and micro-systems of child development, the study draws on the information derived from structured interviews with parents. The quantitative method used in interviews allows for gathering large-scale data in a short time frame to identify the key factors that may influence the outcome variables (Cohen et al., 2017). Thereby, they can capture significant aspects of the issue that are relevant to the wider population. Questionnaires also allow for gathering information on the past experiences of individuals surpassing the limitations of cross-sectional studies. In this study, the information derived from the questionnaires was used to demonstrate the overall patterns in the home environments of Turkish families. To depict these patterns and identify the family background predictors of children's home language and literacy environment, a quantitative analysis was used as the analytical method.

The second research question investigates the potential role of home environment in bilingual language development. By using structured parent interviews, the study captured the frequency of

activities and the relative use of Turkish and English at home. To further understand the variations in mother-child interactions at home, the information derived from the parent interviews was combined with the qualitative data from structured observations and recordings of mother-child interactions. This methodological decision was made to gather information on the characteristics of parent-child interactions at home that cannot be captured via a questionnaire. The mixed-method data were quantified and standardized to make quantitative comparisons of language skills of children drawing on their non-verbal abilities, family characteristics and home environment.

Lastly, the third research question investigates the possibility of interactions between language attitudes and preferences of children through qualitative research methods. To capture children's language attitudes, in-depth interviews with children were carried out. As discussed in Chapter 2, the qualitative interview methods provide a rich account of one's experiences in addressing complex issues such as language attitudes. In-depth interviews can facilitate children to express themselves that allows researchers to capture the complexity of their experiences with growing up bilingual (Crump, 2014). To understand the essence of children's language attitudes and also the idiosyncrasies across their experiences, children were interviewed using a semi-structured interview guide, and then the interviews were analysed through a thematic analysis.

The research was incorporated into a collaborative project, titled 'Inclusive Education and Social Support to Tackle Inequalities in Society' (ISOTIS), which investigated the resources and the experiences of culturally and linguistically diverse families in raising children in Europe with the involvement of 11 countries and 17 institutions (see isotis.org). The project was directed by three co-investigators[6] and received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727069 and provided a DPhil studentship for the author to conduct the research presented in this thesis. The ISOTIS project in the UK, with research conducted in England, was

[6] Prof. Edward Melhuish (University of Oxford); Prof. Paul Leseman (Utrecht University); and Prof. Thomas Moser (University of South-Eastern Norway)

coordinated by five people based in the University of Oxford, one of which was the author of this thesis. The author designed the parts of the research conducted by the University of Oxford for the ISOTIS project presented in this thesis.

The research presented in this thesis was carried out in three phases. In the first phase, 168 first-generation Turkish-parents with 3- to 6-year-old children were interviewed by a group of researchers in Greater London, Greater Manchester, and Merseyside using a questionnaire. For this phase of the study, the author collaborated with a group of researchers from the wider ISOTIS team to develop, revise, and translate the questionnaire items that are used in this study. Once the questionnaire items were finalised, the author recruited a group of fieldwork researchers and trained them to conduct the interviews with a planned number of 300 families. As part of this fieldwork, the author conducted 107 interviews with parents living in Greater London, whereas the rest of the interviews (N = 61) were conducted by the fieldwork researchers led by the author. This phase of the study started in August 2017 and was completed in December 2019. Throughout this phase, the author monitored the dataset and run analyses to detect the missing values to supervise the fieldwork researchers and to inform the wider ISOTIS team. For the second phase, the researcher devised a sub-study for the ISOTIS project to assess the bilingual language skills of children and observe the interactions between children and their mothers (N = 67), who participated in the first phase of the study. The fieldwork for this phase started in May 2018 and was completed in December 2019 solely by the author. For the transcriptions of the mother-child interactions, the author received support from three volunteering undergraduate psychology students based in Bogazici University, where the author had an educational affiliation. The volunteers provided help with the audio transcripts and the language rating of the mother-child interactions. This collaboration on data preparation started in June 2020 and completed in September 2020. For the third phase of the study, the researcher devised another sub-study for the ISOTIS project to interview a group of 5- to 6-year-old children (N =27), who participated in the second phase of the study. This phase of the study was developed by the author to understand children's language attitudes and preferences in line with the research premises of

ISOTIS. The fieldwork for this phase started in September 2018 and was completed in December 2019 solely by the author. The research methods, procedures, and all the data analyses devised by the author were supervised by Prof. Edward Melhuish, who was also one of the co-investigators of the ISOTIS project. The research design and phases in relation to research questions answered by the thesis are depicted in Figure 3.1. below.

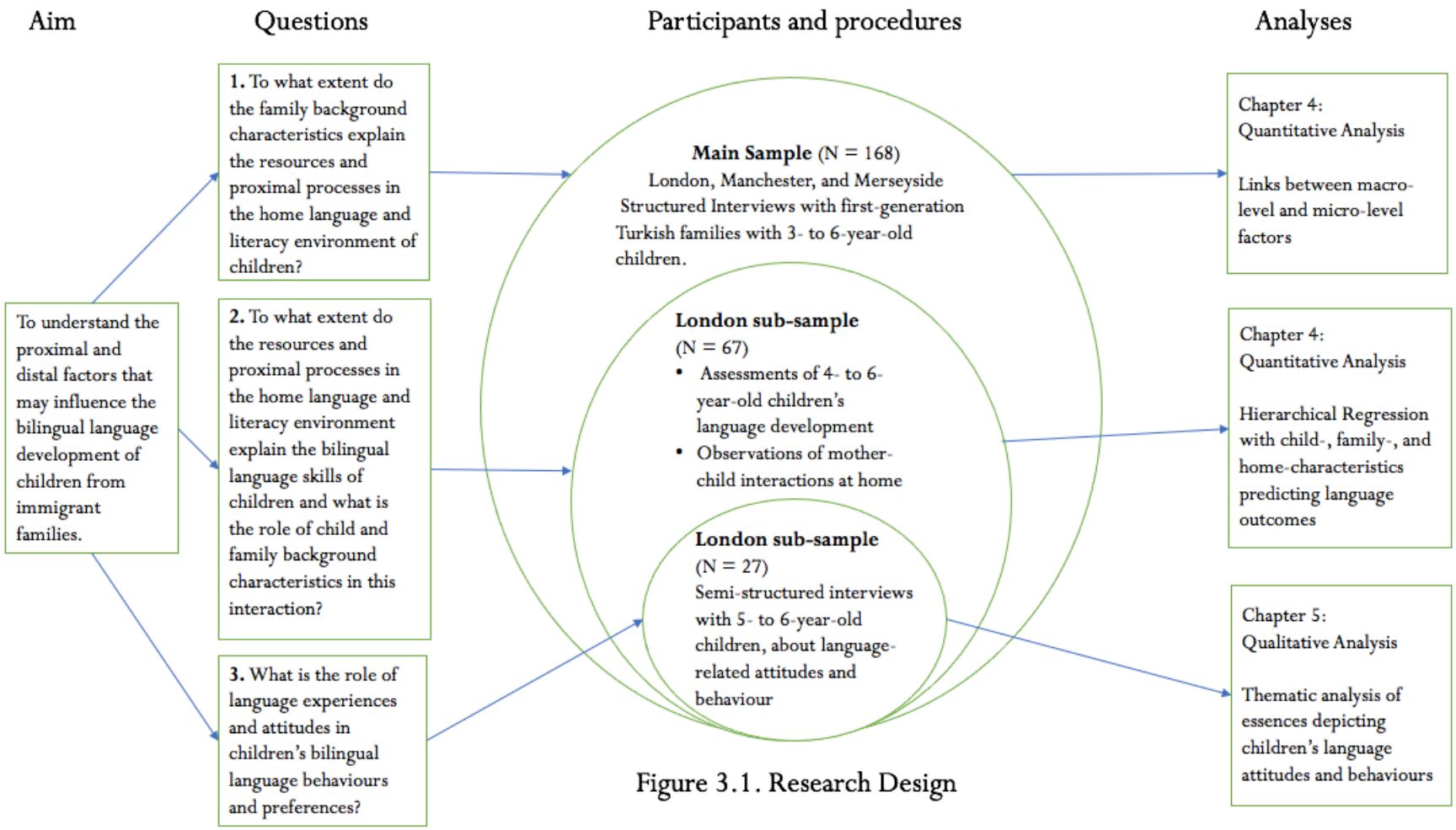


Figure 3.1. Research Design

3.3. Access to the Community, Sampling, and Participants

This section introduces the demographic characteristics of the Turkish community in the UK with particular reference to England. The next section presents how the researcher gained access to the community for the recruitment of study participants. The final section outlines the sampling criteria followed separately for each phase of the study.

3.3.1. Turkish-speaking Population in the United Kingdom

The Turkish-speaking Community in the UK comes from three ethnic backgrounds. Among these, the majority are of Turkish origin, with 101,633 residents in England and Wales according to the 2011 Census. The Kurdish population follows with 48,935 residents. Finally, the smallest group is the Turkish Cypriots with 19,057 people living in England and Wales. The majority of the Turkish-speaking population lives in London (Sirkeci et al., 2016), mainly in the North London boroughs of Enfield, Haringey and Hackney. A study of the socio-economic profiles of these groups in England and Wales has shown that Kurdish people had the most impoverished economic conditions and the fewest years of education (Enneli et al., 2005). The researchers linked this finding to their status as the newest of these migrant groups, and their settling in the country with refugee status. Meanwhile the Turkish Cypriots, as the earliest arrivals, were found to be the most advantaged community, both in their educational background and financial resources. See Table 3.1. for the statistics of the Turkish, Turkish-Cypriot and Kurdish population in England and Wales.

Table 3.1. Turkish, Turkish-Cypriot and Kurdish population in Britain

	England and Wales	**London**	**NorthWest England**
General Population	56,075,912	8,173,941	7,052,177
Turkish	101,633	71,244	3,350
Turkish-Cypriot	19,057	16,598	92
Kurdish	48,935	20,962	4,808
Source: Census 2011: **https://www.nomisweb.co.uk/census/2011**			

3.3.2. Access to the Turkish-speaking Community

In order to access a representative sample of the Turkish-speaking community (for the remaining parts of the thesis, the manuscript will refer to the community as 'Turkish' for practical reasons), the first phase of the study took place in Greater London, Greater Manchester, and Merseyside (the latter two in North West England). These cities capture the socio-economic and demographic diversities among the Turkish community in England and Wales (Sirkeci et al., 2016). London is in some respects different to the rest of the country. It is the most populous city, with a high proportion of young people, more ethnic diversity, higher levels of education, less unemployment, and higher incomes than in any other region. It also has the highest costs of living, and there is wide variation in the socio-economic circumstances of families. Approximately 70% of the Turkish population (71,244) residing in the United Kingdom as a whole live in London, particularly the North and North-East of London according to Census 2011.

To build networks within the Turkish community, the researcher recruited six Turkish-speaking researchers in Greater London (N = 2), Greater Manchester (N = 2), and Merseyside (N = 1), who were part of the Turkish community in the areas of fieldwork. The majority were mothers themselves with strong connections to the Turkish community in the cities where they lived. Only one of the researchers and the author of this thesis were new to the community. To overcome this and build a sense of trust within the community, the researchers spent two months in the field making connections, attending community events, and having meetings with Turkish families and community leaders. The fact that the researchers could communicate in Turkish greatly aided the acceptance of the researchers by the community. Initial access to the Turkish population took place with the help of community centres and groups, who agreed to support the research project during the initial phase of getting access to the field. The centres represented the diverse Turkish-speaking community in London and the North West and included non-profit institutions and organisations such as mosques, cemevis (religious institutions for

Alawi sect), women's centres, weekend schools, Facebook groups for mothers and Turkish immigrants. The researchers contacted up to thirty institutions and the majority of these centres responded positively ~90%. Some of the community groups did not accept to participate in the study to protect the privacy of the individuals they cater for (e.g., domestic abuse victims).

After establishing connections within the community, the researchers used purposive and snowball sampling strategies. First, they built their network with different community centres representative of the different ethnic, cultural and political characteristics of the Turkish population. Then, they continued to grow their contacts using the connections of the existing participants and community centres. Participants were recruited through a wide range of resources including community centres, supplementary schools, community events, and online networks for Turkish-speaking people.

3.3.3. Sampling Criteria and Recruitment

The main eligibility criterion for the first phase of the study was being a parent of a child between the ages of 3- to 6-year-old, who was born in the United Kingdom to a first-generation Turkish family or have been living in the country at least for two years. This criterion was set to ensure that the family had experiences with the educational and social support system in the country. Either one or both parents of the child were expected to be born in Turkey and migrated to the United Kingdom before their child's birth. The cultural or religious background of the parent's partner did not affect the eligibility of the parent and they could be from any ethnic minority background in Turkey such as Kurdish, Zaza, Bulgarian or identifying as Allawi or Sunni. Lastly, the parents were required to be the primary caregiver of the child and responsible for the childcare at home (~ 90% mothers) to be eligible to participate in the interview. Parents who were eligible for the first phase of the study, received an information letter alongside a consent form (Appendix 1). After they agreed to participate in the interview, they were contacted to set up a date for their interview with the researcher.

For the second phase of the study, the researcher recruited a sub-group of parents, who participated in the interviews and consented to be contacted again for a language study. The parents who agreed to be contacted again by the researcher received an invitation letter (see Appendix 2). Those, who had shown interest in the research, received a follow-up call for further information and eligibility check (see Appendix 3). To ensure the eligibility of the child, the researcher first verified that they were between the ages of 4 to 6 with no history of language related or developmental problems. Then, the researcher confirmed that the family used Turkish as one of the main spoken languages at home. If the child was eligible, then the researcher arranged a visit either at home or at a community centre. The information given on the phone was also provided in paper in the first visit alongside a written consent form (Appendix 4).

For the third phase of the study, the researcher recruited a sub-group of children, from those who participated in the second phase of the study. During the first home visit children who demonstrated a good proficiency in both Turkish and English and actively used it in the home environment were recruited for the third phase of the study. The researcher described the study to the parents and asked for their written consent for their children to be interviewed on their language attitudes during the next home visit (see Appendix 5). The researcher also asked for the child's verbal assent before and during the interview to safeguard their decision to be part of the study.

For the main sample of the study, 168 first-generation Turkish parents living in Greater London (N =117) and Northwest England (N = 51) were recruited. From the main sample of the study, due to logistic constraints, only those, who live in London were recruited for the second (N = 67) and the third phases (N = 27) of the study. The sampling weight for the parents living in Greater London was 868.66, whereas it was 65.68 for the parents from the Northwest. These figures suggested that the parents from the Northwest were overrepresented in the main sample, which could be a result of the eligibility criterion requiring parents to be born in Turkey. As research suggests, the Turkish population has an older migration history in London in comparison with other areas in Britain (Sirkeci et al., 2016)

3.4. Participants

This section provides the demographic characteristics of the study sample. The statistics on the demographic characteristics of the families were collected in the first phase of the study. The sample characteristics were presented separately for each study phase.

3.4.1. Phase 1

To be eligible for the first phase of the study the parents were required to be the primary caregiver of the child. A majority of the parents who participated in the first phase of the study (N = 143, 85%), was mothers; only a small minority were fathers (N =25, 15%). The age of parents ranged from 24 to 51 (M= 36.95, SD= 5.81). A small minority of the parents were in the 24-29 age-range (N= 20, 12%), whereas the majority of parents were in the 30-39 age-range (N = 94, 56%), while almost a third were in the 40-50 age-range (N = 54, 32%). A majority of families were parents living together and including the biological father of their child (N= 145, 86%), while only a small percentage of respondents were divorced or single (N = 23, 14%). A small proportion of respondents were married to a non-Turkish person (N = 27, 19%). See Table 3.2. for the demographic characteristics of the parents in study phase 1.

Table 3.2. Demographic characteristics of the parents in study phase 1

Age Group	**N (%)**
24 – 29	20 (12%)
30 – 39	94 (56%)
40 – 50	54 (32%)
Mean (SD)	36.95 (5.81)
Marital Status	**N (%)**
Married	145 (86%)
Single	23 (14%)
Partner's Nationality	**N (%)**
Married to a Turkish person	118 (81%)
Married to a non-Turkish person	27 (19%)

N = 168.

3.4.2. Phase 2

All of the parents (N = 67) who participated in the second phase of the study were mothers. Their age ranged from 24 to 50 (M= 36.65, SD= 5.93). A small minority were in the 24-29 age-range (N= 9, 13%), with the largest number in the 30-39 years range (N = 37, 56%), and more than a quarter of the parents in the 40-49 age-range (N = 21, 31%). The majority were married to the biological father of the child (N= 66, 98%). Only one of the mothers was divorced. Four were married to a non-Turkish person (7%). See Table 3.3. for the demographic characteristics of the parents in study phase 2.

Table 3.3. Demographic characteristics of the parents in study phase 2

Age Group	**N (%)**
24 – 29	9 (13%)
30 – 39	37 (56%)
40 – 50	21 (31%)
Mean (SD)	36.65 (5.93)
Marital Status	**N (%)**
Married	66 (98%)
Single	1 (2%)
Partner's Nationality	**N (%)**
Married to a Turkish person	63 (93%)
Married to a non-Turkish person	4 (7%)

N = 67.

Among the children who participated in the second phase of the study, there were 37 girls and 30 boys. Their ages ranged from 48 months (4 years) to 74 months (6:2 years) (M= 58.37, SD= 7.43). The majority were born in England (N = 59, 88%) and the rest of the children were born in Turkey and migrated to England with their family. Children's length of residence in the country ranged from 2 to 5 years (M= 2.67, SD= 1.00).

3.4.3. Phase 3

Among the children, who participated in the third phase of the study, there were 17 girls and 10 boys. Their ages ranged from 50 months (4:2 years) to 74 months (6:2 years) (M= 62.41, SD= 6.12), and all were born in England. The children came from diverse socioeconomic and demographic backgrounds. For example, one came from an academic family, where both of the parents had graduate degrees and the home language was dominantly English. The mother was teaching children Turkish as an additional language and the family spent holidays in Turkey for children to maintain the language and culture. In contrast, another child came from a working-class family, where parents did not have any school education. Turkish was the dominant language at home although the parents had lived in the country for longer than 30 years. The in-depth information on the children is described in the findings chapter drawing on the questionnaire data, fieldwork notes, and home observations.

3.5. Research Instruments

This section presents the research instruments used in the study with reference to the robustness of the measures. Seven research instruments were used in data collection. For the first phase of the study, a questionnaire was developed in order to obtain information on the family characteristics and the home environment of children. For the second phase of the study, a structured observation method was

developed to obtain information on the mother-child interactions; standardised Turkish and English receptive vocabulary scales were selected to assess children's vocabulary knowledge; and a Turkish sentence repetition test was developed to evaluate children's morphosyntactic language skills in Turkish. For the third phase of the study, a semi-structured interview guide was developed to obtain information on children's language attitudes and behaviours.

3.5.1. Parent Questionnaire

The information on family background characteristics and the resources in home environment was collected through a questionnaire, which was developed by a group of ISOTIS researchers from diverse academic backgrounds (e.g., education, psychology, sociology, economics). The author collaborated with the researchers in preparing the questionnaire items and informed the wider ISOTIS team[7] on the cultural characteristics of the Turkish-speaking community in Europe drawing on a piloting study conducted by the fieldwork researchers. The questions were chosen drawing on the questionnaires that have been successfully used in previous studies that assess constructs such as family socioeconomic background, migration history, and home learning environment (Broekhuizen et al, 2018). Drawing on the bioecological model, the questionnaire included questions on the factors related to the micro- (e.g., child characteristics, family structure, family processes, family attitudes, neighbourhood, and formal- and informal-education) and meso- (e.g., family social network, family education, use of social services, family interactions within the neighbourhood and the community) and the macro-system (e.g., family socioeconomic background, migration history, cultural and religious background) of the families. The questions were translated into Turkish with the collaboration of three Turkish-speaking doctoral researchers, who were part of the wider ISOTIS team[8], including the author of the thesis. For the purposes

[7] Led by Dr Martine Broekhuizen
[8] Ayça Alaylı at Utrecht University and Hande Erdem-Möbius at Freie Universität Berlin

of this study, some sections of the questionnaire were used. See Table 3.4. for the questionnaire sections used in this study. See Appendix 6 for the parts of the questionnaire used in this study.

Table 3.4. Questionnaire components

Components	Sections in the questionnaire
Parent and Child Demographic Characteristics	• Age and gender • Family constellation • Age of arrival in the country
Family Background Characteristics	• Education • Economic capital • Material deprivation • Migration background • Language background and competence
Home Environment	• Activities and languages

2.1.1.1. Parent and Child Demographic Characteristics

The demographic information on child's date of birth, gender, and the age arrived in Britain was collected under the section on the target child. The information on the demographic background of the parents was collected through questions on parent's age, gender, and the country of birth. Information on family constellation was collected through questions on parent's marital status and partner's nationality.

2.1.1.2. Family Background Characteristics

To obtain information on the family background characteristics, parents received questions about their education level, material resources, family income, migration history, and language skills. To assess the education level, parents received questions about their years of education, age and grade of leaving school, vocational training/diploma, and university attendance/diploma and the data were recorded nominally. To assess material resources of families, parents received 13 questions on the material assets and resources

of the family drawing on the material resource indicators developed by the European Union (EU). The indicators assessed the availability of family resources for paid activities (e.g., going for a dinner once a month) or expenditures (e.g., going for a dinner once a month; replacing broken furniture), and ownership of material assets (e.g., owning a car etc.), coded on a dichotomous level (1 = can afford, 0 = cannot afford). The 13-item scale was developed by Giuo et al., (2016) after each item was assessed for (1) suitability for the living standards of the EU member states that are considered as customary, (2) validity with other economic factors such as family income, (3) reliability with regards to internal consistency, and (4) additivity by looking at how much difference each item adds up to the level of the material resources in a household. See Table 3.5. for the questions on material resources.

Table 3.5. Questionnaire items for material resources

Questions…
Most weeks, do you spend a small amount of money on yourself, for your own pleasure?
Do you regularly participate in a leisure activity that costs money?
Do you get together with friends/family for a drink/meal at least once a month?
Can you replace worn-out clothes by some new ones?
Do you have two pairs of shoes in a good condition that are suitable for daily activities?
Could you tell me if your household replaces furniture when worn out or damaged?
Does your household have a car/van for private use?
Do you have an Internet connection for personal use when needed?
Can your household afford a meal with meat or fish (or a vegetarian equivalent) at least every second day?
Can your household afford an unexpected required expense (£800) and pay with your own resources?
Can your entire household afford to go for a week's annual holiday, away from home, including stays in a second dwelling or with friends/relatives?
Can your household afford to keep your home adequately warm?
In the past twelve months, has the household been unable to pay on time due to financial difficulties?

The information on family income was captured using a monthly income scale. Parents were asked to indicate their family's monthly income after tax and compulsory deductions on a range with 10 options ranging from "< £900" to "> £4880 or more". To assess their migration history parents received questions

on their country of birth and year of arrival in Britain. Lastly, to assess parents' language use and competence, participants received questions on their language use in their daily life and in conversation with their partners. Then, parents were asked to indicate their language skills in English via three questions on their ease with having conversations, reading newspapers, and listening to the news on a 1 to 6 interval scale ranging from "never have problems" to "I cannot read/speak".

2.1.1.3. Home Language and Literacy Environment

The information on language and literacy activities and the languages used at home were collected through questions on the home learning environment of families. The questions were prepared for the purposes of the study with reference to some previously used questionnaires measuring the home learning environment of children (Melhuish et al., 2001; 2008; Scheele, 2010). The questions on the activities assessed the frequency of three types of language and literacy activities: conversation activities, literacy activities, and storytelling activities. For each type, participants received three questions and reported their frequency of participating in these activities on a 1 to 6 interval scale from "almost never" to "every day". At the end of the questions on conversation and literacy activities, parents received a question on their language use. Parents reported their language use on 1 to 5 scale from "mainly English" to "mainly Turkish or the other language". See Table 3.6. for the questions and answer scales below.

Table 3.6. Questions on home language and literacy environment

Question	Activity	Answer scale
How often parents talk to their child about their…	Daily experiences Past experiences General interest	1 = Almost never 2 = Less often 3 = Once or twice per month 4 = Once or twice per week 5 = Several times a week 6 = Every day
How often parents read their child…	Picture books Storybooks General interest books	1 = Almost never 2 = Less often 3 = Once or twice per month 4 = Once or twice per week 5 = Several times a week 6 = Every day
How often parents tell their child…	Made-up stories Cultural stories Religious or moral stories	1 = Almost never 2 = Less often 3 = Once or twice per month 4 = Once or twice per week 5 = Several times a week 6 = Every day
Which language(s) do you use when…	Conversation activities Literacy activities	1 = Only English 2 = Mostly English 3 = Equal Use 4 = Mostly Turkish 5 = Only Turkish

3.5.2. Language Quality in Maternal Speech

Given the importance of the quality of language input in child-directed speech demonstrated in Chapter 2, the researcher developed a structured observation method to assess the characteristics of maternal language in mother-child interactions. This method aimed to gather information on the quality of language use at home through the observations and recordings of mother-child interactions in a naturalistic setting. The majority of studies investigating the language use in mother-child interactions reviewed in Chapter 2, however, draws on data collection methods that usually alter the daily language use (e.g., book-reading, see Demir-Vegter et al., 2014). Although there is evidence for the effective use of ethnographic observations for mother-child interactions during their typical home environment, these observations have been carried out during long home visits (Rowe, 2012). Ethnographic observations of the naturally occurring interactions between mothers and children require more time and effort from participants as

well as researchers. In more limited experimental contexts, however, it may become difficult to initiate mother-child interactions (Goemans, van Geel, Vedder, & Bradley, 2016). Similarly, in experimental settings, the use of prompts that include language or literacy input may alter the maternal speech in mother-child interactions (e.g., Demir-Vegter et al., 2014). Drawing on this evidence, the researcher developed a neutral experimental setting to facilitate the interactions between mothers and children using an activity that would be available to all the families regardless of their cultural or socioeconomic background. For this purpose, a silent cartoon, the Ugly Duckling (Walt Disney, 1939: 9 minutes), based on a story that is widely known in the Turkish culture, was chosen after a careful consideration of other resources freely available online. In comparison to the shortlisted videos, this video was neither too long (e.g., 20 minutes) nor too short (e.g., 3 minutes); the storyline was easy and based on a well-known story; and the characters were not a product of a particular race or culture. After the selection of the video, a set of prompt cards was prepared composed of the scenes from the cartoon (see Appendix 7). These scenes depicted the salient themes in the storyline (e.g., ugly duckling being ostracised). The prompt cards were printed on 3x4" gloss cards and attached together in a sequence to be given to dyads after watching the video. For the observations, a structured checklist was developed by the author including the scenes for approximately every 9 seconds of the first half of the video (see Appendix 8). The checklist was developed to collect information on the characteristics of mother-child interactions including turn taking (e.g., how often the interaction was initiated by the mother/child), interactions patterns (e.g., use of pointing by the mother/child), and other fieldwork notes (e.g., language use) for the first half of the cartoon. Alongside the checklist, a high-quality voice-recorder was used to record the vocal interactions to later assess the language quality in child-directed speech.

3.5.3. Turkish Vocabulary Test

To assess children's Turkish vocabulary, a receptive vocabulary test, Türkçe Ifade Edici ve Alıcı Dil Testi (TIFALDI) (Kazak Berument & Guven, 2013) was used. This test was the only Turkish vocabulary test

that was developed for Turkish-speaking children and standardised with the participation of over 3000 children from 61 cities in Turkey. Previous studies on Turkish-speaking children either used the Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007 as cited in Willard et al., 2015; Westeren et al., 2018) or other vocabulary tests that were adapted to Turkish (e.g., Biedinger et al., 2015). This can be problematic for the language assessment of children, as a robust vocabulary test requires the assessment of age and culture appropriate vocabulary items (see Kazak Berument & Guven, 2013). For these reasons, the researcher opted for the standardized Turkish vocabulary test obtained from the Turkish Psychology Association[9] following an online user training. The test-retest reliability of this test varied from .78 to .92, the split-half and internal reliability varied from .95 to .96 for four- to six-year-old children in Turkey (see Kazak Berument & Guven, 2013). The test validity is high based on correlations with other relevant test-scores (e.g., the Wechsler Intelligence Scale for Children (WISC) by Wechsler, 1992). See Figure 3.2. for an example item.

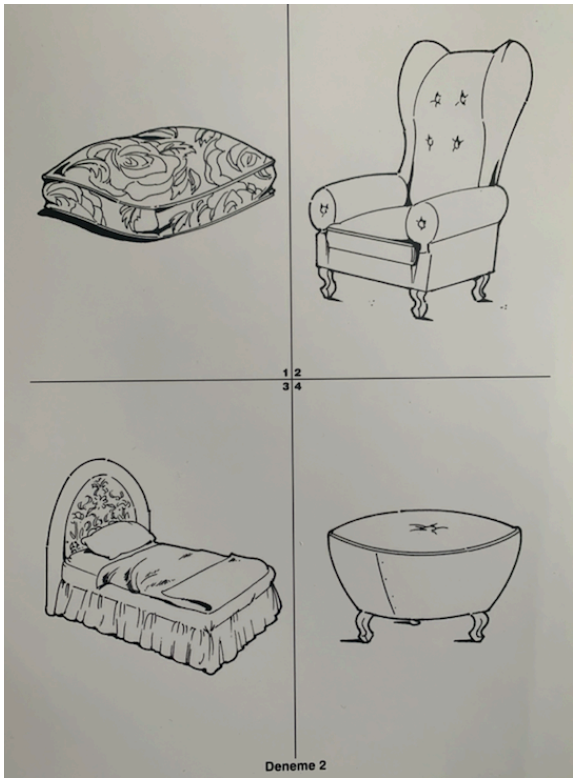


Figure 3.2. Example item from TIFALDI[10]

[9] https://www.psikolog.org.tr/tr/haberler/www/tifaldi-turkce-ifade-edici-ve-alici-dil-testix2301
[10] Prepared by Kazak Berument & Guven (2013)

3.5.4. Turkish Sentence Repetition Test

A sentence repetition assessment for Turkish was developed by the researcher in order to assess the morpho-syntactic skills of children. To create sentences, first, a list of words was selected from the corpus of eight-months to thirty-six-months old Turkish-speaking children (Aksu-Koç, Küntay, Acarlar, Maviş, Sofu, Topbas, & Turan, 2009). Using these words twenty-four sentences were formulated for six sentence length categories. In each category, the number of words and syllables was kept constant, however they differed in syntactic and morphological complexity. Each set had four sentences with two simple and two complex syntactic structures. In each set, the sentences, which were from the same syntactic structure, were manipulated for the number of inflections they had. All of the sentences were formulated using the simple past tense, as the first form of tense articulated in Turkish by children (Ketrez & Aksu-Koc, 2009; Aksu-Koc, 2010). The sentences were grouped in two sections with a structured distribution of the sentences to maintain the difficulty level and a test protocol prepared (See Appendix 9). The correlations between the sections of the test suggested that the test items demonstrated high level of split-half reliability ($\alpha = .90$). The sentence repetition scores also demonstrated a high correlation with the Turkish vocabulary ($r = .77$), suggesting that the test had a good construct validity. See Appendix 10 for the morphological and lexical properties of the sentences used in the assessment.

3.5.5. English Vocabulary Test

To assess children's English vocabulary knowledge, the British Picture Vocabulary Scale-III (Dunn, Dunn, Whetton & Burley, 1997) was selected. The test was standardized in England, Wales, Scotland, and Northern Ireland with a sample of 3278 children in 8 age bands ranging from 3 to 16 years old. The sample also included a sub-sample of children identified as English as an additional language speaker. The test demonstrated high test re-test reliability ($\alpha = .91$) and construct validity established by a high correlation

with WISC (r =.76). In this study, the test also demonstrated a high correlation with children's non-verbal ability scores (r =.59). The test arrived with a manual, which provided an age-appropriate onset for the test assessment, although this was not used in the study assessment as the children in the piloting phase did not know some of the items appropriate for their age band. See Figure 3.3. for an example item.



Figure 3.3. Example item from the BPVS-III[11]

3.5.6. Non-verbal Abilities Test

For assessing children's cognitive skills, a non-verbal reasoning assessment, the Raven's Progressive Matrices (RPM) III (Raven, Court, & Ravne, 1995), was used. The validity of RPM has been shown to be high with scores for correlations between relevant assessments (WAIS verbal and performance) ranging from .65 to .80. Similarly, the reliability coefficients assessed with different methods (e.g., split half) has ranged from .93 to .96. (Burke, 1972). The assessment has been shown to be robust to assess non-verbal abilities for different cultural, ethnic and socioeconomic groups worldwide (Raven, 2000). The test includes three sets (A, AB, and B) of questions requiring the child to find the missing piece in a pattern or

[11] Prepared by Dunn et al. (1997)

a set of matrices (see Figure 3.4.). Each set was carried out with breaks in between and the results scored separately to run a reliability analysis. The Cronbach's coefficient was adequate (α= .76), and the test passed the test re-test reliability. The test arrived with a manual including guidelines for conducting the test with children. The researcher practiced this manual during the piloting phase with Turkish children. See Figure 3.4. for examples.

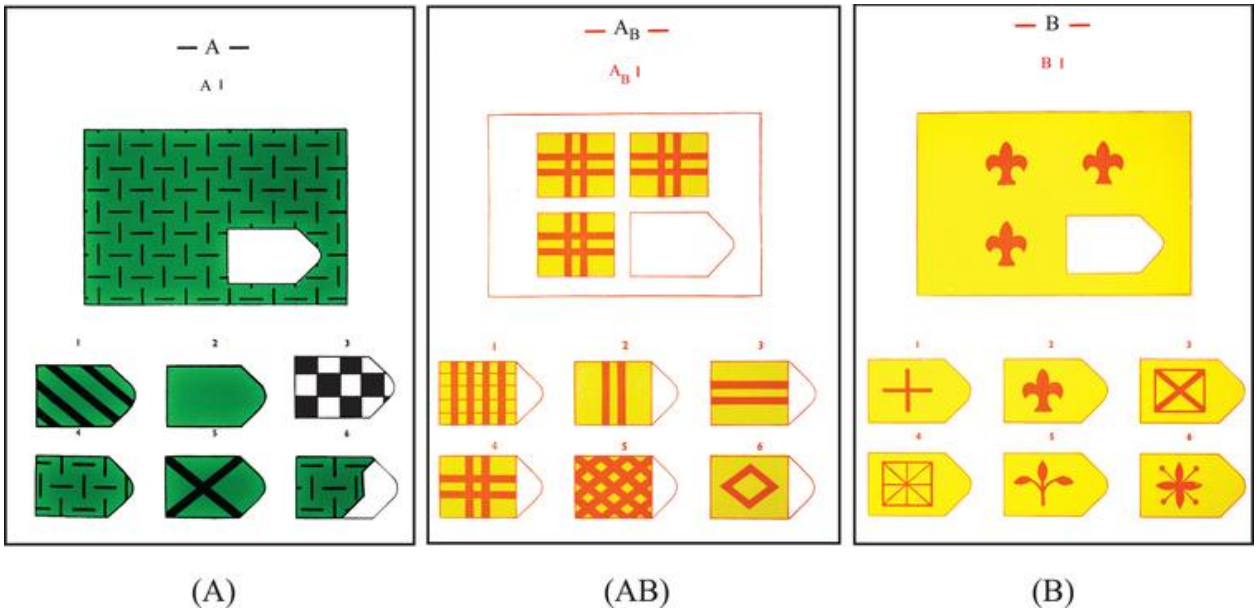


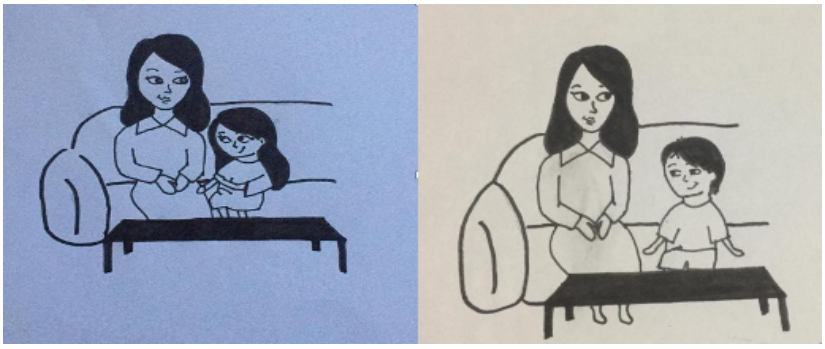
Figure 3.4. Example items from Raven's sets A, AB, and B[12]

3.5.7. Child Interviews

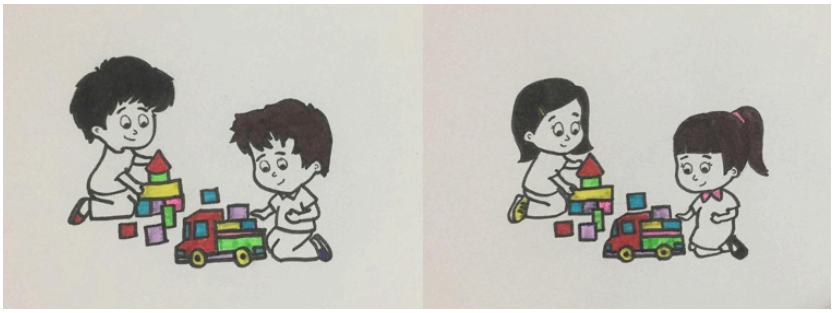
In order to capture children's language attitudes drawing on their social interactions, children were interviewed on their experiences speaking in Turkish and English with their mothers and friends. To facilitate the interview, an experimental pictorial method was developed depicting children in interaction with their mothers and friends and an emotional expression card accompanied the questions to visualise children's answers (see Figure 3.5.). The protagonist child in the visual materials was drawn in black and white with no references to the physical characteristics and the drawings were

[12] Prepared by Raven et al. (1995)

made for boys and girls separately to maximize the similarity between the protagonist in the picture and the participating child. See Figure 3.5. for the visual materials used in the interviews.



Visual 1: Mother-child interactions



Visual 2: Peer interactions



Visual 3: Emotional expression card

Figure 3.5. Visual materials for the interviews[13]

Evidence suggests that preschool-aged children are as capable of answering open-ended questions as older children although their answers are usually shorter and less detailed (Hershkowitz, Lamb, Orbach, Katz, & Horowitz, 2012). In fact, the research on forensic interviews shows that children are more likely to give inaccurate information when they receive close-ended questions (Lamb, Orbach, Hershkowitz, Horowitz, & Abbott, 2007). For these reasons, the interviews were based on a semi-structured design with four open-ended questions, which were supported with additional

[13] Prepared by Hazar Kolancali for the purposes of this study

questions depending on children's answers. See Table 3.7. for the guideline for interview questions and visuals.

Table 3.7. Guideline for the interview questions and visuals

Question	Visual	Supporting Question
Which language do you speak with your mum?	Visual 1	Why do you (not) speak Turkish/English with your mum?
Can you tell me how you feel when you speak in Turkish/English with your mum?	Visual 3	Why do you feel …when you speak Turkish/English?
Which language do you speak with your friends?	Visual 2	Why do you (not) speak Turkish/English with your friends?
Can you tell me how you feel when you speak in Turkish/English with your friends?	Visual 3	Why do you feel …when you speak Turkish/English?

3.6. General Procedures

This section introduces the procedures of the study. The section, first, introduces the measures taken to finalise the research instruments in the piloting phase of the study. Then, it demonstrates the general procedures of the study for each phase including information on the parent questionnaires, home observations, child assessments and interviews. Lastly, the section describes the strategies used in creating an entertaining research environment for children to facilitate the assessments and interviews during the home visits.

3.6.1. Piloting Phase

The first piloting phase of the study took place before the fieldwork started for the parent interviews. Prior to the fieldwork, the researchers recruited for data collection first received a data collection training in Oxford. During the training day and afterwards, the researchers administered two to three mock

interviews with Turkish-speaking individuals. Before the start of the fieldwork, the author of the thesis held two Skype meetings to provide guidelines for the questions or concerns arose during the mock interviews. After the start of the fieldwork, the author held monthly meetings with the researchers to discuss any difficulties that they experienced during the recruitment process and/or when administering the survey. Drawing on the difficulties addressed by the researchers, the author informed the questionnaire committee of the ISOTIS project and some question formats were revised accordingly.

For the piloting of the second phase, the researcher recruited 10 3- to 6-year-old Turkish-speaking children in Oxfordshire and Reading due to proximity. Children were administered the tests including Turkish and English vocabulary tests, Turkish sentence repetition, Raven's Progressive Matrices used in the main study, and an English sentence repetition test that was not used in the main study. The researcher decided to increase the age limit of the study to 4 as the younger children struggled with their attention and demonstrated behavioural problems during the assessments. During the first few cases of the pilot assessments, the researcher noted that children needed longer breaks between the assessment materials. For this reason, the assessments were designed to be carried out in two home visits. Similarly, the researcher observed that children struggled with the English sentence repetition test leading to a floor effect in the scores. For this reason, this test was dropped from the final study battery. Lastly, the researcher noticed that children did not know all the items of their age band in the vocabulary tests, which led to the decision of starting the test from the baseline.

The piloting of the third phase was conducted with same children in Oxfordshire and Reading. The preliminary findings from the mock interviews demonstrated that children, who were not fluent in spoken Turkish and English often struggled to answer the questions of the interview. For these reasons, the interviews were limited to children, who demonstrated a close proficiency level in spoken Turkish

and English. The materials used for the main study demonstrated promising responsiveness from children, thus, they were kept in their original form.

3.6.2. Phase 1

After the recruitment, interview dates and locations were set according to the preferences of the parents. In order to increase the credibility of the researchers and overcome non-response bias, the data collection was carried out face-to-face, although a small minority of parents preferred to carry out the interview over the phone (N =5, 3%). The main reason for the phone call interviews was to accommodate to the parents, who had busy schedules and couldn't make time during the day to meet the researchers. The rest of the interviews took place at homes (N = 79, 47%) or in community centres (N = 84, 50%), depending on the preference of the participants. The interviews were conducted in the participants' language of choice and the majority of them preferred Turkish (95%).

The interviews were delivered using an online survey software called LimeSurvey and administered through a weblink (see Figure 3.6.). Through a multilingual interface, researchers could switch between languages during the interview when this suited the needs of the parents. In addition, some questions were programmed to be answered by all parents, and some questions only for specific age of child or target ethnic groups. The programming of the online survey in LimeSurvey automatically allowed questions to be selected that were applicable to which parents, depending on their child's age and ethnicity. For administering the interview online, the researchers used laptops with the 3G/4G internet card provided by the research project. The researchers were also provided with a printed version of the survey to use in the cases of device or internet failure. The researchers carried their university ID card or employment letter with them to the interviews to prove their research status and to build trust with the community centres and the participants.

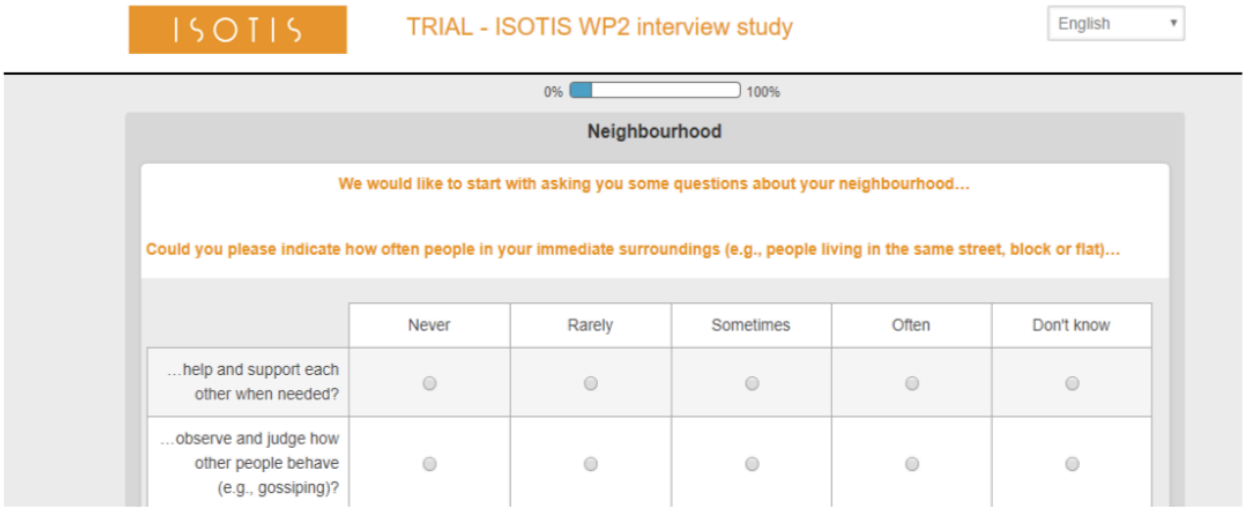


Figure 3.6. Sample interface of LimeSurvey Questionnaire

During the interview, the researcher read the questions out loud for the participant and used the show cards to facilitate their thinking (see Figure 3.7). The interview took an hour on average and the data were entered into LimeSurvey either simultaneously (47%) or after the paper-pencil interview (53%). During laptop use, the researcher entered the answers simultaneously on the LimeSurvey page created for the survey. During paper-pencil interviews, the same procedure was followed, however, the answers were noted on a printed version, which were entered into LimeSurvey after the meeting. The questions targeted only one child in the family and most questions required answers on a scale (e.g., 1 to 6 scale ranging from "almost never" to "every day"). To enhance the response and quality of the data collection, and thank the participants, all parents received a £10 worth gift card that can be used for department, book or food stores.



Figure 3.7. Example of a questionnaire showcard[14]

3.6.3. Phase 2

The data collection of the second phase took place in the home and was completed in two or three home visits depending on the success of the first two visits. To arrange the first home visit, the parents, who had shared their interest in the second phase of the study at the end of their interview, first received a phone call. In this phone call, the parents received further information on the details of the second phase of the study and were screened for the eligibility of their child. The parents, who accepted the offer to participate in the second phase were given a date for their first home visit. A day before the first visit, they either received a text message or a phone call as a reminder of their appointment. In this reminder, they were asked to inform their child on the visit to prepare the child for the arrival of the researcher. On the day of the visit, they received another message or a phone call half an hour before the researcher's arrival.

When the researcher arrived at the family's home, she first introduced herself to the parent and then the child using ice-breaking strategies (see Section 3.6.5.). After an initial period of warming up, the researcher, then, asked the child to indicate which language they would prefer to communicate during the home visit. After the child chose a language, the researcher informed the child that they were free to switch between languages whenever they needed. After getting to know the child, the researcher asked them to sit together at a table or a desk to start the 'games' of the study. At first, the researcher introduced

[14] From left to right: every day, several times a week, once or twice per week, once or twice per month, less often, almost never

the plan of the day using an activity card visualising the research activities for the child and explained that the child would receive a sticker for each task completed during the visit (see Figure 3.8.).

ACTIVITY CARD (BOYS)			ACTIVITY CARD (GIRLS)		
					
					

Figure 3.8. Activity cards for boys and girls[15]

The first task of the home visit was the Turkish vocabulary assessment. For the assessment, the test material was placed on a table in front of the child and the task was introduced as in the following:

> *"Now, I will ask you a few things in Turkish and I want you to find them in the picture here. Some of them might be difficult for you, but don't you worry, this is not a competition. You don't need to know all of the questions and mummy and I will help you if you don't know the answers."*

Following that, the child was prepared with three trials. After the trials, the child was asked to point at the picture that depicts the given word without the help of the researcher. During the assessment, the child was reminded that they would not know answers to all the questions and some of the words could

[15] Prepared by the author using open-source images

be for older children. The assessment was stopped after a succession of eight incorrect answers. After the completion of the assessment, the child was given a sticker followed by a break, where the child received colouring papers and crayons.

The second task was the Turkish sentence repetition. After the break, the researcher asked the child if they wanted to continue with another game. If the child gave a negative answer, the researcher explained that it would be a fun game where they would play with toys and imitate each other or allowed for more time for the break. After the child agreed to play the next 'game', the researcher introduced the child two toys and asked them to choose one. After the child was given the toy of their preference, the researcher took the other toy and asked the child to imitate what the toy said. If the child found the task difficult, the mother was asked to role-play with the researcher to demonstrate an example. Once the task was clear to the child, the researcher carried out the trial items, then continued with the test items. The researcher recorded the repetitions of the child simultaneously on paper and on a voice recorder. The assessment ended after a succession of eight incorrect repetitions and the child received a sticker for the task and had another break with colouring papers and crayons.

The final task of this visit was the observations of mother-child interactions. For this, the researcher first asked the child if they wanted to watch a cartoon together with their mother. If the child gave a negative answer, the researcher explained that the cartoon was very interesting, and all the children enjoyed watching it or the break was extended until the child was ready. When the child was ready for the task, the researcher asked the mother to choose a comfortable spot, where they usually watch the TV together. Once the mother and the child were ready, the researcher prepared the laptop and the voice-recorder and reminded the mother of the recording and asked for their consent once again. Before starting the video, the researcher informed the mother that the video would take around 9 minutes and they would receive a set of cards composed of the scenes from the cartoon at the end. The researcher asked the mothers to interact with their children in a natural manner and with a style of communication they would

typically use (e.g., speaking only Turkish or only English, code-switching between languages) when they converse about something at home. During the first half of the cartoon, the researcher used the structured observation checklist and observed the dyads with the observer-as-participant approach. During the observations, the researcher recorded the pointing and verbalization behaviours performed by the mothers and children in the checklist. For the rest of the task, the researcher kept taking a record of the behaviours of the mother-child interactions as part of the fieldwork notes. At the end of this task, the researcher stopped the voice-recorder and thanked both the mothers and their children for the day and notified that the tasks for the day were finished. Before leaving the home, the researcher made another appointment with the mothers for the second home visit.

The second visits usually took place a week after the first one. On the day of the visit, the parents received a message or a phone call half an hour before the researcher's arrival. When the researcher arrived for the second visit, the children were usually waiting in anticipation, which made the reunion pleasant for both. After the reunion, the researcher asked the child if they wanted to start playing the 'games' of the day. Before introducing the first task, the researcher reminded the child using the activity card that they would play two (or three if they were interviewed) more games, which would complete the researcher's visit.

The first task of the second home visit was the English vocabulary assessment. The same methods were used in administering the task as for the Turkish vocabulary (see above). After the completion of the assessment the child was given a sticker followed by a break, where the child received colouring papers and crayons. The second task was the non-verbal abilities assessment. In this task the child was asked to point at the piece among six options that would complete the pattern by using the Raven's matrices. Before the assessment items, the researcher carried out four trial items, for which she explained the strategy as in the following:

> *"For this game we have one big picture (pointing at the picture missing a piece) and it is missing a piece here (pointing at the missing piece). Now, we need to find the right piece that would make this picture complete. In order to do so, look how this picture was drawn (pointing at the patterns), can you see the dots (or lines, squares…etc.) that goes in line with each other. Do you think any of the pieces below look similar to this pattern?"* If the child shows the correct piece: *"Yes, because if you place this piece into the missing box it would make this picture complete. You see, the dots here in the piece below is the same as the one in the main picture. So, you chose the correct answer."*

After the completion of the assessment items, the researcher notified the child that she wouldn't help for the next items and, instead, she would be taking notes of the child's answers. Again, the researcher reminded the child that they didn't have to answer all the questions and they could pass the question if it was too hard for them. After the completion of the assessment the child was given another sticker. If the child was to be interviewed for the third study, the researcher gave the child another break with colouring papers and crayons.

In three of the cases, the researcher carried out another home visit to complete the child assessments. In the first case, the mother had a young baby and the assessment had to discontinue during the first home visit when the baby woke up from her sleep. In this case, the researcher had to end the visit early and rescheduled another one to complete the research tasks. In the second case, the child was watching a movie when the researcher arrived, and he did not want to be interrupted for the research assessments. For this reason, the researcher made another visit to complete the research assessments of the day. In the final case, when the researcher started to play the cartoon, the child got distracted and wanted to stop the movie. When her mother tried to continue the task, then, the child started to cry. In this visit, the researcher had to stop the recording and reschedule another visit to complete the assessments of the child. See Section 3.6.5. for more information on how the researcher eased the warm-up, reunion, and farewell processes with the children and their families.

3.6.4. Phase 3

The interviews with the children for the third phase of the study were carried out on the day of second home visit of the second study. At the end of the assessments and a play break, the researcher asked the children if they wanted to have a conversation with the researcher. By this time, the children were already accustomed to spending time with the researcher, which eased the interview process for both parties. First, the child was introduced to the task as in the following:

> *"You know that I do speak Turkish and English like you do. Now, you and I will talk about our languages. I will show you some pictures and ask you how you feel about speaking Turkish and English. We can always give a break whenever you want and play games or do anything else."*

Following that, the child was first introduced to emotional expression card (see Figure 3.5.) and then, the child was asked to identify the emotions depicted in the expression card: *"You see three faces in this card. I want to ask you what you think of them. (Pointing at the first facial expression on the card) What kind of a face is this?"*. This provided time for the child to prepare for the forthcoming questions and it allowed the researcher to emotionally contextualise the following answers of the child. Following this introduction, the child received questions on their language use and experiences in different scenarios. First, they were introduced to the first scenario with using the visual material 1 (see Figure 3.5.): *"This picture is drawn for you and it shows you talking about your day with your mother. Do you speak Turkish or English?"*. If the child indicated only one language over the other, then, they were asked the following question: *"Why do you use X but not Y?"*. Depending on their answer the child, then, was asked how they felt about speaking Turkish or English in the given context by using the facial expression card: *"Okay now looking at this card can you tell me how you feel when you speak Turkish at home? Can you show me the face?"*. Once the child pointed at a face on the emotional expression card, they were asked to explain their reasons with prompting questions such as: "*Tell me what makes you feel like that (pointing to the positive emotional expression on the visual 3) when you speak in Turkish at home?"*. To facilitate children's answers, a set of prompt questions were used including

"*what do you mean*" and "*tell me a bit more*". The children were voice recorded during this task and additional observational information was recorded in the fieldwork notes. After the completion of the interview, the researcher thanked the child and told them that her visit came to an end.

3.6.5. Doing research with children

Doing research with young children is not a straightforward task and it requires training to acquire certain skills to accommodate the difficulties faced in the fieldwork. There are a few moderately comprehensive resources on doing research with children that contemplate on the methods, ethics, and limitations of the experience (Greig, Taylor, & MacKay, 2007), although the literature on the minority children is limited. Researchers working with children have highlighted the importance of the researcher behaviour in enabling a friendly environment, which encourages children in participating in the research activities (Docherty & Sandelowski, 1999). The key behaviours initiating contact with children are attentiveness, recognition of child's agency, negotiation, playfulness and creativity. Drawing on this advice, the researcher developed a set of strategies to carry out the research activities smoothly during the home visits. For instance, the home visits started with an introduction of the researcher and the purposes of her visit:

> "*Hi X! My name is Pinar and I'm here to play some games with you. (Mother collaborates with the researcher in this introduction) What is your name? … Do you go to school? … How was your school day? … I brought some games with me today and I want to play them with you. I played these games with other children before and they really enjoyed it. Do you want to try it as well?*"

In some cases, children were shy and preferred to stay silent. In these instances, sometimes the mother took over to ease the interaction by offering the child to play together with the researcher. In other cases, the researcher offered the child to paint colouring papers together as an ice-breaking activity. In the majority of the visits, children were sociable and friendly, and they accepted the researcher's offer

to play games with them forthwith or sometimes they initiated the play by introducing their toys upon the arrival of the researcher.

Another strategy that was used in this study was to introduce children the 'games' that they were to play with the researcher using an activity card (see Figure 3.8.). The children were told that they would receive a sticker of their choice at the end of each game which they could keep with the activity card. During the assessments the researcher reminded the child that it was not important if they did not get the answer right and that some of the questions were even hard for the researcher, to minimise the power imbalance between the child and the researcher. Lastly, at the end of the visits, the researcher thanked the children and expressed her gratitude and wished them farewell. This was the most difficult part of the fieldwork, as the time spent with children were enough to create a feeling of attachment, especially on the child's behalf. In some cases, children gifted the researcher a piece of paper with their drawing on, a toy, or they asked the researcher to come for another visit or stay for a sleepover. In these cases, the researcher kindly explained that she would love to do so, but it would be difficult as she lived in a different city. In a few cases, some of them expressed their reaction with crying or ignoring the researcher when they realised that she was leaving. In these cases, the researcher made a follow-up call to the mothers to make sure that the child was feeling better and asked them to thank their child for their participation.

3.7. Ethical Considerations

As set out in the ethics application of this research project (Appendix 11), the participants received in-depth information on the studies more than once. For the first phase of the study, the parents received a leaflet, information letter and a consent form on the day of the recruitment and the interview. They were asked if they had any concerns or questions regarding the study or the data protection protocols as provided in the information letter and the consent form. Before the start of the interview, the parents were asked for a written and electronic forms of consent and informed that they were free to withdraw from the

interview at any point. Lastly, the parents received a voucher of £10 worth for the compensation of their time. For the second and third phases of the study, the parents who expressed their interest in the second study were contacted via phone call for in-depth information on what their participation meant for them and their children (see Appendix 3). In the beginning of the first visit, the parents were asked to read an information letter before providing a written consent. Once the written consent was taken, the tasks were introduced to the child. An activity card was used in order to explain the tasks and home visits to the children (see Figure 3.8).

Following the approval of the Oxford Central University Research Ethics Committee and Fieldwork Safety Office (Appendix 12), the researcher started the fieldwork of the study in accordance with the ethical guidelines of the University of Oxford (CUREC, 2018). Over the course of the fieldwork, the researcher has been to the homes of more than 70 Turkish-speaking families in London. Although the ethical promises were kept strictly, there were a few instances, where ethical issues arisen from the researcher's perspective. For example, one of the children, who participated in the second phase of the study became distressed when the researcher left at the end of the visit taking away the crayons used during the breaks. This led to an emotional tantrum, responding to which the researcher offered to give the crayons to the child. As the mother did not allow this for disciplinary purposes, the researcher had to leave the house while the child was still crying. Similarly, in another case, a child got distressed in the midst of his vocabulary assessment. After realising his distress, the researcher wanted to stop the assessment, although the mother insisted on the assessment continuing. Reflecting on these instances, a few lessons were drawn, and the fieldwork continued in line with these lessons. For the rest of the fieldwork, the researcher aimed to be responsive and respectful towards the needs of the children to accommodate to their needs and monitor the power imbalance (Grau & Walsh, 1998). This ethical concern was in line with Groundwater-Smith's (2011) request from researchers to put their "academic egos to one side and think instead of the well-being of those who are often vulnerable and lacking in power" (p. 209). To ensure the well-being of the children and their families, who participated in this study, the researcher remained

flexible to minimise the directive researcher role throughout her time with them and to ensure that the children enjoyed their time during the research. In so doing, the researcher was vigilant of the emotional states of her participants and often reminded them that she could stop at any time when needed. In order to minimize the moments of crisis, the researcher informed the children about the procedures in the beginning of each home visit and stayed in touch with their parents to ensure that the children received detailed information on the research.

3.8. Data Storage and Protection

For the purposes of data storage and protection in the first phase of the study, each interviewer kept a record file including information on the participant's ID number, date of the interviews, research site, target group, and interest for the second phase of the study. These record files were only accessible to the ISOTIS research team at the University of Oxford. The record files were securely stored, and password protected. Next to the ID record files, the researcher kept a record file for the approached centres, schools, and organizations during the recruitment process. For administrative purposes as agreed by the collaborating institutions in the research proposal of the project, the data collected in parent interviews through LimeSurvey were automatically transferred to and stored at the protected central data server of Utrecht University via safe https connections. Data were never stored on the laptop/ tablet of the interviewer and the paper-pencil versions were sent to the coordinating institutions to be destroyed in a paper shredder. The datasets were shared by the ISOTIS team at the Utrecht University in the form of SPSS documents via password protected online transfer systems and they did not include any personal or contact information and all the cases were anonymized through using participant IDs. The Utrecht University team ensured to comply with the General Data Protection and Regulation rules following the introduction of the legislation in 2018.

For the second and third phases of the study, the record sheets from children skills testing, recordings of observations and child interviews were entered into an excel file or transcribed to be kept in a password protected cloud storage. The participants were anonymized with ID numbers and the record sheets were kept in a locker in the education department. The data were only accessible to the researcher and the thesis supervisor. The voice recordings of mother-child interactions and child interviews were uploaded onto the same password-protected cloud storage and were only shared with three undergraduate students from Bogazici University, who had no access to identifying information, for the purposes of transcription reliability.

3.9. Analysis Plan

This section introduces the analytical plan of the thesis drawing on the research questions addressed in the beginning of this chapter.

3.9.1. Research Question 1

To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children?

To answer the first research question, a regression model was developed in line with the Family Investment Model (Conger & Donnellan, 2007). According to Family Investment Model, parents' contribution to their children depends on their socio-economic resources as depicted in the Figure 3.9. below. Drawing on this model, regression analyses were carried out using the data from parent interviews depicting family background characteristics including parent's education, family material well-being, and family socio-economic integration and the resources in the home language and literacy environment including language and literacy activities and language use. Primary caregiver education was taken as the independent variable of primary interest, as immigrant families' material resources and social integration

can depend on their educational resources (see Section 2.6.2.). The second block included Material Well-being entered as an aggregated variable based on monthly income and material resources, and the third block included Social Integration variable entered as the weighted values of migration history and English competence. Social Integration replaced parent occupational status in the family investment model, as for immigrant parents, social integration can serve as a correlate of their occupational status in the country (e.g., Dixon et al., 2012). For the analyses, IBM SPSS 23.0 was used.

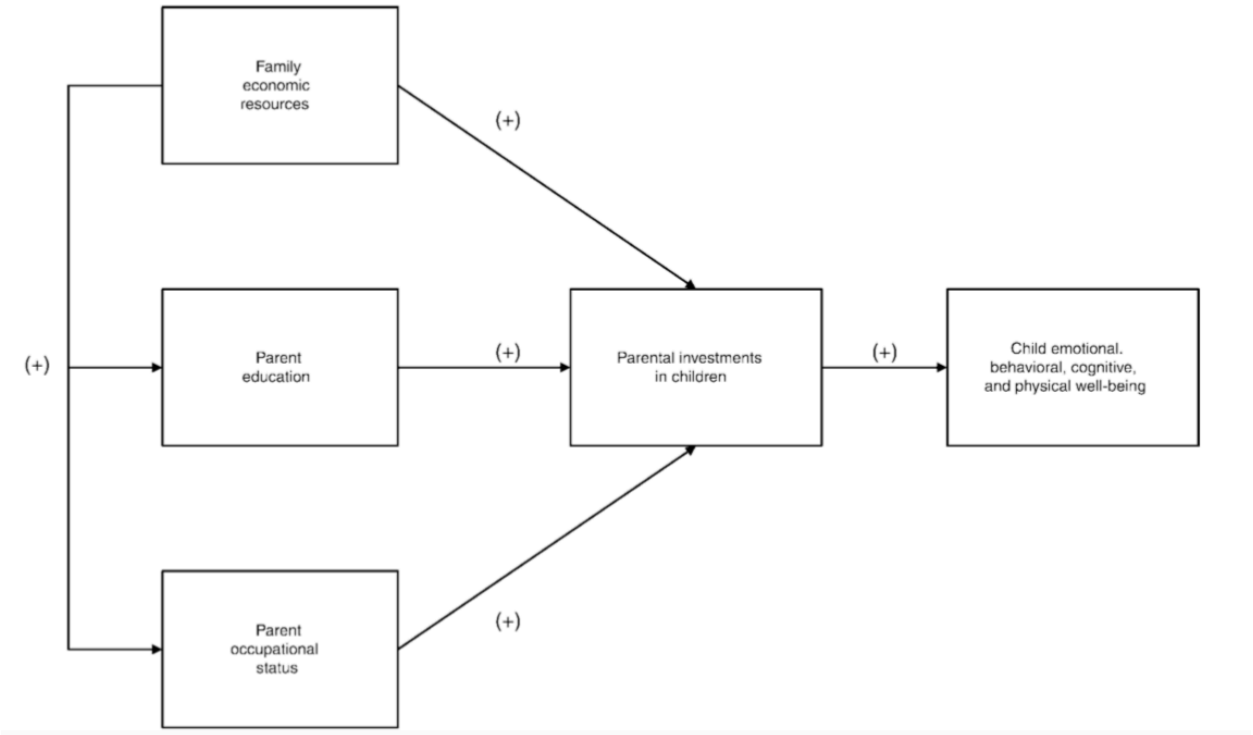


Figure 3.9. Family Investment Model[16]

[16] Taken from Conger and Donnellan's article (2007)

3.9.2. Research Question 2

To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?

To answer the second research question, a regression model was developed drawing on the analytical application of the revised Bio-ecological Model of Human Development (Bronfenbrenner & Morris, 2006). As explained in Chapter 2, the study was designed drawing on the Bio-ecological Model of Human Development (Bronfenbrenner & Morris, 2006) and aimed to depict the role of ecological systems and proximal processes in the language development of children. To achieve this goal, 4 blocks were created to categorise the variables of the study according to the model for the regression analyses. Block 1 presented the individual characteristics that predict the language skills of children and included age-controlled non-verbal ability scores of children. Block 2 presented macro-level factors that predict language skills of children and was comprised of family background characteristics including parent's education, material well-being and social integration. Block 3 presented micro-level factors that predict language skills of children and was comprised of the resources in the home language and literacy environment of children including activities and language use. Lastly, Block 4 presented the characteristics of the proximal processes in the home language and literacy environment by introducing the lexical diversity in maternal speech to the model. These blocks are demonstrated in the Figure 3.10. below that is prepared drawing on the Bio-ecological Model of Human Development (Bronfenbrenner & Morris, 2006).

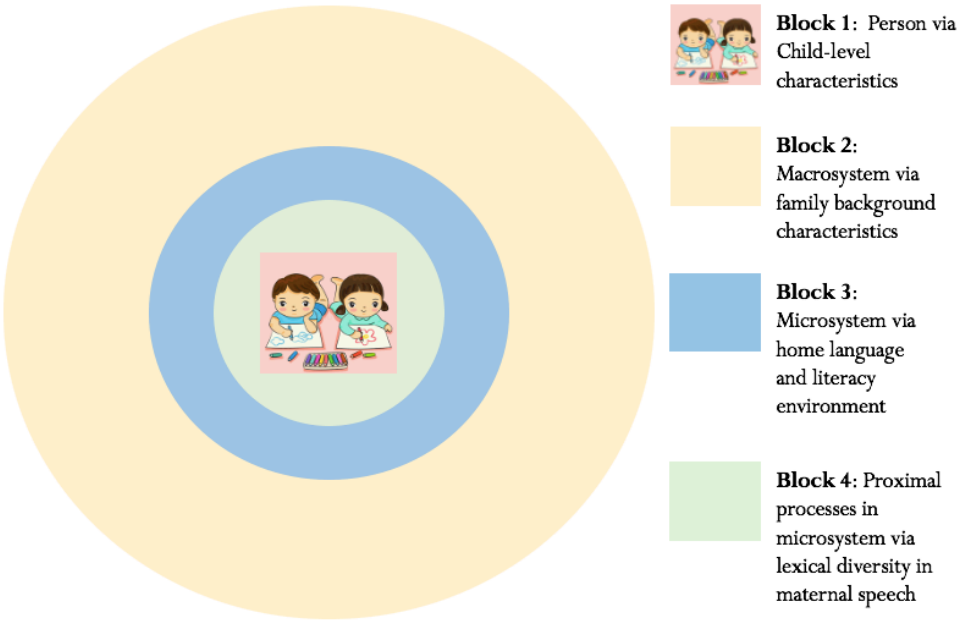


Figure 3.10. Diagram depicting the blocks of hierarchical regression analysis[17]

Using these blocks, a hierarchical analysis was run for each outcome variable to address the second research question of the thesis. The blocks were entered according to the layers depicted in the Figure 3.10. First, the block 1 was added to account for the differences in individual-level characteristics via the non-verbal abilities of children. Then, the block 2 was added to account for the macro-level factors via the family background characteristics of children. Next, the block 3 was added to account for the micro-level factors via the language and literacy activities and language use in the home environment. Finally, the block 4 was added to evaluate the contribution of proximal processes in the home language and literacy environment via language quality in maternal speech after taking the micro-, macro-, and individual-level factors into account. This regression model also aimed to demonstrate the significant predictors of language skills of children in different levels of the bioecological model. For the analyses, IBM SPSS 23.0 was used.

[17] Figure is developed by the author

3.9.3. Research Question 3

What is the role of language experiences and attitudes in children's bilingual language preferences?

To answer the third research question of the study, a qualitative analysis was carried out. An analytical framework was developed using a thematic analysis, first to provide a description of children's perceptions of their language attitudes as a source of explanation of their language preferences and then, to understand how children's social interactions with their family members and friends influence their language preferences and attitudes. For the first goal, the analysis aimed to provide a description and interpretation of the key themes that are relevant to children's self-concept and self-perception as they speak Turkish and English in order to improve the thesis' understanding of bilingual children's language preferences and attitudes. For the second goal, the analysis aimed to provide an in-depth understanding of the role of the home environment and social interactions in bilingual language development drawing on various components of children's experiences in their social interactions. Drawing on these goals, an interpretive thematic analysis was carried out to depict the themes that emerged from the interviews related to children's language attitudes and behaviours. As will be explained in Chapter 5, children's accounts were initially treated as separate and distinct stories. The interviews were then examined for shared experiences as recurring themes across the interviews. These shared experiences emerged as patterns in the data that later converged into a theme through thematic analysis. Each sub-theme emerged from a synthesis of children's accounts that helped the understanding of children's language preferences and attitudes. The presentation of the subthemes demonstrated the shared and multifaceted experiences of bilingualism. These themes aimed to envelope and emphasize sub-themes that capture the different components of children's language preferences and attitudes as well as the shared experiences of being bilingual. The themes illustrate the ways in which children made sense of their experiences with speaking Turkish and English through self-perception and social interactions. The findings draw on the

interpretations of children's experiences with speaking Turkish and English in their primary social environments. The interpretations were consolidated through fieldwork accounts/descriptions of family interaction/dynamics. For the analyses, NVivo 12 was used.

4. BILINGUAL LANGUAGE DEVELOPMENT AND LANGUAGE AND LITERACY RESOURCES

4.1. Introduction

This chapter presents the results of the quantitative data analysis investigating the predictors of bilingual language skills in the macro- and micro-system of children drawing on the bioecological model (See Section 2.2.1.). The findings presented in this chapter pertain to the first two research questions of the thesis below:

> *Research Question 1:* To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children?
>
> *Research Question 2:* To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?

The first research question investigates the contribution of the socioeconomic status of parents and their integration with the majority culture, as aspects of the macrosystem, towards the language and literacy resources and proximal processes in the home environment, as the micro-system of children. As discussed in the Chapter 2, socio-economic status and integration of immigrant families can be an indicator of resources in the home environment of children that support their language development (e.g., Becker, 2011). Thus, this chapter aims to understand the relative contribution of family socioeconomic status and integration by studying parent's education, material well-being, migration history, and parent's language skills.

The second research question investigates the contribution of resources and proximal processes in home language and literacy environment, as aspects of the microsystem, towards the bilingual language skills of children. The resources in the microsystem of children are depicted by the language and literacy

activities and language exposure in the home environment of children. The proximal processes in the microsystem are depicted by the language quality in maternal speech. In order to eliminate the possible interaction effects of family background characteristics and child abilities, the child- and macro-level factors are taken into account in the analysis.

The aforementioned research questions are addressed through quantitative analytical methods drawing on the data collected in the first and second phases of the study. The results of the analysis are presented in two sections:

'Findings I: 'Explaining the home language and literacy environment through the macrosystem' presented in Section 4.9.

'Findings II: 'Explaining bilingual language skills of children through the microsystem' presented in Section 4.10.

Prior to the presentation of the findings, this chapter, first, describes the analytical strategy (see Section 4.2.), and the stages of data analysis (see Section 4.3.), followed by the variables of the study, which are presented alongside the analytical decisions made to transform the raw data into variables to be used in the analyses. The macro-system characteristics of the families and the relevant variables are presented in Section 4.4. The micro-system characteristics of families and the relevant variables are presented in Section 4.5. Then, the characteristics of proximal processes and the variable developed to indicate the language quality in maternal speech are presented in Section 4.6. Finally, language skills and non-verbal abilities of children are presented in Section 4.7., followed by an interim summary in Section 4.8., leading to two sections on the study findings. The next section describes the strategies adopted in the analyses presented in this chapter.

4.2. Analytical Strategy

This section elaborates on the theoretical framework and methodological strategies that guided the analytical decisions taken in this chapter. As the analyses aim to depict the predictors of the language skills leading to variations in bilingualism, quantitative methods are deployed. Drawing on the predictors of bilingual language skills of children in the literature, this chapter examines the factors related to family characteristics and home language and literacy environment as predictors of the variations in the bilingual language skills of Turkish children in England. In so doing, the analyses draw on three goals:

(1) organising the questionnaire data and the recordings of mother-child interactions into variables that represent potentially important aspects of the language experiences of children,

(2) capturing and evaluating the factors that influence the home language and literacy experiences of children,

(3) showing the contribution of these experiences to the language skills of children after controlling for the individual- and macro-level factors.

The analytical approach originates from a post-positivist research paradigm, which emphasises the probabilistic nature of quantitative findings instead of testing for an *a priori* hypothesis guiding the research expectations (Agar, 1990). The post-positivist approach in quantitative analysis allows researchers to investigate and describe the quantifiable factors pertinent to the subject of analysis. In doing so, it does not aim for one overall truth in the data and rather it recognises the complexity of the real-life research and experience. In that regard, the post-positivist approach allows for the interpretation of the findings from multiple vantage points in the apprehension of an issue (Richie & Riagno, 2001). The interpretation of quantitative findings in Chapter 6, thus, involves examination of the social structures and phenomena

that might account for the variations across individuals to provide a better understanding of the issue or to offer alternative explanations for the findings drawing on the study context.

The post-positivist approach presented in this chapter draws on the analytical methods and strategies provided by the Hierarchical Regression Analysis (HRA). To address the research questions of this chapter, a set of strategies are chosen for the application and interpretation of the HRA of the quantitative data acquired from the families. The following section provides a description of HRA and its relevance to the research questions with the reasons for decisions made. Thereafter, the assumptions of HRA and the procedures followed to deal with the issues pertaining to validity, reliability, and credibility are explained.

4.2.1. Hierarchical Regression Analysis and Its Use

HRA is a quantitative method of analysis that has been extensively used in behavioural sciences to examine the relevance of multiple set of factors in explaining or predicting outcomes (Cohen, Cohen, West, & Aiken, 2003). In HRA, independent variables are entered sequentially based upon theoretical and empirical grounds. For that reason, HRA is versatile and does not limit researchers to a fixed form of relationship between independent and dependent variables. The researcher decides which factors are grouped together either structurally or functionally. Similarly, the HRA can accommodate different levels of measurement including ratio, interval, ordinal, and nominal scales that allow researchers the possibility to distinguish the influence of different types of variables. The hierarchical nature of HRA can accommodate the different levels of contextual influences, e.g., distinguish between macro-level and micro-level variables. In so doing, HRA allows researchers to examine multiple influences upon a dependent variable. This feature of HRA enables research findings to capture more of the complexity of the issue by demonstrating both linear and curvilinear relationships between the independent and

dependent variables through the analysis of multiple factors. The results from the analysis, then, inform the researchers on the relative importance of each measure by calculating the effect sizes relating independent variables to an outcome variable. The changes in effect sizes after the addition of each model can demonstrate the nature of interaction between the independent and outcome variables under varying conditions of other factors. By using the HRA, this study identifies the predictors of children's language skills drawing on the following research premises:

Premise 1: *Research questions, literature, and the statistical evidence guide the analytical strategies*

The first research question addresses the role of family background characteristics in accounting for the variations in the home language and literacy environment of children and the second research question explores the predictors of bilingual language skills in the home language and literacy environment of children after accounting for the interacting effects of child abilities and family background characteristics. In the first part of the analysis (see Section 4.9.), to demonstrate the relationships between family background characteristics and the home language and literacy environment, a preliminary correlation analysis was run. Drawing on the correlations between the indicators of family background and the home language and literacy environment, a set of variables was selected as the predictors of home language and literacy environment to be used in the final hierarchical regression analysis. The hierarchical regression analysis was run to show the relevance of the indicators of family background characteristics in predicting different aspects of the Home Language and Literacy Environment (HLLE) of children. Thus, the first part of the analysis accomplishes the following goals:

(1) identifying predictors of the HLLE among the family background characteristics,

(2) accounting for the contribution of family socioeconomic status and integration to aspects of the HLLE,

(3) demonstrating the overall role of family background characteristics in explaining variations in the HLLE of children.

The second part of the analysis (see Section 4.10.), considers how aspects of the HLLE might predict the bilingual language skills of children after taking child abilities and family background characteristics into account. For this purpose, an initial correlation analysis was carried out to depict the interactions between child abilities, family background characteristics, HLLE, and bilingual language skills of children. Drawing on the outcomes of the correlation analysis, a hierarchical regression analysis was run with indicators of the family background characteristics and HLLE to predict the bilingual language outcomes of children after controlling for child abilities. Thus, the second part of the analysis aimed to accomplish the following goals:

(1) identifying the predictors of HLLE that significantly explain the bilingual language skills of children

(2) showing the relevance of HLLE indicators in explaining the bilingual language skills after taking the child and family background characteristics into account,

(3) demonstrating the role of the bio-ecological model as a whole in explaining the language skills of children.

Premise 2: *The statistical assumptions of HRA inform the suitability of the study variables*

Hierarchical regression assumes that the variables of a study should demonstrate reasonable levels of normality, linearity, singularity, and homoscedasticity of residuals to be fit for the analysis (Tabachnick & Fidell, 2012). Before the final analysis, the variables were evaluated for their suitability for the hierarchical analysis drawing on these assumptions.

The normality assumption requires variables to demonstrate an approximation to a normal distribution of scores. The normality assumption was investigated by examining the z-scores of skewness and kurtosis. Datasets demonstrating large variation from normal, as in some skewed and asymmetric distributions of scores, can lead to Type I and Type II errors in the significance of the test results and reduce the power of the analysis (Knudson & Lindsey, 2014). The normality assumption is particularly important for the outcome variables as the prediction analysis targets the variance in the distribution of outcome scores (Tabachnick & Fidell, 2012). One method of dealing with this issue is to transform the variable to establish a level of normality in the distribution of scores. In the preliminary analyses of this chapter, when a variable demonstrated a significant level of skewness, a logarithmic and/or square root transformations were applied to normalise the score distribution. Some outcome variables, however, did not demonstrate a significant change after the transformations. In these cases, the analysis proceeded with the skewed variable. The outcome variable scores, however, were recoded into a dichotomous variable (e.g., low/high) to create alternative methods to check for the reliability of the outcomes through a binary logistic regression. Binary logistic regression is a form of multiple regression analysis that uses categorical variables as the outcome variable (Cohen et al., 2003). Hence, the analysis is not affected by the distribution characteristics of the outcome variable and the results demonstrate the probability of a case to fall into a category defined by a binary outcome variable drawing on the independent variable scores of the cases. The outcomes of the alternative analyses were presented in Appendix 19 and compared to the main findings of the chapter when reporting the HRA outcomes.

After finalising the variables for the hierarchical regression analysis, the interactions between the variables were examined for linearity, singularity, and homoscedasticity. Linearity in the dataset means a set of linear relationships between the pairs of variables of the study and the homoscedasticity rule expects similarity across the variances of the study variables. To test the linearity and homoscedasticity assumptions for the study variables, the scatterplots for standardized predicted values and standardized residuals were examined for significant deviations between the predicted and actual residuals. The

assumption for singularity requires the variables of the study to represent unique factors. When the singularity assumption is violated, multicollinearity occurs. Multicollinearity refers to a high correlation between the predictor variables of a study (Pearson > .90). The violation of singularity assumption can lead to misleading results and a failure of achieving statistical significance of regression coefficients (Tabachnick & Fidell, 2012). To prevent multicollinearity, the interactions between predictor variables were examined for high correlation coefficients. Lastly, outliers in a dataset can lead to statistical errors in the inference of results. For that reason, the outliers were examined through using the standardized scores. Multivariate outliers were checked by examining the Mahalanobis distance of each case to the centroid of all cases.

Premise 3: *Analytical decisions aim to minimise Type I and II errors*

As the sample size of this study is relatively small for conducting a regression analysis, some precautions were taken to minimise the possibility of Type I error in the inference of the results. The Type I error in inference occurs when the statistical results indicate a false significant finding, whereas Type II error occurs when the results fail to indicate a significant relationship that is present in the population. Although a general rule of thumb advises the use of 15 cases per predictor, this calculation simplifies the issue (Green, 1991). Hence, other methods of calculation are warranted to ensure the suitability of a study for a regression analysis. Green (1991), for instance, developed two formulas for calculating the overall fitness of the regression model and the sample size (N) required for the number of predictors (k) used in a regression analysis. To ensure the overall fitness of a dataset for a regression model, the sample size required is calculated through the following equation: $\mathbf{50 + 8k}$. To calculate the sample size required for a set of predictors in an analysis, Green (1991) recommended the following formula: $\mathbf{104 + k}$. In this study, to ensure the analysis models are suitable for a regression analysis, the methods recommended by Green (1991) were followed. Some of the potential predictors were aggregated or removed from the

analysis, if preliminary correlations were nonsignificant, to reduce the number of predictors used in the final regression analysis.

Premise 4: *The interpretation of the findings draws on a post-positivist perspective*

While the findings presented in this chapter draw on a quantitative approach, the interpretation of the findings does not assume an overall 'truth' (Richie & Rigano, 2001). Instead, the quantification of the data depicts the patterns in the data on bilingual language skills of minority children and explores the significant predictors of children's language outcomes. In doing so, the researcher accepts that the findings cannot capture all the details of individual cases and can only provide a broad understanding of the factors that contribute to the experiences of children and their bilingual language acquisition. For these reasons, the findings are not used to prove or falsify a specific hypothesis, but rather to illuminate factors that need attention when studying the bilingual language development of minority children through the study of home environment, and thus inform alternative hypotheses.

4.3. Stages of Analysis

The findings presented in this chapter involved four levels of data analysis. Firstly, the data were screened for missing values to establish the characteristics of missingness, then, where missingness occurred, data were either imputed or the cases dropped from the analysis drawing on theoretical and statistical reasons. After the dataset was screened and modified, the second level of analysis organised the data into meaningful variables. In this phase of the analysis, the item-level data were decluttered to create the variables, the observation data were quantified into meaningful variables, and scores from child measurements were screened for their fitness for the regression analysis and standardised if necessary. In the third phase of the analysis, the relationships between the final study variables were analysed through Pearson's correlations

to re-evaluate the theory-based predictors of the regression analysis with statistical fitness. In the fourth and final phase of the study, the regression models were finalised, and the analyses run to examine the predictors of the HLLE and the bilingual language skills of children as the outcome variables. The following subsections describe the methods and stages of data analysis.

4.3.1. Data Screening

One of the drawbacks of using a questionnaire is the non-response rate. Although combining face-to-face and computer-assisted interviews can reduce the missing data rate, it is unlikely to completely prevent it (for a review of literature see De Leeuw, 1992). Nonresponse can occur at different levels of the data. The unit nonresponse, for instance, occurs when a participant skips an entire part of the questionnaire, which may be due to a technical failure. The item nonresponse, however, occurs when a participant leaves an item in a questionnaire unanswered (for a review of literature see De Leeuw, 2001). Missing information resulting from nonresponse can be a threat to the validity of the findings and the power of the analyses, especially when the data are missing due to non-technical reasons (Enders & Bandalos, 2001).

Nonresponse can occur for various reasons. One of the common reasons is the design of the interview questionnaire. In some questionnaires, questions are routed to appear for certain groups of respondents depending on their relevance to the set of questions or their previous answers. The missing data that result from the design of the questionnaire is controlled by the researcher. Another reason for missing data is partial nonresponse, which can occur due to technical problems (e.g., internet disconnection), interviewer error, or participant attrition. Some of the cases of partial nonresponse can be also treated as item nonresponse, which is another type of missingness. Item nonresponse can occur when information is not provided at the item level or when a question is skipped on purpose or by mistake. The missing data resulting from item nonresponse can be missing completely at random (MCAR), missing at random (MAR), and nonrandomly missing (NMAR). For instance, skipping an answer by mistake is

classified as MCAR, whereas a participant not answering a question due to feeling uncertain about the answer might be MAR. Lastly, NMAR occurs when respondents use the option to skip a question intentionally or use the options such as "do not know" and "do not want to tell". For a summary of the characteristics of missing data see the article by De Leeuw (2001).

In this study, the questionnaire data from the first phase did not demonstrate a unit-level nonresponse, however, a small percentage of the data were missing due to nonresponse at the item-level (<1%). Some participants were missing data for one or more items. In order to decide on how to proceed with the missing data the possible reasons were considered. The characteristics of the missingness demonstrated that data were missing due to questionnaire design and item nonresponse. The parts of the questionnaire on participants' education background were routed to appear depending on the answers given to the primary questions. For instance, respondents who did not have a secondary education degree, were not asked to respond to the questions on university education. Hence, the data were missing by design. The missing data due to item nonresponse were observed to occur both at random and non-random levels. The random missingness was found to be non-systematic and independent of the other items in the questionnaire. This might have resulted due to interviewer errors or the uncertainty experienced by the participants when answering some of the questions (De Leeuw, 2001). Lastly, NMAR was observed for the question on monthly income, which allowed participants to proceed with optional answers such as "do not know" or "do not want to tell".

Traditional approaches to missing data such as excluding the cases by listwise or pairwise deletion can lead to a loss of valuable information. Thus, proper methods of handling missing data are important for ensuring the validity of outcomes. In this study, the missing data were imputed to maximise the sample size and retain the information from participants. The nonresponse weighting method was applied to impute the data by drawing on the information available from the items of the questionnaire that showed significant correlations with the items where missingness occur (Finch, 2010). The missing cases were

matched with the similar cases on the correlate variables, and then average scores were calculated by using Multiple Imputation analysis on SPSS. The average scores for the matching cases were used for the missing cases when organising the items into variables. The missing cases for each item, if any, are presented in the descriptive statistics for each variable for each variable.

4.3.2. Organising Data into Variables

Recoding data into variables is necessary when the raw data need to be processed before the statistical analysis (David & Sutton, 2011). Data can be recoded into a new variable to change the measurement scale of an item or to collapse the item-level data into a variable by creating a composite score. Prior to the regression analyses data from the questionnaire items were analysed in order to create the variables for the regression analysis. The variables were prepared by using data aggregation methods drawing on theoretical and statistical reasons.

Data aggregation is a technique used with large datasets to reduce the number of variables used in the analyses (OECD, 2008). It is especially useful when working with questionnaire data with item-level information. Items of a measure can be aggregated by grouping weighted or non-weighted indicator scores of a variable (for a review of literature see Greco, Ishizaka, Tasiou, & Torrisi, 2019). The decisions on data aggregation are usually made drawing on theoretical and/or statistical frameworks. Non-weighted aggregation methods such as additive aggregation is widely used in creating a composite score by summing or calculating arithmetic average of the indicator scores. This method is criticized for not maximizing the statistical information. Researchers argue that using non-weighted scores to aggregate data can cause bias by shadowing the differential contribution of each indicator (OECD, 2008).

Evaluating the indicators of a variable for validity and reliability can minimize the drawbacks of the additive aggregation method. Assessing content validity is a way of investigating the representativeness

of indicators that underlie a construct (Salkind, 2010). Comprehensive methods of measuring content validity draw on a theoretical framework along with the observations of the associations between the items and the predicted outcomes (Newman, Lim, & Pineda, 2013). Correlation coefficient analysis is one way of assessing the relationship between the items of a target variable and the predicted outcomes. The associations with probabilities (alpha levels) smaller than .05 can be used to indicate a significant relationship between the indicator items (e.g., material deprivation items) and the outcome variable (e.g., monthly income).

Inter-item reliability can assess the consistency between the indicators of a construct and the overall variable (Field, 2011). The most common method of testing inter-item reliability is calculating Cronbach's alpha. Cronbach's alpha measures the extent to which the items of a scale correlate with each other and demonstrate consistency (Tavakol & Dennick, 2011). The measure is computed by correlating the score for each scale item with the total score for each observation, and then comparing that to the variance for all individual item scores. In this regard, high Cronbach's alpha values mean high correlations between the items of a scale. High values, however, does not always equal to good internal consistency since the length of a scale influences the alpha calculation. For instance, small number of items in a test can lead to low alpha values (Cortina, 1993). For these reasons, the Cronbach's alpha in this thesis is set to .70 instead of .90 as the scales assessed for internal consistency do not contain more than 10 items.

Principal Component Analysis (PCA) is another technique to explore the suitability of a set of indicators to represent a construct/variable that would explain the maximized amount of variance in the dataset. The analysis aims to reduce the number of items in explaining a construct while minimizing the information loss. It does not set a priori factors and adapts to the nature of the data (Bro & Smilde, 2014). Model fit is evaluated using goodness-of-fit indices including correlation statistics, eigenvalues, and scree plots. Correlations larger than .30 indicate the suitability of items for PCA, whereas eigenvalues larger

than 1 indicate that a component explains a significant amount of the variance in the data. The scree plot of the components can be observed to further confirm the final decision.

In this study, the data were organised by using additive aggregation and PCA. Some nominal data were recategorized into ordinal data using a composite score, where this makes theoretical sense. The decisions drew on statistical thresholds and fit indices presented in Table 4.1. before finalizing the variables.

Table 4.1. Fit indices and acceptable thresholds

Analysis Type	Fit Statistic	Acceptable Threshold
Data Aggregation	Cronbach's Alpha	$\alpha > 0.7$ indicates a good fit and retention of the model
Dimension Reduction	Principal Component Analysis	$\Lambda > 1.00$ indicates that components account for more variance than accounted by the original items
Correlation Analysis	P Value	$*p \leq .05$, $**p \leq .01$, $***p \leq .001$, two-tailed

4.3.3. Preliminary Analyses

Prior to the regression analyses, variables indicating family background characteristics, HLLE, and child skills were analysed for the assumptions underlying hierarchical regression analysis. In order to evaluate the fitness of the variables preliminary analyses were carried out. Descriptive statistics reported the suitability of the variable for the final analysis. To finalise the models for the regression analyses, preliminary correlation analyses were conducted. The correlations between the variables were reported to check for possible multicollinearity among the study variables and to demonstrate their relevance for the regression model.

4.3.4. Regression Analyses

Regression analysis was used as the main analytical strategy to answer the research questions addressed in this chapter. Among different types of regression, hierarchical regression analysis was chosen as the analysis method as explained in the Section 4.2. In hierarchical regression analysis, the independent variables of the study are entered sequentially to explain the variance in the outcome variables after controlling for a set of independent variables. To illustrate this analytical method, a Venn diagram is prepared below:

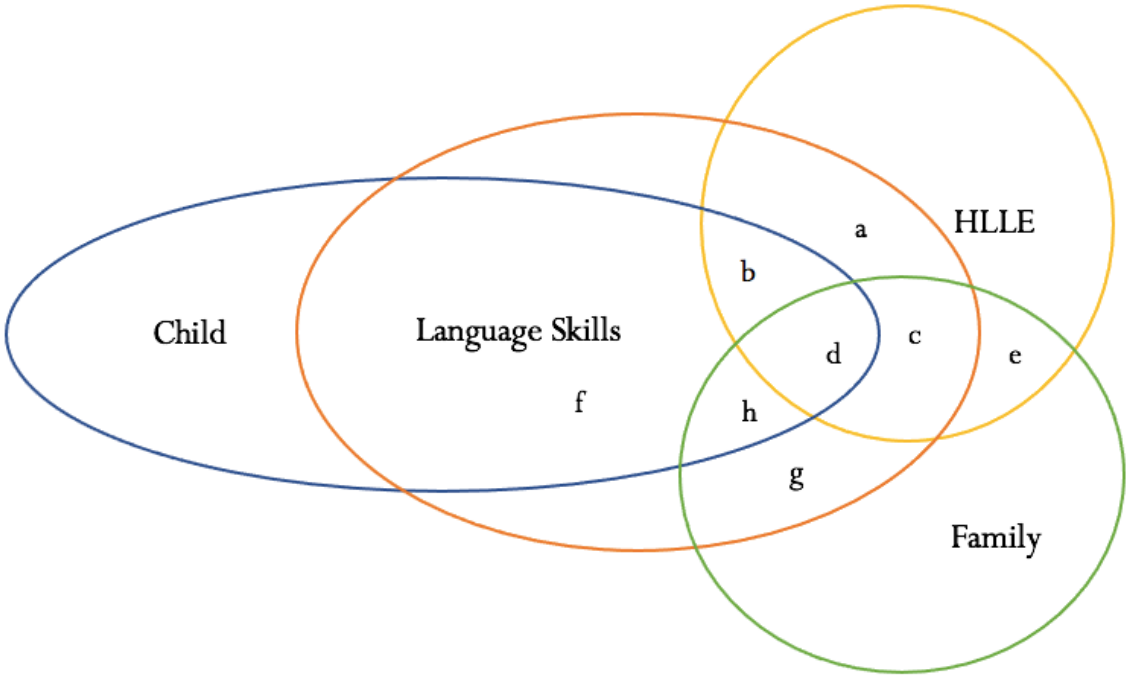


Figure 4.1. The Venn Diagram for the regression analysis

In this diagram, the intersection areas identified by the letters *a, b, c, d*, and *e* depict the variance across the HLLE characteristics of children that this study aims to capture. Similarly, the intersection areas identified by the letters *a, b, c, d, f, g,* and *h* reflect the variance across the characteristics of language skills of children captured by this study. The rest of the areas falling under the orange and yellow lines that are

not identified by a letter demonstrate the variability in the language skills and the HLLE of children that are not captured by this study (e.g., phonological awareness or paternal language use). This diagram was drawn in line with the illustration prepared by Cohen et al. (2003) to explain the fundamentals of multiple regression analysis. In their figure, they present the variance explained by two variables depicted by X_1 and X_2, which predict an outcome variable named Y. These variables are pictured as three intersecting ballantines. The intersecting areas between the independent and dependent variables are defined as the "portions of Y overlapped uniquely by X_1 and X_2" (Cohen et al., 2003, p.72). These areas demonstrate the "proportions of Y variance, are squared semipartial correlation coefficients, and each equals the increase in the squared multiple correlation that occurs when the variable is added to the other independent variable" (Cohen et al., 2003, p.72).

Now, drawing on this explanation, the illustration depicted by Figure 4.1. demonstrates the unique and shared variances examined by the research questions of this study.The first research question aims to demonstrate the variance in the HLLE of children explained by their family background characteristics. To answer this research question, the areas *c, d*, and *e* are investigated through the variance explained by the regression analysis after entering the variables of family background characteristics. The explained variance demonstrated by this analysis excludes the variance that can be depicted by a different regression analysis of language skills explained by children's changing language practices at home as a result of their diminishing heritage language skills, hypothetically captured by the area *b*. Whereas, the second research question aims to depict the variance in the language skills of children explained by the HLLE resources of families after taking the child- and macro-level factors into account. To answer this research question, first the vocabulary scores of children are observed in relation to their non-verbal abilities. In this case, the model first captured the variance depicted by the areas *f, b, d, h*. Then, the family characteristics were entered in the model to observe the change in variance as depicted by the areas *c, e, and g*. Lastly, the HLLE variables entered and the change in variance was observed depicted by the area *a*. The area *a* demonstrated the final contribution of the home language and literacy environment variables

in explaining the variance in children's language skills after controlling for variations in child and family background characteristics.

The research findings were answered through three statistical values. To test for the significance of a model predicting the outcome variable, the *F* values were reported. To evaluate the relevance and the effects of the predictors in a model, *B* values were reported with an emphasis on their effect size and the directionality of their effect. Lastly, to evaluate the contribution of a model in explaining the variance in an outcome variable, the overall R^2 values were examined and reported.

4.4. Macro-system: Family Background Characteristics

The factors pertaining to the macro-system of children were selected as the indicators of family background characteristics that have a possible influence on the resources in the HLLE of children. Drawing on the evidence, three variables were used to indicate the family background characteristics: parent's education, material well-being, and social integration.

4.4.1. Parent's Education

Parents answered several questions on their education including their school qualification levels, vocational education, and university education. In order to unify the information collected on the education levels of the parents, a syntax was created to recategorize the items into a five-level scale drawing on the International Standard Classification of Education (ISCED) 2011: (1) ISCED 0, 1 (primary education or lower), (2) ISCED 2, 3 (lower or upper secondary education), (3) ISCED 4,5 (post-secondary non-tertiary and short cycle tertiary education), (4) ISCED 6 (bachelor level), (5) ISCED 7 (graduate level education). See Appendix 13 for the syntax.

Phase 1. The descriptive analysis of the education levels of the primary caregivers in the Phase 1 demonstrated that almost a half of the parents had at least a bachelor's degree (N =80, 48%). Less than a quarter of parents had a vocational degree (N = 31, 18%) or had only school qualification (N = 34, 20%). Only a small minority of the parents did not have a qualification or only had a primary school education (N = 23, 14%). See Table 4.2. for the frequencies of education levels.

Phase 2. Education levels of the parents who participated in the second phase of the study were similar to the qualifications of the main sample. The frequencies varied between 1 to 6% for each education level. The comparison of the education levels of parents, who participated in the second phase of the study and the parents, who only participated in the first phase of the study has shown that there was no significant difference in the education levels of the two groups. See Table 4.2. for the frequencies of education levels.

Table 4.2. Descriptive statistics of parent's education level

Level	**As Defined by ISCED 2011**	**Phase 1**	**Phase 2**
		N (%)	**N (%)**
1	ISCED 0 % 1 (primary or lower)	23 (14%)	9 (13%)
2	ISCED 2 & 3 (lower or upper secondary education)	34 (20%)	9 (13%)
3	ISCED 4 & 5 (post-secondary non-tertiary and short cycle tertiary education)	31 (18%)	11 (17%)
4	ISCED 6 (bachelor level)	58 (35%)	26 (39%)
5	ISCED 7 (graduate level education)	22 (13%)	12 (18%)
Phase 1 N = 168; Phase 2 = 67			

4.4.2. Material Well-being

The data collected with regards to the material well-being of the families came from information on families' monthly income and material assets. The data were aggregated to create a composite score of material well-being by adding the scores of monthly income and material assets of the families. This section describes the indicators of the material well-being variable, data reduction methods, and the distribution of scores for the final variable.

4.4.2.1. Monthly Income

Phase 1. A large group of parents in the main sample showed nonrandomly missing data on the monthly income question. 15% of the parents indicated that they did not want to tell their monthly family income, whereas 16% of the parents indicated that they did not know their family income. Among the families who reported their monthly income, the lowest quarter of the families earnt less than 1510 GBP a month, whereas highest quarter earnt more than 3730 a month. Almost a half of the families earnt less than 2560 GBP a month (37%). See Table 4.3. for the frequencies of family monthly income.

Phase 2. Monthly income characteristics of families, who participated in the second phase of the study were similar to the resources depicted for the main sample. The frequencies showed a maximum 11% of difference for each income level. Only the percentages for missingness showed a bigger difference. In comparison to the main sample of the study, only a small minority of parents did not know their monthly income (2%) or preferred not to disclose (2%). See Table 4.3. for the frequencies of family monthly income.

Table 4.3. Descriptive statistics of family monthly income as in British pounds

Monthly Income	**Phase 1** **N (%)**	**Phase 2** **N (%)**
< 900	12 (7%)	5 (7%)
900 – 1210	8 (5%)	4 (6%)
1210 – 1510	17 (10%)	11 (16%)
1510 – 1810	12 (7%)	2 (3%)
1810 – 2170	9 (5%)	3 (5%)
2170 – 2560	5 (3%)	5 (7%)
2560 – 3060	8 (5%)	6 (9%)
3060 – 3730	14 (8%)	10 (15%)
3730 – 4880	11 (7%)	6 (9%)
> 4880	20 (12%)	13 (19%)
Do not know	27 (16%)	1 (2%)
Do not want to tell	25 (15%)	1 (2%)
Phase 1 N = 168; Phase 2 = 67		

Due to large amount of missing data, the monthly income item was imputed using multiple imputation method. The variables for material resources (see Section 4.4.2.2.), migration history (see Section 4.4.3.1.) and parent's English competence (see Section 4.4.3.2.), which are statistically and theoretically shown to be correlates of family income, were used as the predictors of the imputation analysis. The analysis automatically assigned Fully Conditional Specification (FCS) model, which creates imputations in large data sets including both categorical and continuous variables. Once the imputations were created, the data were checked for the differences between the observed and imputed values, and the distribution of the completed data as a whole. The visual examination of the distribution graphs has shown that the imputed data followed a similar trend in the distribution of monthly income (see Figure 4.2.).

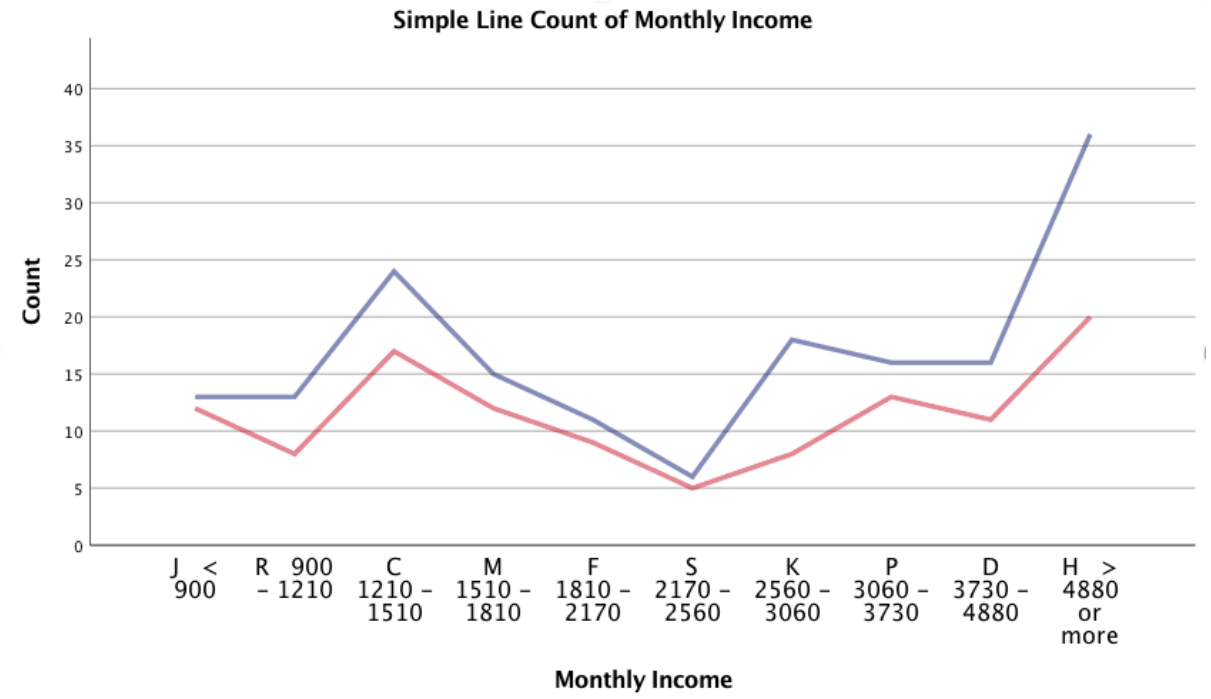


Figure 4.2. Comparison of imputed and non-imputed data of monthly income as in British pounds[18]

Further mean comparisons show no significant difference in monthly income of families between the imputed and the observed data ($t(281) = .858$, $p = .392$). Hence, the analysis continued with the imputed dataset. The comparison of the family income of parents, who participated in the second phase of the study and the parents, who only participated in the first phase of the study has also shown that there was no significant difference in the material resources of the two groups ($t(166) = .414$, $p = .679$). See Table 4.4. for the frequencies of monthly income for the imputed data set.

[18] Blue line represents the income distribution of imputed data by FCS model; Red line represents the income distribution of the observed data set.

Table 4.4. Descriptive statistics of imputed monthly income data as in British pounds

Monthly Income	Phase 1 N (%)	Phase 2 N (%)
< 900	13 (8%)	5 (7%)
900 – 1210	13 (8%)	4 (6%)
1210 – 1510	24 (14%)	12 (18%)
1510 – 1810	15 (9%)	2 (3%)
1810 – 2170	11 (6%)	3 (5%)
2170 – 2560	6 (4%)	5 (8%)
2560 – 3060	18 (11%)	7 (10%)
3060 – 3730	16 (10%)	10 (15%)
3730 – 4880	16 (10%)	6 (9%)
> 4880	36 (20%)	13 (19%)
Phase 1 N = 168; Phase 2 = 67		

4.4.2.2. Material Resources

Phase 1. For the individual-level items, a majority of parents indicated that they were able to afford spending small amounts of money for their selves (N = 154, 92%), attending weekly leisure activities (N = 136, 81%), getting together with friends or family once a month (N = 152, 91%), replacing worn-out clothes with new ones (N = 157, 94%), and having two pairs of shoes suitable for daily activities (N = 161, 96%). For the household-level items, a majority of parents reported being able to afford to replace worn- out or damaged furniture (N = 145, 86%), own a car (N = 153, 91%), cover an unexpected expense (N = 112, 67%), go on a family holiday once a year (N = 142, 85%), and pay household arrears on time (N = 121, 72%). Almost all of the households were able to afford internet (N = 166, 99%), cook meat/fish-based meals more than once a week (N = 164, 98%), and keep their home warm (N = 164, 98%).

Phase 2. Material resources of families, who participated in the second phase of the study was similar to the resources depicted for the main sample. The frequencies varied between 1 to 11% for each indicator. The indicators were summed together to create an overall material resources variable to compare the samples of the study phases ($\alpha = .79$). The comparison of the material resources of parents,

who participated in the second phase of the study and the parents, who only participated in the first phase of the study has shown that there was no significant difference in the material resources of the two groups ($t(166) = 1.108$, $p = .251$). See Table 4.5. for the items and the frequencies.

Table 4.5. Descriptive statistics of material deprivation

Indicators	**Phase 1 N of Yes (%)**	**Phase 2 N of Yes (%)**
1. Most weeks, do you spend a small amount of money on yourself, for your own pleasure?	154 (92%)	61 (91%)
2. Do you regularly participate in a leisure activity that costs money?	136 (81%)	47 70%)
3. Do you get together with friends/family for a drink/meal at least once a month?	152 (91%)	60 (90%)
4. Can you replace worn-out clothes by some new ones?	157 (94%)	66 (99%)
5. Do you have two pairs of shoes in a good condition that are suitable for daily activities?	161 (96%)	66 (99%)
6. Could you tell me if your household replaces furniture when worn out or damaged?	145 (86%)	53 (79%)
7. Does your household have a car/van for private use?	153 (91%)	55 (82%)
8. Do you have an Internet connection for personal use when needed?	166 (99%)	67 (100%)
9. Can your household afford a meal with meat or fish (or a vegetarian equivalent) at least every second day?	164 (98%)	66 (99%)
10. Can your household afford an unexpected required expense (£800) and pay with your own resources?	112 (67%)	49 (73%)
11. Can your entire household afford to go for a week's annual holiday, away from home, including stays in a second dwelling or with friends/relatives?	142 (85%)	54 (81%)
12. Can your household afford to keep your home adequately warm?	164 (98%)	65 (97%)
13. In the past twelve months, has the household been unable to pay on time due to financial difficulties?	47 (28%)	16 (23%)
Total Mean (SD)	11.58 (2.30)	11.13 (2.77)
Phase 1 N = 168; Phase 2 = 67		

4.4.2.3. Data Reduction

Variables including material assets and family monthly income have been used for many years in wide-ranging studies on child development as indicators of socio-economic status (Conger & Donnellan, 2007; Hoff, 2013; Pungello et al., 2009). In order to minimize the variable redundancy, the data were examined

for possible methods of data reduction. As the factors were all indicators of material well-being of families, but still captured different aspects of the use of economic resources, the data reduction continued with the aggregation method. First the internal consistency for these variables was calculated. After observing the correlations between the indicators, the analysis proceeded with the inclusion of all the indicators. Adding all the indicators of the material well-being in the reliability analysis resulted in an acceptable Cronbach's alpha coefficient of .70. The scores were added together to create a total score for the material well-being with higher scores indicating better material well-being.

4.4.2.4. Normality and Outliers

The material well-being scores were, then, analysed for normality of distribution. There was a difference smaller than the standard deviation score of the data between the mean and the 5% trimmed mean in Phase 1 (M=17.38, SD=4.96; 5%TM=17.69) and Phase 2 (M=17.77, SD=4.68; 5%TM=17.93). See Table 4.6. for the descriptive statistics of material well-being scores.

Table 4.6. Descriptive statistics of material well-being

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Phase 1	17.38 (4.96)	2 – 23	-.68 (.19)	-.21 (.37)
Phase 2	17.77 (4.68)	2 – 23	-.89 (.29)	.71 (.58)

The Shapiro-Wilk statistics were significant at p=.000 for both Phase 1 and Phase 2. The data were skewed to the right (negative skew), all of which indicating a non-normal distribution of the financial well-being scores in both phases. See Figure 4.3. for the distribution of material well-being scores.

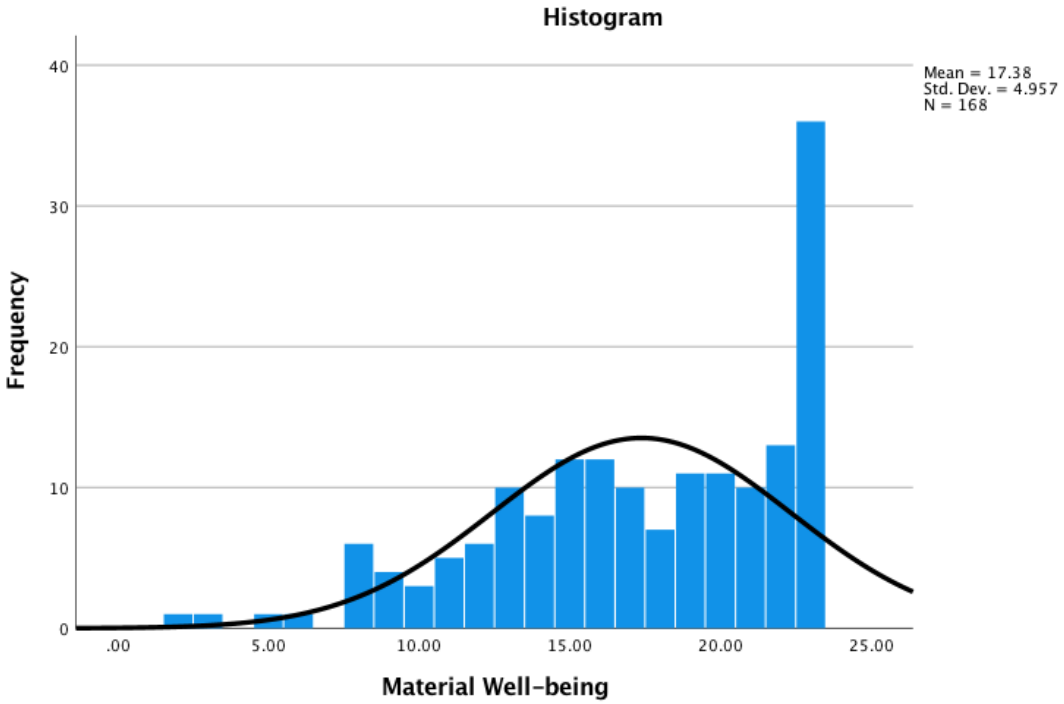


Figure 4.3. Distribution of material well-being scores in phase 1

There were no outliers detected in the box plot. In order to attain a normal distribution of scores, a square root transformation was conducted as the data demonstrated moderate level of skewness. The transformation formula did not change the scores into a normal distribution as shown by the result of the Shapiro-Wilk test ($p = .000$) and the histogram plot. As the final variable was not used as an outcome variable, non-transformed values were retained for the final analysis and a nominal variable was not developed. The material well-being scores demonstrated a similar distribution for the dataset of the Phase 2 ($t(166) = -.841$, $p = .402$); hence, no further analysis was carried out.

4.4.3. Social Integration of Parents

The data collected with regards to the social integration of parents came from the questionnaire data on parents' migration history and English competence. The data were analysed to create a composite score of social integration by assigning weighted scores produced by the principal component analysis. This

section describes the indicators of the social integration variable, data reduction methods, and the distribution of scores for the final variable.

4.4.3.1. Migration History of Parents

As the parents in both samples were first-generation immigrants in England, their migration history was calculated through their length of residence.

Phase 1. The parents' length of residence in the country ranged from 2 years to 38 years (M= 15.05, SD= 7.91). Mothers' age at arrival ranged from 2 years to 41 years (M= 26.22, SD= 17.08).

Phase 2. Parents' length of residence in the country ranged from 2 years to 32 years (M= 14.82, SD= 8.73). Mothers' age at arrival ranged from 4 years to 41 years (M= 26.80, SD= 17.95). The parents who participated in the second phase did not show a significant difference in length of residence in comparison to the parents, who only participated in the first phase of the study ($t(166) = -.31$, $p = .760$). See Table 4.7. for the descriptive statistics for parents' migration history.

Table 4.7. Descriptive statistics of parent's migration history

Length of Residence	**Phase 1** N (%)	**Phase 2** N (%)	**Age at Arrival**	**Phase 1** N (%)	**Phase 2** N (%)
1 – 9	49 (29%)	23 (34%)	**1 – 9**	14 (8%)	8 (12%)
10 – 19	77 (46%)	25 (38%)	**10 – 19**	31 (18%)	10 (15%)
20 – 29	35 (21%)	16 (24%)	**20 – 29**	80 (48%)	31 (46%)
30 – 39	7 (4%)	3 (4%)	**30 – 41**	36 (21%)	15 (22%)
M (SD)	15.05 (7.91)	14.82 (8.73)	**M (SD)**	26.22 (17.08)	26.80 (17.95)
Phase 1 N = 168; Phase 2 = 67					

4.4.3.2. Language Skills of Parents

Almost all the parents in the main sample did not experience any issues with Turkish at all (99%), i.e., they were fully fluent in Turkish. For that reason, information on their English skills was reported only and the data were used for the development of the social integration variable.

Phase 1. Parents' English language skills varied. In the main sample, a large proportion of parents did not experience any problems when reading newspapers in English (N = 57, 34%), whereas smaller groups of parents reported to experience problems rarely (N = 30, 18%) or sometimes (N = 43, 26%). In comparison to reading skills, a slightly larger proportion of parents did not experience any problems when listening to news in English (N = 67, 40%), whereas smaller groups of parents reported experience problems rarely (N = 24, 14%) or sometimes (N = 44, 26%). For parents' communication skills, more than half of the parents (N = 90, 54%) indicated that they did not experience any problems when having a conversation in English, whereas smaller groups of parents reported to experience problems rarely (N = 28, 17%) or sometimes (N = 31, 18%) when having a conversation at least sometimes.

Phase 2. Language skills of parents, who participated in the second phase of the study was almost identical to the language skills of the main sample. The frequencies varied between 1 to 3% for each language competence indicator. The comparison of the language skills of parents, who participated in the second phase of the study and the parents, who only participated in the first phase of the study has shown that there was no significant difference in the language skills of the two groups for reading ($t(166) = .99$, $p = .322$), listening ($t(166) = .49$, $p = .627$), and speaking ($t(166) = .10$, $p = .918$). See table 4.8. for the descriptive statistics of parent's English skills.

Table 4.8. Descriptive statistics of parent's English skills

	Answer	Phase 1 N (%)	Phase 2 N (%)	Range	Mean (SD)
Reading newspapers	Never	57 (34%)	22 (33%)	Phase 1: 1-6	2.55 (1.48)
	Rarely	30 (18%)	10 (15%)	Phase 2: 1-6	2.69 (1.56)
	Sometimes	43 (26%)	17 (25%)		
	Often	14 (8%)	6 (9%)		
	Always	18 (11%)	9 (13%)		
	I cannot read	6 (3%)	3 (5%)		
Listening to news	Never	67 (40%)	25 (37%)	Phase 1: 1-6	2.37 (1.38)
	Rarely	24 (14%)	10 (15%)	Phase 2: 1-5	2.43 (1.38)
	Sometimes	44 (26%)	18 (27%)		
	Often	15 (9%)	6 (9%)		
	Always	17 (10%)	8 (12%)		
	I cannot understand	1 (1%)	0		
Having conversations	Never	90 (54%)	35 (52%)	Phase1: 1-5	1.93 (1.20)
	Rarely	28 (17%)	10 (15%)	Phase 2: 1-5	1.94 (1.67)
	Sometimes	31 (18%)	16 (23%)		
	Often	10 (6%)	3 (5%)		
	Always	9 (5%)	3 (5%)		
Phase 1 N = 168; Phase 2 = 67					

4.1.1.1. Data Reduction

Literature shows that time spent in the country can attenuate the challenges that are associated with migration, such as lack of language proficiency, impermanent residence, and unfamiliarity with the legal and healthcare systems can be detrimental for the psychological and economic well-being of individuals (Luksyte et al., 2014). However, language integration of immigrants does not always correspond with the time spent in the country as shown by evidence from the Turkish population in Norway (Blom & Henriksen, 2008). For these reasons, a new variable was developed to indicate parents' level of social integration in the country using data on parents' English competence and length of residence in England. This variable aimed to capture parents' length of residence as well as their language skills to demonstrate parents' experiences with integration at a more differentiating level. To develop a new social integration variable, a PCA was carried out. The analysis examined the indicators of parents' language skills and migration history to extract one factor.

As shown by the preliminary analysis, different components of parents' English skills were highly correlated with each other, whereas parents' language skills have shown an acceptable level of correlation with the length of residence ($r > .31$). To ensure the appropriateness of PCA, the assumptions of the analysis was examined. The Kaiser-Meyer-Olkin measure of sampling adequacy attained a value of .756, above the recommended value of .5 (Kaiser, 1970; 1974). The Bartlett's Test of Sphericity (Bartlett, 1954) was statistically significance (p=.000), supporting the factorability of the correlation matrix. The factor created as a final measure of parents' social integration established an eigenvalue of 2.845 and explained a total of 71% of the variance. See Table 4.9. for the factor loadings of the analysis items.

Table 4.9. Factor loadings of principal component analysis for social integration variable

Factor Loadings	Length of Residence	Reading Competence	Listening Competence	Speaking Competence
Component	.510	.937	.955	.891
Communalities	.260	.879	.911	.794

The final component was labelled as social integration drawing on the theoretical evidence suggesting that the indicators of the analysis are the predictors of social integration (Luksyte et al., 2014; Blom & Henriksen, 2008). The participants were assigned to an optimally weighted component score reflecting their social integration as produced by the PCA. The scores are examined for normality and outliers prior to the main analysis.

4.4.3.3. Normality and Outliers

The social integration scores were, then, analysed for normality of distribution. There was a difference smaller than the standard deviation score of the data between the mean and the 5% trimmed mean in Phase 1 (M=.00, SD=1.00; 5%TM=.05) and Phase 2 (M=-.06, SD=1.03; 5%TM=-.01). See Table 4.10. for the descriptive statistics of social integration scores.

Table 4.10. Descriptive statistics of social integration scores

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Phase 1	.00 (1.00)	-.249 – 1.44	-.52 (.19)	-.71 (.37)
Phase 2	-.06 (1.03)	-.249 – 1.33	-.33 (.29)	-.96 (.58)

The Shapiro-Wilk statistics were significant at p=.01 for both Phase 1 and Phase 2. The data was skewed to the right, all of which indicating a non-normal distribution of the social integration scores in phase 1. See Figure 4.4. for the distribution of social integration scores.

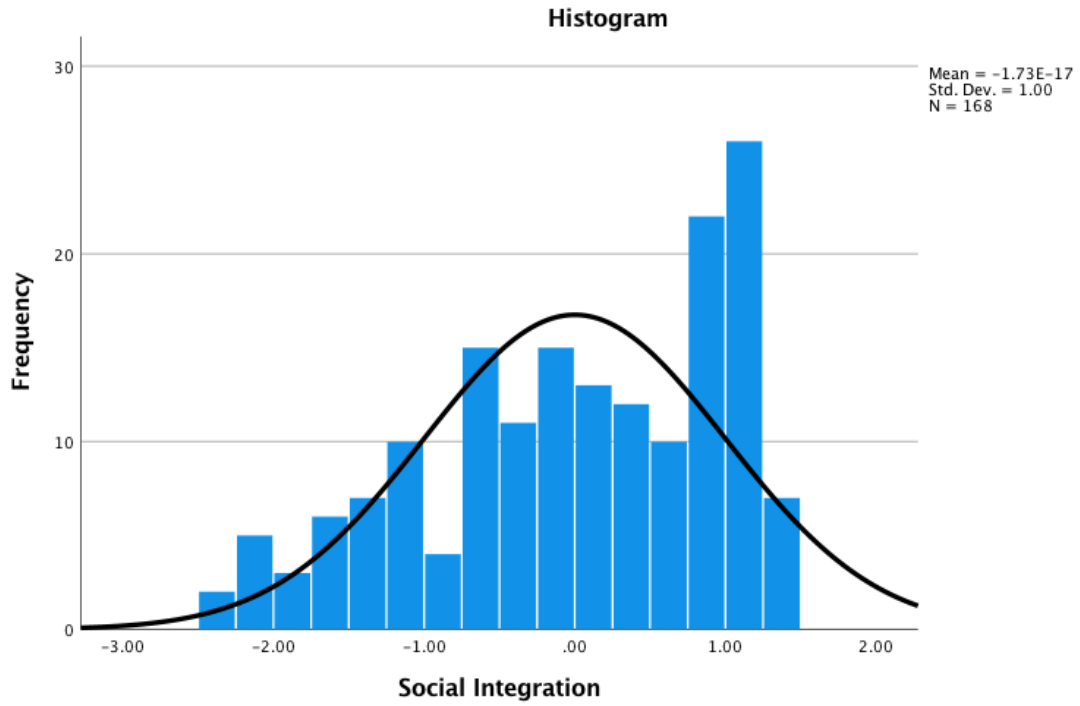


Figure 4.4. Distribution of social integration scores in Phase 1

There were no outliers detected in the observed value. In order to attain a normal distribution of scores by preserving the valid and non-extreme scores, a square root transformation was conducted as the data demonstrated moderate level of skewness. The transformed data were no more normally distributed than the original data. As the final variable was not used as an outcome variable, non-transformed values were retained for the final analysis and a nominal variable was not developed. The social integration scores

demonstrated a similar distribution for the dataset of the Phase 2 ($t(166) = .580$, $p = .563$); hence, no further analysis was carried out.

4.5. Microsystem: Home Language and Literacy Environment

The factors pertaining to the micro-system of children were selected as the indicators of Home Language and Literacy Environment (HLLE) that have a possible influence on the language skills of children as presented in the Chapter 2. Drawing on the evidence from the literature, three variables were used to indicate the HLLE: language and literacy activities, language exposure, and language quality in maternal speech.

4.5.1. Home Language and Literacy Activities

The data for language and literacy activities were collected for 9 activity types that were theoretically categorized under three activity groups (Melhuish et al., 2008). The data on the items that established a significant correlation with children's language skills were summed together to create an overall variable for the home language and literacy activities. This section describes the indicators of the home language and literacy activities, data reduction methods, and the final distribution of the scores.

4.5.1.1. Conversation activities

Phase 1. On a 1 to 6 interval scale from "almost never" to "every day", the majority of the parents indicated to talk to their child about their child's daily experiences on a daily basis (77%) and about child's past experiences several times a week or more (70%). Similarly, the majority of the parents indicated to talk to their child about their child's general interest at least several times a week (73%). On average, parents had more conversations with their children about their daily experiences ($M = 5.64$, $SD = .82$),

followed by the conversations on general interest (M = 4.94, SD = 1.29), and past experiences (M = 4.87, SD = 1.09).

Phase 2. Parents, who participated in the second phase of the study demonstrated similar trends in participating in the conversation activities at home. There were more parents who reported talking to their children every day on their daily experiences (88%). A majority of the parents reported to talk to their child on their past experiences (70%) and general interest topics (75%) at least several times a week. Similar to the descriptive statistics of the main sample, on average, parents had more conversations with their children about their daily experiences (M = 5.87, SD = .39), followed by the conversations on general interest (M = 5.01, SD = 1.19), and past experiences (M = 4.82, SD = 1.01). See Table 4.11. for the descriptive statistics of conversation activities.

Table 4.11. Descriptive statistics of conversation activities

Items		**Frequencies**	
How often do parents talk to their child about their child's…			
		Phase 1 N (%)	Phase 2 N (%)
Item (1) Daily experiences	Almost Never	1 (1%)	-
	Less often	3 (2%)	-
	Once or twice per month	-	-
	Once or twice per week	9 (5%)	1 (2%)
	Several times a week	25 (15%)	7 (10%)
	Every day	130 (77%)	59 (88%)
	M (SD)	5.64 (.82)	5.87 (.39)
Item (2) Past experiences	Almost Never	-	-
	Less often	7 (4%)	1 (2%)
	Once or twice per month	12 (7%)	8 (12%)
	Once or twice per week	33 (19%)	11 (16%)
	Several times a week	58 (35%)	29 (43%)
	Every day	58 (35%)	18 (27%)
	M (SD)	4.87 (1.09)	4.82 (1.01)
Item (3) General interest	Almost Never	3 (2%)	1 (2%)
	Less often	12 (7%)	3 (5%)
	Once or twice per month	6 (4%)	3 (5%)
	Once or twice per week	24 (14%)	9 (13%)
	Several times a week	49 (29%)	22 (32%)
	Every day	74 (44%)	29 (43%)
	M (SD)	4.94 (1.29)	5.01(1.19)
Phase 1 N = 168; Phase 2 = 67			

4.5.1.2. Literacy activities.

Phase 1. On a 1 to 6 interval scale from "almost never" to "every day", a majority of the parents indicated to read their child picture books on a daily basis (63%) and storybooks (61%). The portion of parents who read their children general interest books on a daily basis was much smaller (32%). On average, parents read picture books more often with their children (M = 5.43, SD = .96), followed storybooks (M = 5.30, SD = 1.14), and general interest books (M = 4.39, SD = 1.60).

Phase 2. Parents, who participated in the second phase of the study demonstrated similar trends in carrying out literacy activities at home. a majority of the parents indicated to read their child picture books on a daily basis (68%) and storybooks (63%). The proportion of parents who read their children

general interest books on a daily basis was again much smaller (25%). Similar to the descriptive statistics of the main sample, on average, parents read picture books more often with their children (M = 5.51, SD = .89), followed storybooks (M = 5.25, SD = 1.26), and general interest books (M = 3.94, SD = 1.74). See table 4.12. for the descriptive statistics of literacy activities.

Table 4.12. Descriptive statistics of literacy activities

Items		**Frequencies**	
How often parents read to their child…			
		Phase 1 N (%)	Phase 2 N (%)
Item (1) Picture book	Almost Never	1 (1%)	-
	Less often	4 (3%)	1 (2%)
	Once or twice per month	3 (2%)	3 (5%)
	Once or twice per week	13 (8%)	3 (5%)
	Several times a week	40 (23%)	14 (20%)
	Every day	107 (63%)	46 (68%)
	M (SD)	5.43 (.96)	5.51 (.89)
Item (2) Story book	Almost Never	3 (2%)	2 (3%)
	Less often	5 (3%)	2 (3%)
	Once or twice per month	5 (3%)	3 (5%)
	Once or twice per week	16 (10%)	5 (7%)
	Several times a week	36 (21%)	13 (19%)
	Every day	103 (61%)	42 (63%)
	M (SD)	5.30 (1.14)	5.25 (1.26)
Item (3) Interest book	Almost Never	17 (10%)	11 (17%)
	Less often	8 (5%)	4 (6%)
	Once or twice per month	14 (8%)	7 (10%)
	Once or twice per week	37 (22%)	18 (27%)
	Several times a week	38 (23%)	10 (15%)
	Every day	54 (32%)	17 (25%)
	M (SD)	4.39 (1.60)	3.94 (1.74)
Phase 1 N = 168; Phase 2 = 67			

4.5.1.3. Storytelling Activities

Phase 1. On a 1 to 6 interval scale from "almost never" to "every day", a majority of the parents indicated that they tell their child made-up stories more than once or twice a month (58%), whereas a majority of parents indicated to tell cultural stories to their children less often than once or twice a week (58%). The portion of parents who tell their children religious stories was much smaller and a majority

of parents indicated to tell religious stories less often than once a month or almost never (67%). On average, parents told made-up stories to their children more often (M = 3.65, SD = 1.84), followed cultural stories (M = 3.18, SD = 1.62), and religious stories (M = 2.19, SD = 1.57).

Phase 2. Parents, who participated in the second phase of the study demonstrated similar trends in carrying out storytelling activities at home. A majority of the parents indicated that they tell their child made-up stories once or twice a week or more often (64%), whereas a majority of parents indicated to tell cultural stories to their children once or twice a month or less often (53%). The portion of parents who tell their children religious stories was much smaller and a majority of parents indicated to tell religious stories less often than once a month or almost never (55%). Similar to the descriptive statistics of the main sample, on average, parents told made-up stories to their children more often (M = 4.13, SD = 1.76), followed cultural stories (M = 3.47, SD = 1.42), and religious stories (M = 2.46, SD = 1.71). See Table 4.13. for the descriptive statistics of literacy activities.

Table 4.13. Descriptive statistics of storytelling activities

Items		**Frequencies**	
How often parents tell their child…			
		Phase 1 N (%)	Phase 2 N (%)
Item (1) Made-up stories	Almost Never	38 (23%)	10 (15%)
	Less often	13 (7%)	4 (6%)
	Once or twice per month	20 (12%)	10 (15%)
	Once or twice per week	33 (19%)	12 (18%)
	Several times a week	30 (18%)	11 (16%)
	Every day	35 (21%)	20 (30%)
	M (SD)	3.65 (1.84)	4.13 (1.76)
Item (2) Cultural stories	Almost Never	36 (22%)	7 (10%)
	Less often	26 (15%)	10 (15%)
	Once or twice per month	35 (21%)	19 (28%)
	Once or twice per week	27 (16%)	12 (18%)
	Several times a week	30 (18%)	14 (22%)
	Every day	14 (8%)	5 (7%)
	M (SD)	3.18 (1.62)	3.47 (1.42)
Item (3) Religious stories	Almost Never	84 (53%)	29 (43%)
	Less often	25 (14%)	8 (12%)
	Once or twice per month	20 (12%)	10 (15%)
	Once or twice per week	18 (10%)	10 (15%)
	Several times a week	9 (5%)	3 (5%)
	Every day	12 (6%)	7 (10%)
	M (SD)	2.19 (1.57)	2.46 (1.71)
Phase 1 N = 168; Phase 2 = 67			

4.5.1.4. Data Reduction

To develop a variable that incorporated the activities in the home environment predicting the language development of children, both bottom-up and top-down levels of analytical methods were used. This analytical decision was made to explore and depict the activity types that may be the correlates of bilingual language skills of minority children as discussed in Chapter 2 (e.g., Puglisi et al., 2017). Drawing on this evidence, the analysis, first, aimed to depict the activities that are the correlates of children's language skills in this study. In order to achieve this goal, a correlation analysis was carried out. Drawing on the findings of this correlation analysis, the items, which are significantly correlated with the Turkish and English vocabulary scores, were selected as the correlates of children's language skills. Three items were

significantly correlated with children's English skills: conversations about daily experiences and general interest and reading a picture book (see Appendix 14). As these items were also significantly correlated with each other, the scores for each item were, then, summed to create the language and literacy activities variable for the final analysis. The additive data reduction was used as a method to account for the variations in each activity that might have a significant effect on children's language skills.

4.5.1.5. Distribution and Outliers

The distribution of scores for the HLLA variable were examined. The range of scores on this variable was from 8-18 points. There was a noticeable difference between the mean and the 5% trimmed mean (M=16.01, SD=2.19; 5%TM=16.22). The Shapiro-Wilk statistics were significant at p=.000 and the data were negatively skewed, all of which indicating a non-normal distribution of the HLLE Activities in phase 1. See Figure 4.5. for the distribution of scores for home language and literacy activities in Phase 1.

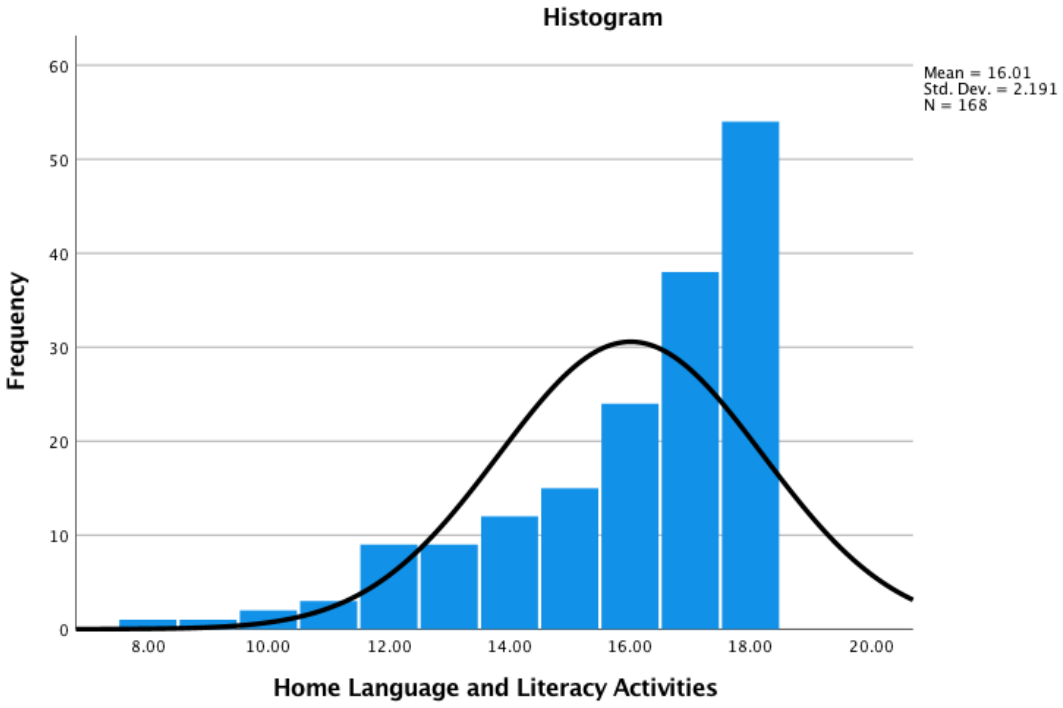


Figure 4.5. Distribution of scores for home language and literacy activities in Phase 1

There were four outliers at the lower end of the language and literacy activities scale detected by the boxplot. To decide how to handle the outliers, the cases were first examined for possible errors with data entry. After deciding that the outliers did not result from a data entry error, the cases were kept in the analysis. A logarithmic transformation was carried out to attain a normal distribution of scores by preserving the valid and non-extreme scores. However, the transformation did not lead to a significant change in the distribution of the scores as shown by the histogram plots and significant Shapiro-Wilk test results ($p = .000$). As the skewness and kurtosis values of the aggregated data were not beyond the limit of +/-2.00, the raw scores were retained and used in the final analysis. An alternative variable was also developed by assigning participants into low, medium, and high frequency language and literacy activity households (see Appendix 15). The alternative variable was used in the prediction of language and literacy activities to check for the reliability of the analysis results (see Section 4.9.3.1.). The mean comparisons of the scores for the language and literacy activities was not significant between the groups ($t(166) = -1.82$, $p = .070$), hence, the data distribution was not reported separately for Phase 2. Table 4.14. demonstrates the descriptive statistics for the language and literacy activities.

Table 4.14. Descriptive statistics of the language and literacy activities

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Phase 1	16.01 (2.19)	8 – 18	-1.24 (.19)	1.04 (.37)
Phase 2	16.38 (1.71)	12 – 18	-1.22 (.29)	.80 (.58)

4.5.2. Home Language Use

This section demonstrates the descriptive statistics of home language use in conversation and literacy activities and the method for creating a variable for home language use.

4.5.2.1. Language Use in Conversation Activities

Phase 1. On a 1- to 5-scale from "mainly English" to "mainly Turkish", almost half of the parents reported using only Turkish as the conversation language with children (N = 69, 41%), and almost a quarter of the families equally used Turkish and English as the conversation language (N = 32, 19%). Only small groups of parents reported to use only English (N =21, 13%), mostly English (N = 17, 10%), and mostly Turkish (N = 29, 17%).

Phase 2. Parents, who participated in the second phase of the study demonstrated differing patterns in their language use with their children. There were fewer parents who reported to use only Turkish (N = 16, 24%) and less parents who only spoke in English when having conversations with their children (N = 3, 5%). More parents spoke mostly in Turkish (N = 25, 37%) and mostly in English (N = 10, 15%) in comparison to the main sample. The percentage of parents who used both Turkish and English in conversation with their children did not change (N = 13, 19%). Self-reported language use in conversation activities was compared to the observed language use in mother-child interactions and demonstrated a high correlation [r=.717, N=67, *p*=.000]. See Table 4.15. for the descriptive statistics of language use in conversation activities.

Table 4.15. Descriptive statistics of language use in conversation activities

	Percentages	**Phase 1 N (%)**	**Phase 2 N (%)**
Conversation Language	Only English	21 (13%)	3 (5%)
	Mostly English	17 (10%)	10 (15%)
	Equal Use	32 (19%)	13 (19%)
	Mostly Turkish	29 (17%)	25 (37%)
	Only Turkish	69 (41%)	16 (24%)
Phase 1 N = 168; Phase 2 = 67			

4.5.2.2. Language Use in Literacy Activities

Phase 1. Language use of parents were different for literacy activities. Almost half of the parents used only English as the conversation language with their children (N = 67, 40%) and almost a quarter of the families equally used Turkish and English as the literacy language (N = 39, 23%). Only small groups of parents reported to use only Turkish (N = 23, 14 %), mostly English (N = 28, 17%), and mostly Turkish (N =11, 6%).

Phase 2. Parents, who participated in the second phase of the study demonstrated similar patterns in their language use when having literacy activities with their children. There were fewer parents who reported to use only English (N = 21, 31%) and more parents who mostly used English when having literacy activities with their children (N = 19, 29%). The equal use of languages and the Turkish use trends in literacy activities were close to the percentages demonstrated by the main sample. The frequencies varied 2 to 6% for each category. See Table 4.16. for the descriptive statistics of language use in conversation activities.

Table 4.16. Descriptive statistics of home language use in literacy activities

	Percentages	**Phase 1 N (%)**	**Phase 2 N (%)**
Conversation Language	Only English	67 (40%)	21 (31%)
	Mostly English	28 (17%)	19 (29%)
	Equal Use	39 (23%)	11 (16%)
	Mostly Turkish	11 (6%)	8 (12%)
	Only Turkish	23 (14%)	8 (12%)
Phase 1 N = 168; Phase 2 N = 67			

4.5.2.3. Data Reduction

There was a noticeable difference between the mean and the 5% trimmed mean for the language use in conversation activities (M=3.64, SD=1.42; 5%TM=3.71) and for the language use in literacy activities (M=2.37, SD=1.42; 5%TM=2.30). The Shapiro-Wilk statistics were significant (p=.000) for both indicators and the histogram plot for the Phase 1 data was negatively skewed. In order to overcome this problem, the scores were summed together to create a measure of overall home language use as they showed an acceptable Cronbach's alpha (α = .63).

4.5.2.4. Distribution and Outliers

After the aggregation of the scores, the new data were examined for normality and outliers. The scores on this summed variable ranged from 2-10 points. There was no observable difference between the mean and the 5% trimmed mean (M=6.02, SD= 2.42; 5%TM=6.02). The values for skewness and kurtosis were in the acceptable range and the data did not demonstrate outliers in the boxplot. The raw scores were retained for the final analysis. See Figure 4.8. for the histogram graph for the home language use variable.

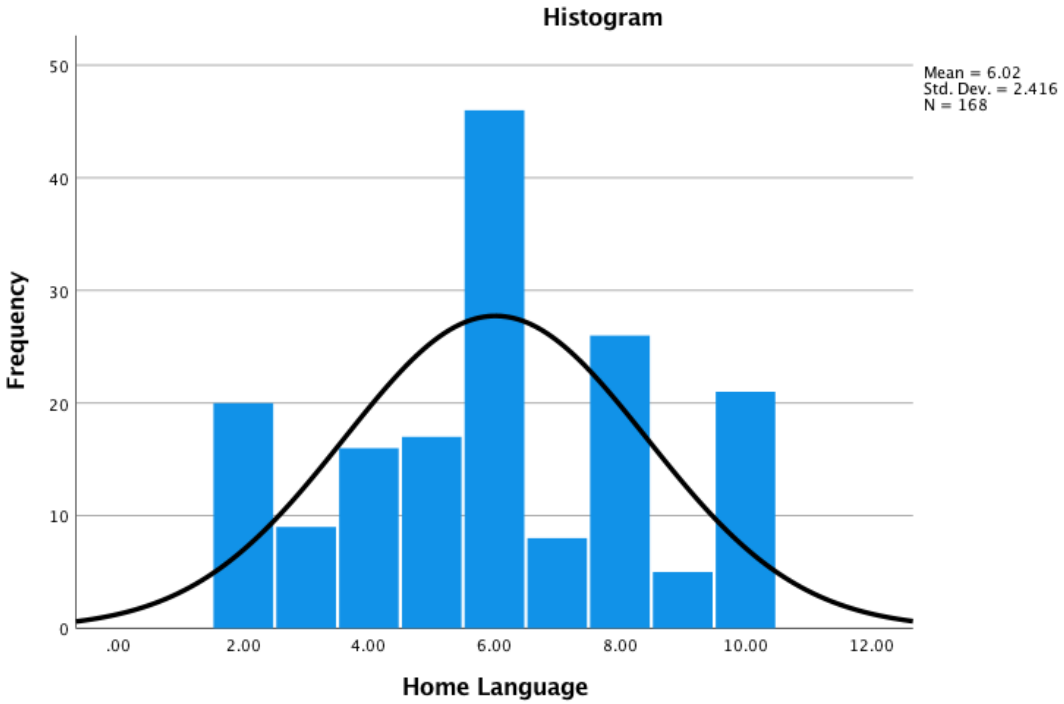


Figure 4.6. Distribution of scores for home language use in Phase 1

The mean comparison of the scores in Phase 1 and 2 was not significant ($t(166) = .182$, $p = .856$), For that reason, the distribution of the data was not further reported for the Phase 2. See Table 4.17. for the descriptive statistics of the summed scores for home language use.

Table 4.17. Descriptive statistics of home language use

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Phase 1	6.02 (2.42)	2 – 10	-.011 (.19)	-.81 (.37)
Phase 2	6.06 (2.12)	2 – 10	.27 (.29)	-.55 (.58)

4.6. Proximal Processes: Language Quality in Maternal Speech

As this chapter examines the role of quality of maternal speech through observations of mother-child interactions, the observational data collected only during Phase 2 were quantified for the final analysis. In order to depict language quality in maternal speech, the analysis focused on the measure of language quality drawing on the evidence in the current literature as presented in Chapter 2.

4.6.1. Language Quality in Maternal Speech

In order to calculate language quality in maternal speech, the voice-records of mother-child interactions were first transcribed, and the maternal speech was extracted into separate word documents. During transcriptions, the voice-records were assessed for observed language use on a 1- to 5-scale from "mainly English" to "mainly Turkish" by three Turkish-speaking researchers, including the author, the ratings demonstrated a high inter-rater reliability ($\alpha = .93$). Cronbach's Coefficient Alpha was used as a reliability measure as opposed to Cohen's Kappa as it allowed for the comparison of ratings to be done using non-categorical scales (see DeVellis, 2005). After transcriptions were revised by the Turkish-speaking research volunteers from the Bogazici University, the extracts were prepared for the assessment of lexical input. For this purpose, three steps were executed in editing the transcripts. First, inconsistencies in spelling and root forms were standardised to allow for the 'Quanteda' package in R (Benoit et al., 2018), to identify the same words in the text. Second, exclamation markers, interjections (e.g., 'hmm', 'oh' and 'ah!'), and functional words in both Turkish and English (e.g., de/da (in Turkish); is/are (in English) were removed from the text to restrict the analysis to only lexical input in speech. And lastly, the inflectional morphology was removed from the words to restore them in their root forms. As Turkish is an agglutinative language, the inflection morphology caused changes in the root forms of the words (e.g., 'git' (go), 'gider' (goes)). To overcome this problem, the inflections were removed, and the roots were reversed to their original forms manually. This was also applied to English inflections that functioned agglutinatively (e.g., apple(s)). Words with derivational morphology were not manipulated as derivative inflections lead to changes in the meaning of a word (e.g., mutlu (happy) and mutluluk (happiness)). After the transcriptions were finalised for the textual analysis, the texts were examined for the descriptive statistics of word tokens and word types using the Quanteda package in R (Benoit et al., 2018; see Appendix 16 for an example analysis in R). Then, the relationships between these indicators were analysed to understand if mothers used a more

diverse vocabulary when they talked more with their children. For these analyses, the raw scores of lexical input characteristics were used.

The interactions between mothers and children demonstrated a high level of variation in the number of words produced although the length of interaction did not vary significantly. The shortest interaction lasted for 11 minutes 11 seconds, whereas the longest one was 18 minutes 57 seconds. The descriptive statistics have shown that the frequency of tokens in maternal speech varied from 75 words to 643 words (M = 351.07, SD = 151.90). For the frequency of types in maternal speech, the number of different words used by mothers varied from 37 different words to 276 words (M = 132.90, SD = 51.93). The correlation between token and type counts has shown that parents used more diverse vocabulary when they produced more words in their speech [r=.763, N=67, *p*=.000]. The data demonstrated an acceptable level of normality for both token and type count as shown by the skewness and kurtosis values. See Table 4.18. for the descriptive statistics of lexical input characteristics maternal speech.

Table 4.18. Descriptive statistics of lexical input characteristics in maternal speech

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Token	351.07 (151.90)	75-643	.46 (.29)	-.95 (.58)
Type	132.90 (51.93)	37-276	.41 (.29)	-.08 (.58)

4.6.2. Data Reduction

After the preliminary analyses were completed, a final variable for lexical diversity was calculated. Although lexical diversity simply means the number of different words used in a text or speech, the methods of measuring lexical diversity in speech are diverse and the choice depends on the characteristics of a study. One extensively used method in the literature is the type/token ratio (TTR). This method, however, calculates the occurrence of diverse word utterances in a speech without taking the length of complete speech into consideration (Malvern, 2004). For that reason, the TTR analysis can be length sensitive and produce misleading results. McCarthy and Jarvis (2007) showed that text length did not have

a significant effect on the TTR analysis only if the text length was in the following ranges of text length: 100–154, 154–333, 200–666, and 250–2,000. In this study, the number of words produced by mothers during this interaction varied between 75 and 643. Since the range of text length in this study demonstrated a larger variation, first, a TTR analysis was run in R using the Quanteda package, then, a logarithmic correction was applied to the TTR analysis scores to minimize the text length effects (McCarthy & Jarvis, 2007).

4.6.3. Distribution and Outliers

After the logarithmic correction of the TTR scores, each participant in Phase 2 received a new score for their language quality in their speech. Next, the data were examined for the distribution of scores. Descriptive statistics have shown that scores were ranged from 2.72 to 4.79. There was no observable difference between the mean and the 5% trimmed mean (M=3.67, SD=.29; 5%TM=3.67). See Table 4.19. for the descriptive statistics of language quality in maternal speech.

Table 4.19. Descriptive statistics of language quality in maternal speech

Level	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Language quality	3.67 (.29)	2.72-4.79	-.68 (.29)	.65 (.59)

The data histogram demonstrated an approximation to a normal distribution of the categories alongside the acceptable skewness and kurtosis scores. Lastly, the Shapiro-Wilk test of normality was not significant ($p = .08$). Hence, the analysis proceeded with the transformed scores for language quality in maternal speech. See Figure 4.7. for the distribution of scores for the language quality in maternal speech.

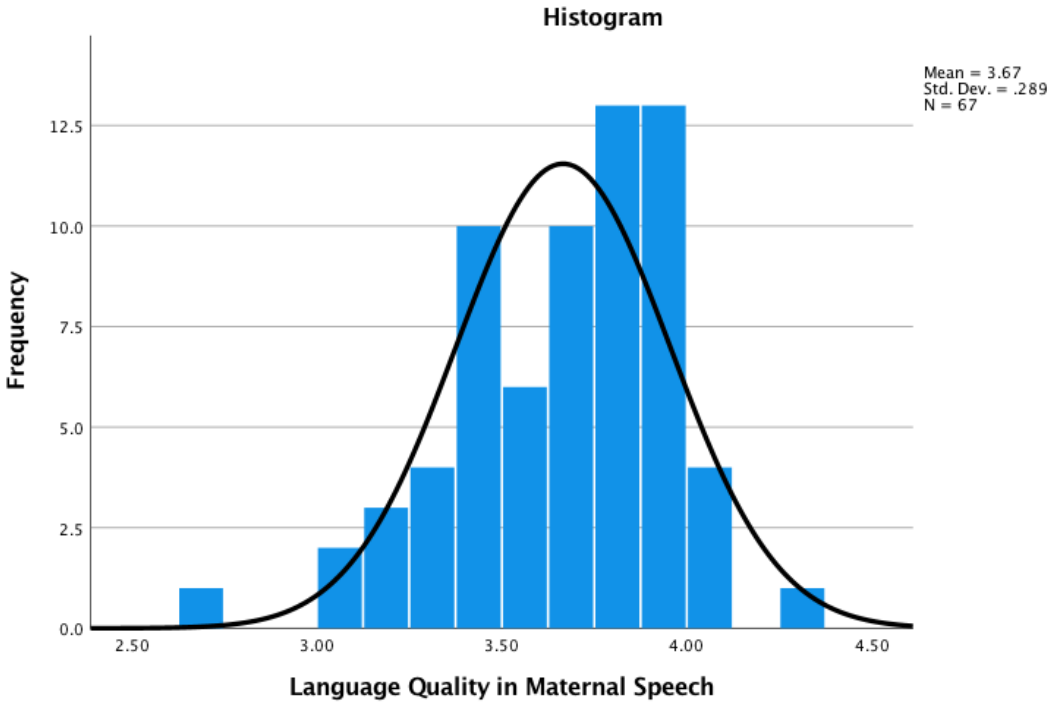


Figure 4.7. Distribution of scores for language quality in maternal speech

4.7. Child Skills

This section first presents the results of the Turkish receptive vocabulary test, followed by the results of the Turkish sentence repetition, English receptive vocabulary test, and the non-verbal ability scores of children. The descriptive statistics were first presented for the raw scores. Then, for vocabulary outcomes, age adjusted scores were calculated by regressing child outcomes onto their age. For the sentence repetition, the scores were regressed onto children's Turkish vocabulary knowledge to generate scores for the morpho-syntactic abilities of children. Depending on the normality distribution of scores one of the two was selected for the final analysis.

4.7.1. Turkish Vocabulary

Descriptive statistics for the Turkish vocabulary test have shown that the raw scores ranged from 2 to 79. There was an observable difference between the mean and the 5% trimmed mean (M=42.63, SD=17.06; 5%TM=42.99). The data histogram, however, demonstrated an acceptable level of normality and the

Shapiro-Wilk test of normality was not significant (p = .115). No outliers were observed in the boxplot. See Figure 4.8. for the distribution of raw scores for Turkish vocabulary.

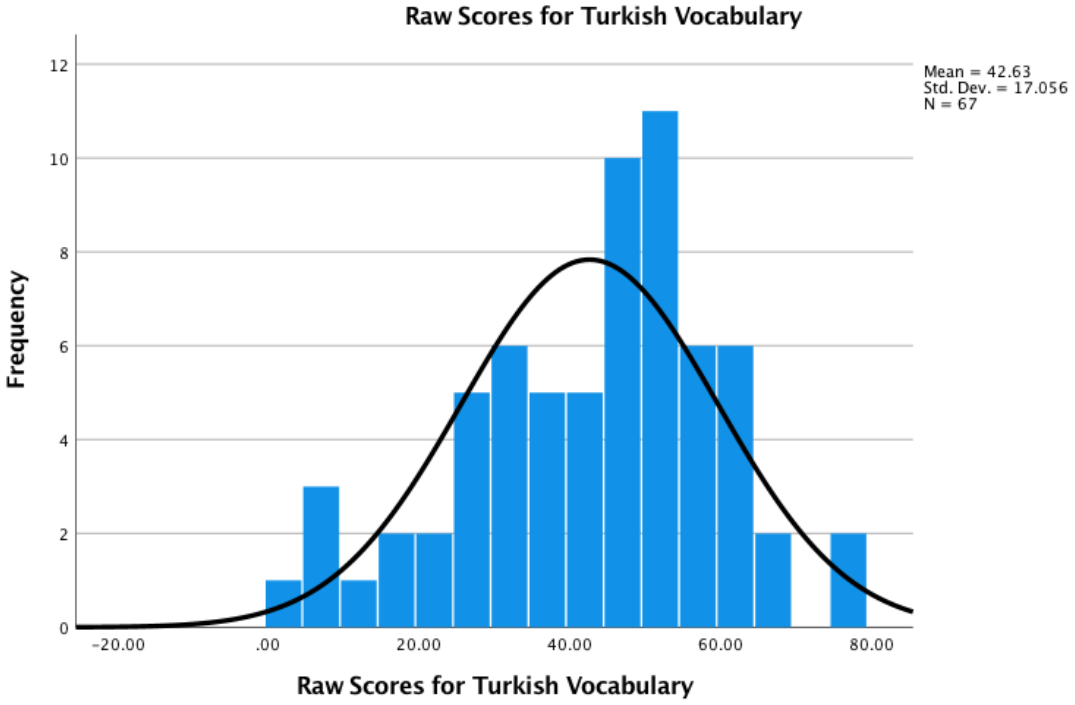


Figure 4.8. Distribution of raw scores for Turkish vocabulary

There was no significant relationship between Turkish vocabulary scores and children' age [r=.112, N=67, *p*=.366] and the age-adjusted scores demonstrated skewness in the data (p = .02) for the Shapiro-Wilk Test). Therefore, the raw scores were used in the regression analysis. See Table 4.20. for the descriptive statistics for the Turkish vocabulary scores.

Table 4.20. Descriptive statistics of raw scores for Turkish vocabulary

	Mean (SD)	**Min-Max**	**Skewness (SE)**	**Kurtosis (SE)**
Raw Scores	42.63 (17.05)	2 – 79	-.46 (.29)	-.01 (.58)
Aged adjusted scores	.00 (.99)	-2.67 – 1.97	-.63 (.29)	.43 (.58)

4.7.2. Turkish Sentence Repetition

Descriptive statistics for the Turkish sentence repetition test have shown that raw scores ranged from 0 to 28. There was an observable difference between the mean and the 5% trimmed mean (M=11.52, SD=7.43; 5%TM=11.45). The data histogram demonstrated a randomly scattered scores and the Shapiro-Wilk test of normality was significant (p = .002). No outliers were observed in the boxplot. See Figure 4.9. for the distribution of raw scores for Turkish Sentence Repetition.

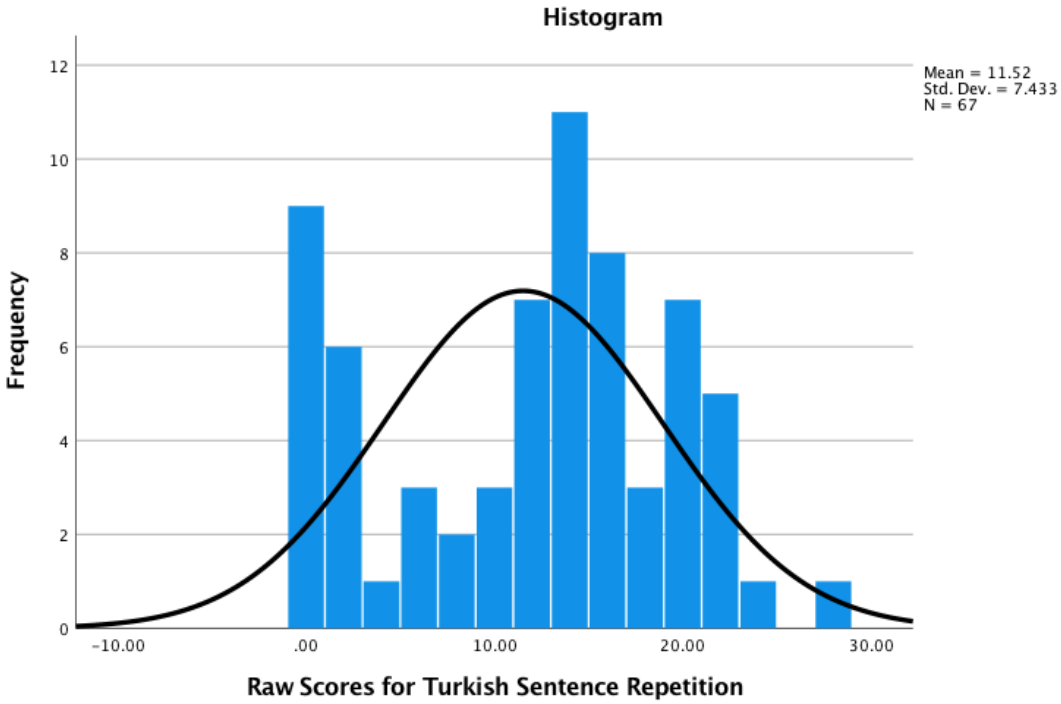


Figure 4.9. Distribution of raw scores for Turkish sentence repetition

As discussed in Section 2.7.1., the performance in sentence repetition test is highly dependent on children's vocabulary knowledge and accounting for the receptive vocabulary scores in sentence repetition ability leads to the prediction of children's morpho-syntax abilities in the language (Komeili & Marshall, 2013). As expected, there was a significant relationship between sentence repetition and Turkish vocabulary scores [r=.773, N=67, *p*=.000]. For that reason, the raw scores of sentence repetition were regressed onto Turkish vocabulary scores and standardized residuals were generated for the vocabulary-

adjusted scores. Vocabulary-adjusted scores demonstrated a normal distribution (p = .703 for the Shapiro-Wilk Test) with only one observed outlier; therefore, the residual scores were used for the final analysis and the outlier was kept in the analysis. See Figure 4.10. for the distribution of vocabulary-adjusted scores for Turkish vocabulary.

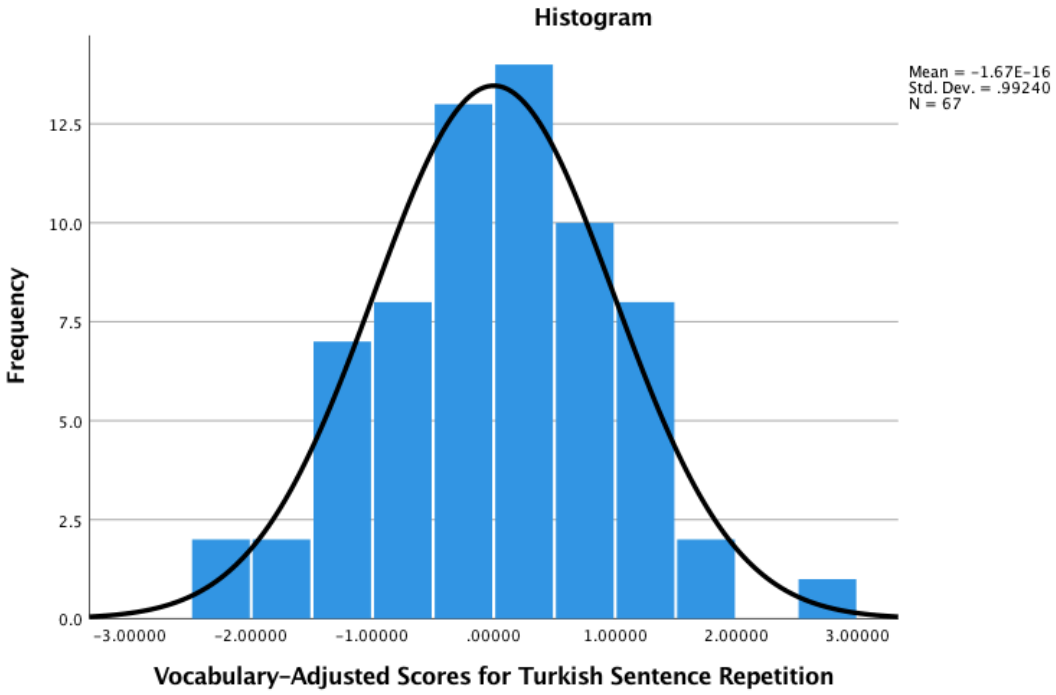


Figure 4.10. Distribution of vocabulary-adjusted scores for sentence repetition

Descriptive statistics have shown that the vocabulary-adjusted residual scores were ranged from -2.38 to 2.53. There was a small difference between the mean and the 5% trimmed mean (M=.00, SD=.99; 5%TM=-.03). See Table 4.21. for the descriptive statistics for the vocabulary-adjusted and raw sentence repetition scores.

Table 4.21. Descriptive statistics of raw and vocabulary-adjusted scores for Turkish sentence repetition

	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Raw Scores	11.52 (7.43)	0 – 28	-.19 (.29)	-.90 (.58)
Vocabulary-adjusted Residuals	.00 (.99)	-2.38 – 2.53	-.11 (.29)	-.03 (.58)

4.7.3. English Vocabulary

Descriptive statistics for the English vocabulary have shown that raw scores ranged from 7 to 90. There was an observable difference between the mean and the 5% trimmed mean (M=52.56, SD=19.51; 5%TM=52.94). The data histogram, however, demonstrated an acceptable level of normality and the Shapiro-Wilk test of normality was not significant (p = .07). No outliers were observed in the boxplot. See Table 4.11. for the distribution of raw scores for English vocabulary.

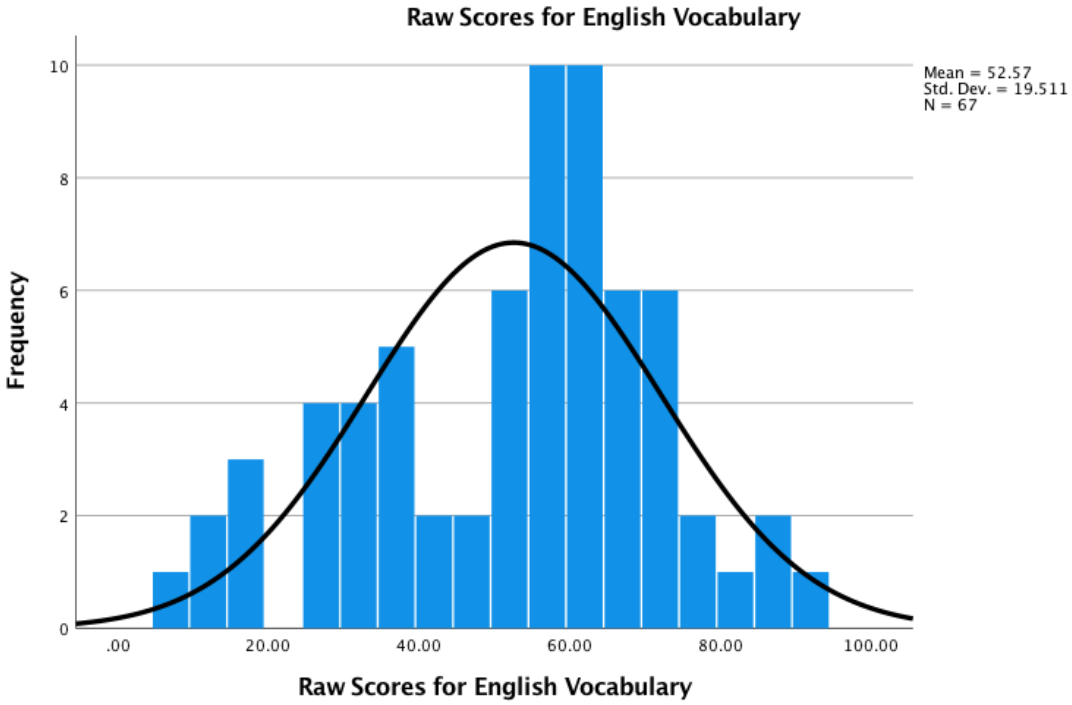


Figure 4.11. Distribution of raw scores for English vocabulary

There was a significant relationship between English vocabulary scores and children' age [r=.546, N=67, *p*=.000]. However, age-adjusted scores lead to the violation of normality and produced outlier scores (p = .001 for the Shapiro-Wilk Test); therefore, the raw scores were used for the final analysis. See Table 4.22. for the descriptive statistics for the English vocabulary scores.

Table 4.22. Descriptive statistics of English vocabulary

	Mean (SD)	Min-Max	Skewness (SE)	Kurtosis (SE)
Raw Scores	52.56 (19.51)	7 – 90	-.46 (.29)	-.43 (.58)
Aged-adjusted scores	.00 (.99)	-2.29 – 1.62	-.75 (.29)	-.10 (.58)

4.7.4. Non-verbal Abilities

Descriptive statistics for the non-verbal abilities have shown that raw scores ranged from 4 to 26. There was an observable difference between the mean and the 5% trimmed mean (M=14.25, SD=4.96; 5%TM=14.13). The histogram plot was positively skewed, and the Shapiro-Wilk test of normality was significant (p = .02), all of which confirmed that the data demonstrated a non-normal distribution of scores. No outliers were observed in the boxplot. See Figure 4.12. for the distribution of raw scores for children's non-verbal abilities.

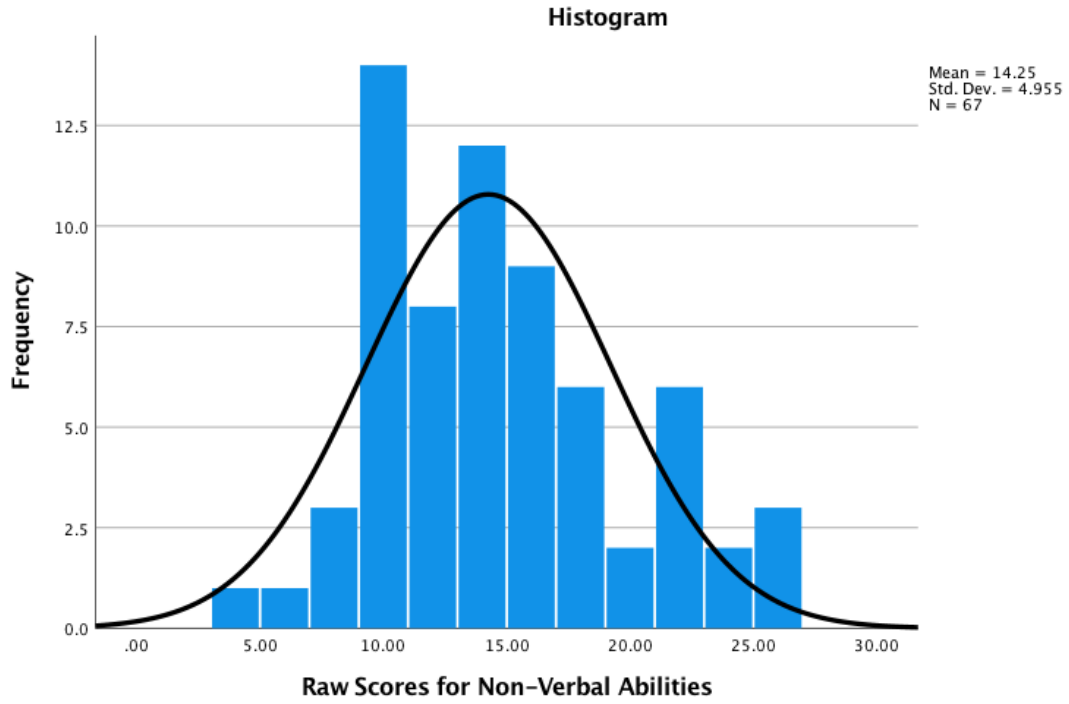


Figure 4.12. Distribution of non-verbal ability scores

There was a significant relationship between non-verbal ability scores and children' age [r=.582, N=67, *p*=.000]. For that reason, the raw scores of non-verbal abilities were regressed onto age and standardized residuals were generated for the age-adjusted scores. Age-adjusted scores demonstrated a normal distribution (p = .463 for the Shapiro-Wilk Test) with no observed outliers; therefore, the residual scores were used for the final analysis. See Figure 4.13. for the distribution of age-adjusted non-verbal ability scores.

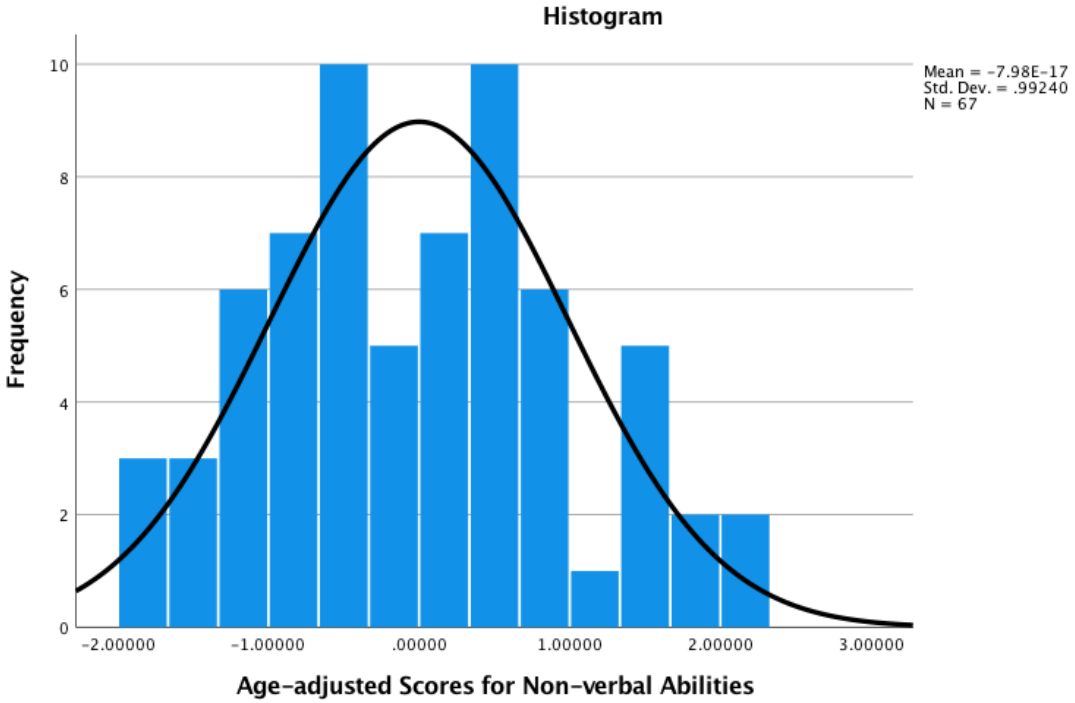


Figure 4.13. Distribution of age-adjusted non-verbal ability scores

Descriptive statistics have shown that the age-adjusted residual scores were ranged from -1.99 to 2.02. There was a small difference between the mean and the 5% trimmed mean (M=.00, SD=.99; 5%TM=-.01). See Table 4.23. for the descriptive statistics for the age-adjusted non-verbal ability scores.

Table 4.23. Descriptive statistics of non-verbal ability scores

	Mean (SD)	**Min-Max**	**Skewness (SE)**	**Kurtosis (SE)**
Raw Scores	14.25 (4.96)	4 – 26	.52 (.29)	-.21 (.58)
Aged-adjusted scores	.00 (.99)	-1.99 – 2.02	.17 (.29)	-.59 (.58)

4.8. Summary I

Previous sections demonstrated the analytical steps taken prior to the regression analysis. The chapter, first, introduced the analytical strategy of the chapter, followed by a section on the stages of analysis. Then, the study variables were presented. In these sections, first, the descriptive statistics of components/indicators of the variable were given, then, the data reduction strategy was introduced, and lastly, the descriptive statistics of the final composite/aggregated/transformed variable provided with a focus on data distribution and outliers. See Table 4.24. below for a summary of the study variables presented in this chapter so far.

Table 4.24. Summary of the Study Variables

Final Variable	Components	Data Reduction	Sample
Primary Caregiver Education	Questionnaire items	Recoding data into a 5-level variable using a syntax	Parents Phase 1 (N =168) Phase 2 (N = 67)
Material Well-being	Material assets Monthly income	Cronbach's Alpha analysis Sum of item-level scores	Parents Phase 1 (N =168) Phase 2 (N = 67)
Social Integration	Length of Residence English Competence	Principal Component Analysis Weighted scores	Parents Phase 1 (N =168) Phase 2 (N = 67)
Language and Literacy Activities	Two items for conversation activities One item for literacy activities	Correlation analysis Sum of item-level scores	Parents Phase 1 (N =168) Phase 2 (N = 67)
Home Language Use	Conversation language Literacy language	Cronbach's Alpha analysis Sum of item-level scores	Parents Phase 1 (N =168) Phase 2 (N = 67)
Language quality in Maternal Speech	Transcription of Mother voice-records	Type/Token Ratio Analysis of lexical diversity Logarithmically Transformed scores	Parents Phase 2 (N = 67)
Turkish Vocabulary	TIFALDI Vocabulary Test	Data Screening Raw Scores	Children Phase 2 (N = 67)
Turkish Sentence Repetition	Custom Sentence Repetition Test	Data Screening Vocabulary-adjusted scores	Children Phase 2 (N = 67)
English Vocabulary	British Picture Vocabulary Test	Data Screening Raw Scores	Children Phase 2 (N = 67)
Non-verbal Abilities	Raven's Matrices	Data Screening Age-adjusted scores	Children Phase 2 (N = 67)

Note: Phase 1 comprises the sample in Phase 2.

- See Appendix 13 for the syntax for reassigning parents to 5-level education categories
- See Appendix 14 for the correlations between language outcomes and language and literacy activities
- See Appendix 15 for the alternative variable for language and literacy activities
- See Appendix 16 for the syntax used to calculate the lexical diversity using the Quanteda package in R

- See Appendix 17 for boxplots and outliers
- See Appendix 18 for normal probability plots and residual scatterplots

4.9. Findings I: Explaining the home language and literacy environment through the macrosystem

This findings section presents the results of the statistical analyses carried out to answer the first research question of the study: To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children? To study the contribution of macro-system indicators, the variables pertaining to family background characteristics were studied as the predictors of the home language and literacy environment of children. As presented in Chapter 3, a hierarchical regression model was developed to explain the variations in the home language and literacy environment of children relating to language and literacy activities, home language use, and language quality in maternal speech. Prior to the regression analyses, the variables of the study were investigated for their suitability for the HRA. First, preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, homoscedasticity, and the independence of variables. Then, a Pearson's correlation analysis was carried out to provide an initial impression of the associations between the variables. The following sections demonstrate the results of the preliminary analyses under the sections of Parametric Assumptions and Pearson's Correlations.

4.9.1. Parametric Assumptions

HRA has a set of assumptions that need to be met before the analysis of the data as discussed in Section 4.2.1. These are normality, linearity, homoscedasticity of the data, independence of the study variables, and examination of the data for outliers. This section demonstrates the requirements of these assumptions and the analyses carried out to ensure the data have met them.

Ratio of cases to independent variables. The ratio of cases to independent variables were examined by the formula developed by Tabachnick and Fidell (2001) as described in 4.2.1. The sample size exceeded the minimum recommended number for the outcome variables of home language and literacy activities and home language use. The sample size for the analysis of language quality was below the optimal sample size for a regression analysis, and this was considered as a limitation of the study and discussed in the final chapter.

Treatment of outliers. Outliers in the dataset were observed as the variables were prepared for the analysis. Boxplot analysis was used to examine if the scores demonstrated outlier scores. The boxplots were provided in the Appendix 17.

Normality, linearity and homoscedasticity of residuals. In order to be able to run inferential statistics, the residual errors of the outcome variables need to be normally distributed. The normal probability plots for the language and literacy activities, home language use, and language quality in maternal speech demonstrated a reasonably straight, diagonal linear manifestation of the points suggesting that there was no major deviation from the assumption of normality. Examination of residuals scatterplots for each outcome indicated that the variables did not violate the assumptions of linearity and homoscedasticity. See Appendix 18 for the normal probability plots and residual scatterplots for the home language and literacy environment outcomes.

Multicollinearity and Singularity. An initial regression was run to check the assumptions of multicollinearity, normality, linearity and homoscedasticity. The tolerance values for the independent variables as shown in the collinearity statistics output of the initial regression were all high (.730 to .978). Moreover, examination of the correlations output indicated the variables of the study did not demonstrate multicollinearity.

Independence of Error. The Durbin-Watson statistic of the regression model predicting the HLLE outcomes ranged from 1.80 to 1.87, close to the optimal score 2.00, suggesting that the residuals were relatively uncorrelated and therefore that the assumption of independence of errors had not been violated.

Solution Outliers. In order to examine the model for solution outliers, the Mahalanobis distances were investigated with a maximum value of 16.27 as recommended by Tabachnick and Fidell (2001) for a model with three independent variables. The Mahalanobis distance value ranged from .121 to 15.628 (M= 2.98, SD = 2.40), with no cases in the model exceeded the maximum value of 16.27.

4.9.2. Pearson's Correlations

This section demonstrates the report of correlation analyses employed to examine the relationships between the independent variables of family background characteristics used in the subsequent regression analyses. See Table 4.25 for the complete correlations between the study variables.

Table 4.25. Pearson correlations between the variables of macro- and micro-system variables

	1	**2**	**3**	**4**	**5**
1. Parent education	.				
2. Material well-being	**.176***	.			
3. Social integration	**.383*****	**.429*****	.		
4. Language and literacy activities	**.408*****	.144	**.261*****	.	
5. Home language use	**-.173***	**-.226****	**-.527*****	-.141	.
6. Language quality in maternal speech	**-.308****	-.204	**-.317****	-.206	**.240***

N=168. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

4.9.2.1. Associations between Variables of Family Background Characteristics

Parents' education level was positively correlated with their material well-being [r=.176, N=168, *p*=.023] and social integration [r=.383, N=168, *p*=.000]. Material well-being was also positively correlated with parents' level of social integration [r=.429, N=168, *p*=.000].

4.9.2.2. Associations between Family Background Characteristics and HLLE

Correlations between the family background characteristics and the HLLE variables have indicated significant relationships between the predictor and outcome variables. Parents' education level was positively correlated with the frequency of language and literacy activities at home [r=.408, N=168, *p*=.000]. Parents from higher educational backgrounds tended use more English in language and literacy activities at home, although the effect size was small [r=-.173, N=168, *p*=.025]. Similarly, material well-being of families was positively correlated with English use in language and literacy activities [r=-.226, N=168, *p*=.003]. Parents' level of social integration was highly correlated with their language use in language and literacy activities [r=-.527, N=168, *p*=.000]. The interaction suggested that parents with higher social integration scores tended to use English more often with their children. Parents' education level, however, was negatively correlated with the language quality in their speech [r=-.308, N=67, *p*=.011]. Similarly, parents' level of social integration was negatively correlated with the level of language quality in parents' speech [r=-.317, N=67, *p*=.009].

4.9.2.3. Associations between HLLE variables

Correlations between the outcome variables have indicated a possibility of associations between the outcome variables, although the correlation coefficients were low. Parents' Turkish use in language and literacy activities was positively correlated with their language quality in their speech [r=.240, N=67,

p=.050]. Some of the correlation coefficients were very close to a significant level of p-value. The correlation between the language and literacy activities and language use at home has indicated a possible connection between parents' English use in language and literacy activities and their participation in the activities [r=-.141, N=168, p=.068]. Similarly, there was a negative correlation between parents' language quality and language and literacy activities at home [r=-.206, N=67, p=.094].

4.9.3. Hierarchical Regression Analysis

Hierarchical multiple regression analysis was used to determine the ability of the three independent variables (primary caregiver's education, material well-being, and social integration) to predict the frequency of language and literacy activities, home language use, language quality in maternal speech.

4.9.3.1. Language and Literacy Activities

A hierarchical multiple regression analysis was run to examine the family background variables predicting the home language and literacy activities. After the entry of block 1 (parent's education), the proportion of variance explained was 17% and parent's education was shown to have a significant effect on home language and literacy activities [F(1, 166)=33.233, p=.000]. After block 2 had been entered into the model, the model as a whole explained 17% of the variance and this model was also significant [F(2, 165)=16.588, p=.000]. However, the R Square change value was null and nonsignificant (ΔR^2=.001, p=.729), which suggested that when the effect of parent's education was controlled for, material resources did not have an additional significant effect. Lastly, when the social integration variable was entered in the block 3, the model as a whole explained 18% of the variance and this model was also significant [F(3, 164)=11.990, p=.000]. Again, the R square change value was not significant (ΔR^2=.012, p=.116). Due to skewness in the data, a binary logistics regression analysis was carried out using the three-level variable (low, medium, high) for language and literacy activities to ensure the results of the HRA

was reliable. The final model significantly explained 11 % of the variance of the high-frequency language and literacy activities in the home environment (X^2 (3) = 13.105, p = .004), see Appendix 19 for this alternative analysis. See Table 26 for the hierarchical regression outcomes.

Table 4.26. Hierarchical regression analysis predicting home language and literacy activities

	Language and Literacy Activities		
Predictor Order	B	SEB	β
Step 1			
Intercept	**13.804*** **	.413	
Parent education	**.705*** **	.122	.408
R2	**.17*** **		
Step 2			
Intercept	**13.302*** **	.637	
Parent education	**.682*** **	.124	.395
Material well-being	.033	.032	.075
R2	**.17*** **		
ΔR2	.00		
Step 3			
Intercept	**13.795*** **	.741	
Parent education	**.624*** **	.132	.361
Material well-being	.015	.035	.034
Social Integration	.236	.183	.108
R2	**.18*** **		
ΔR2	.01		

N=168. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

Only parent's education made a significant contribution to all three models. In the first model parent's education was significant with a positive beta value (β=.705, p=.000). Similarly, the values were positively significant in the second (β=.682, p=.000) and third model (β=.624, p=.000) with a small decrease in its effect size. The positive beta values indicated that parents with higher education backgrounds were more likely to participate in language and literacy activities with their children. The binary logistics regression analysis also confirmed that parent's education was a significant and positive predictor of high-frequency language and literacy activities in the home environment (β=.499, p=.002).

4.9.3.2. Home Language Use

The regression analysis was repeated for the home language variable as the dependent variable. After the entry of block 1 (parent's education), the proportion of variance explained was 3% and parent's education demonstrated a significant effect on home language use [$F(1, 166)=5.095$, $p=.025$]. After block 2 had been entered into the model, the model as a whole explained 6% of the variance and this model was also significant [$F(2, 165)=5.443$, $p=.005$]. The R Square change value was also significant ($\Delta R^2=.032$, $p=.019$), which suggested that when the effect of parent's education was controlled for, material resources had a significant additional effect in explaining the home language. Lastly, when the social integration variable was entered in the block 3, the model as a whole explained 29% of the variance and the addition of this variable significantly improved the model predicting the home language use [$F(3, 164)=21.083$, $p=.000$]. Moreover, the R square change value in this regression analysis was significant ($\Delta R^2=.216$, $p=.000$), suggesting that family social integration was a significant predictor of home language use after controlling for family socioeconomic background. See Table 4.27. below for the outcomes of the regression analysis.

Table 4.27. Hierarchical regression analysis predicting home language use

	Home Language Use		
Predictor Order	B	SEB	β
Step 1			
Intercept	**7.046*** **	.491	
Parent education	**-.328***	.146	-.173
R2	**.03***		
Step 2			
Intercept	**8.546*** **	.744	
Parent education	-.261	.145	-.137
Material well-being	**-.098** **	.037	-.202
R2	**.06** **		
ΔR2	**.03***		
Step 3			
Intercept	**5.823*** **	.767	
Parent education	.065	.137	.034
Material well-being	.000	.036	-.001
Social Integration	**-1.303*** **	.189	-.539
R2	**.29*** **		
ΔR2	**.23*** **		

N=168. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

All three of the variables in the model made a significant contribution predicting the home language use. In the first model parent's education was not significant due to change in the (β=-.328, p=.025). When the variable for material resources was added in the model, the effect of parent's education predicting the home language diminished (β=-.261, p=.074), and material resources became a significant contributor (β=-.098, p=.009). When the variable for social integration was added in the model, both parent's education (β=.065, p=.636) and material resources (β=.000, p=.989) became nonsignificant. Social integration, then, had a significant effect in the model (β=-1.303, p=.000). The negative beta values of these findings suggest that increase in parent's education, material resources, and social integration predicts English use at home.

4.9.3.3. Language Quality in Maternal Speech

Lastly, the regression analysis was run to examine the role of family characteristics in predicting the language quality in maternal speech. This analysis only included the sample of Phase 2 (N = 67). After block 1 had been entered, the model explained 10% of the variance and the model was significant in predicting the language quality in maternal speech [$F(1,65)=6.829$, $p=.011$]. After the variable for material resources was added in block 2, the model as a whole explained 11% of the variance [$F(2,64)=3.894$, $p=.025$]. The R square change value, however, was nonsignificant ($\Delta R^2=.013$, $p=.330$). Lastly, when the social integration variable was entered in block 3, the model as a whole was significant and explained 14% variation in the language quality of maternal speech [$F(3,63)=3.526$, $p=.020$]. Addition of social integration variable in the model, however, did not change the R square value significantly ($\Delta R^2=.031$, $p=.330$), suggesting that the addition of social integration did not contribute to the explanatory power of the model. See Table 4.28 below for the outcomes of the regression analysis.

Table 4.28. Hierarchical regression analysis predicting language quality in maternal speech

	Language Quality in Maternal Speech		
Predictor Order	B	SEB	β
Step 1			
Intercept	**3.895*** **	.094	
Parent education	**-.069** **	.026	-.308
R2	**.10***		
Step 2			
Intercept	**4.026*** **	.146	
Parent education	**-.062***	.027	-.276
Material well-being	-.009	.007	-.141
R2	**.11***		
ΔR2	.01		
Step 3			
Intercept	**3.913*** **	.162	
Parent education	-.046	.028	-.206
Material well-being	-.005	.008	-.088
Social Integration	-.058	.037	-.206
R2	**.14***		
ΔR2	.03		

N=67. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

Among the predictors of the model only parent's education (β=-.069, p=.011), made a significant contribution to the first model in explaining the language quality in maternal speech. After adding the variables for material well-being and social integration, parent's education became nonsignificant (β=-.046, p=.111). The negative beta weight of parent's education explaining the language quality suggested that parents from lower education backgrounds used a more diverse vocabulary when talking to their children.

4.9.4. Summary

The findings of the regression analyses reported in this section indicate that the overall model of family characteristics was able to explain 18% of the variance in language and literacy activities, 29% of the variance in home language use, and 14% of the variance in language quality in maternal speech. For language and literacy activities, parents' education background was a significant factor in explaining

children's exposure to beneficial activities at home. The model suggested that parents from higher education backgrounds participated in language and literacy activities more frequently. For home language use, social integration was an important factor. The model suggested that parents with higher levels of social integration were more likely to use English in language and literacy activities. For language quality, there were no significant predictors in the final model suggesting that when the variables of family characteristics taken together the model had no explanatory power over the language quality in maternal speech.

4.10. Findings II: Explaining the bilingual language skills of children through the microsystem

This section presents the results of the statistical analyses carried out to answer the second research question of the study: 'To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?' To study the contribution of microsystem indicators, the variables pertaining home language and literacy environment were used as predictors of the bilingual language skills of children. As explained in Chapter 3, a regression model was developed to explain the variations in the bilingual language skills of children through home language and literacy environment after taking child-level and macrosystem characteristics into account. Prior to the regression analysis, the variables were investigated for their suitability. First, preliminary analyses were conducted to ensure the assumptions of normality, linearity, homoscedasticity, and the independence of variables were met. Then, a Pearson's correlation analysis was carried out to provide an initial impression of the relationships between the variables. This section demonstrates the results of the preliminary analyses under the subsections of Parametric Assumptions and Pearson's Correlations.

4.10.1. Parametric Assumptions

This section demonstrates the assessment of the analysis variables for their suitability for a HRA as discussed in Section 4.2.1.

Ratio of cases to independent variables. The ratio of cases to independent variables were examined by the formula developed by Tabachnick and Fidell (2001) as described in 4.2.1. The sample size was smaller than the optimal number. Again, this was considered as one of the statistical limitations of the study and discussed in the final chapter.

Treatment of outliers. Outliers in the dataset were observed as the variables were prepared for the analysis. Boxplot analysis was used to examine if the scores demonstrated outlier scores. The boxplots were provided in the Appendix 17.

Normality, linearity and homoscedasticity of residuals. To ensure normality, linearity and homoscedasticity of residuals, the normal probability plots and residual scatterplots that depict the relationships between the residuals of outcome variables and independent variables of the analysis were examined. The normal probability plots for Turkish and English language outcomes demonstrated a reasonably straight, diagonal linear manifestation of the points suggesting that there was no major deviation from the assumption of normality. Examination of residuals scatterplots for each outcome indicated that the variables did not violate the assumptions of linearity and homoscedasticity. See Appendix 18 for the normal probability plots and residual scatterplots for the language outcomes.

Multicollinearity and Singularity. An initial regression was run to check the assumptions of multicollinearity, normality, linearity and homoscedasticity. The tolerance values for the independent variables as shown in the collinearity statistics output of the initial regression were all high (.606 to .996). According to Allison (1999) a tolerance value below .40 can be problematic for the results of the regression analysis and a tolerance value under .20 suggests multicollinearity in a model. To ensure the independent variables of the model did not violate multicollinearity assumption, the correlations were

examined. The examination of the correlation's coefficients and tolerance values of the predictors indicated the variables of the study did not establish multicollinearity.

Independence of Error. The Durbin-Watson statistic of the regression model was 1.96 for the English vocabulary, 2.12 for the Turkish vocabulary and 2.14 for Turkish sentence repetition scores. These values were close to the optimal score 2.00, suggesting that the residuals were uncorrelated and therefore that the assumption of independence of errors had not been violated.

Solution Outliers. In order to examine the model for solution outliers, the Mahalanobis distances were investigated with a maximum value of 24.32 as recommended by Tabachnick and Fidell (2001) for a model with seven independent variables. The Mahalanobis distance value ranged from 1.099 to 17.557 (M= 6.89, SD = 3.063), with no cases in the model exceeded the maximum value of 24.32.

4.10.2. Pearson's Correlations

This section demonstrates the report of correlation analyses employed to examine the relationships between the independent and dependent variables used in the subsequent regression analyses. See Table 4.29. for the complete correlations between the study variables.

Table 4.29. Pearson's correlations between child skills and the variables of the study

	1	2	3	4	5	6	7	8	9
1. Turkish vocabulary	.								
2. Sentence repetition	.000	.							
3. English vocabulary	.112	-.209	.						
4. Non-verbal abilities	.202	-.020	**.335****	.					
5. Parent education	.026	-.084	**.302****	**.427*****	.				
6. Material well-being	.063	-.047	.133	.206	**.176***	.			
7. Social integration	-.202	-.136	**.491*****	.080	**.383*****	**.429*****	.		
8. Language and literacy activities	-.100	-.062	**.417*****	**.263***	**.408*****	.144	**.261*****	.	
9. Language use	**.411*****	**.296***	**-.541*****	-.072	**-.173***	**-.226****	**-.527*****	-.141	.
10. Language quality	**.345****	-.116	.051	.002	**-.308****	-.204	**-.317****	-.206	**.240***

Note. For child skills: N = 67; for family and home characteristic: N = 168. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

4.10.2.1. Child Skills

There were no significant association between Turkish and English vocabulary [r=.112, N=67, *p*=.366]. Turkish vocabulary did not demonstrate a significant relationship with the non-verbal ability scores [r=.202, N=67, *p*=.101]. Similarly, vocabulary-adjusted scores for sentence repetition did not demonstrate a significant relationship with English vocabulary [r=-.209, N=67, *p*=.089] or non-verbal abilities [r=-.020, N=67, *p*=.873]. English vocabulary scores, however, was positively correlated with non-verbal ability scores [r=.335, N=67, *p*=.006].

4.10.2.2. Family Background Characteristics and Child Skills

Correlations between the family background characteristics and child skills indicated some significant relationships between the predictor and outcome variables. English vocabulary was positively correlated with parent's education level [r=.302, N=67, *p*=.013]. Similarly, social integration was positively correlated with English vocabulary [r=.491, N=67, *p*=.000]. The association between material well-being of families and children's English vocabulary was nonsignificant [r=.133, N=67, *p*=.285]. Children's age-adjusted non-verbal abilities were positively correlated with parent's education level [r=.427, N=67, *p*=.000]. Correlations between non-verbal ability scores and family material well-being [r=.206, N=67, *p*=.094] and social integration [r=.080, N=67, *p*=.518] was nonsignificant. Turkish vocabulary and sentence repetition scores did not show any significant correlations with the indicators of family background characteristics.

4.10.2.3. Home Language and Literacy Environment and Child Skills

Correlations between the indicators of home language and literacy environment and the child outcomes indicated some strong associations. Children's Turkish vocabulary scores were positively correlated with Turkish use in language and literacy activities [r=.411, N=67, *p*=.001] and language quality in maternal speech [r=.345, N=67, *p*=.004]. However, the association between home language and literacy activities and Turkish vocabulary demonstrated a nonsignificant negative coefficient [r=-.100, N=67, *p*=.420]. For Turkish sentence repetition scores, the only significant correlation was found for home language use [r=.296, N=67, *p*=.015]. There were no significant associations between children's sentence repetition scores and language and literacy activities [r= -.062, N=67, *p*=.619] or language quality in maternal speech [r= -.116, N=67, *p*=.348]. Children's English vocabulary scores were positively correlated with the frequency of home language and literacy activities [r=.417, N=67, *p*=.000] and English use in the home environment [r=-.541, N=67, *p*=.000]. The association between English vocabulary and language quality was close to null and nonsignificant [r=.051, N=67, *p*=.683]. Children's age-adjusted non-verbal ability scores demonstrated a significant relationship with the language and literacy activities [r=.263, N=67, *p*=.032]. There were no significant associations between children's non-verbal abilities and language quality in maternal speech [r=.002, N=67, *p*=.986] or language use at home [r=-.072, N=67, *p*=.564].

4.10.3. Hierarchical Regression Analysis

Hierarchical multiple regression analysis was run to predict the language skills of children by drawing on the home language and literacy environment of families after controlling for the child and family characteristics. Three independent variables of home language and literacy environment including language and literacy activities, language use, and language quality in maternal speech was analysed to predict the outcome scores for Turkish vocabulary, Turkish sentence repetition, and English vocabulary

after taking child (age-adjusted non-verbal abilities) and family characteristics (parent's education, material well-being, social integration) into account.

4.10.3.1. Turkish Vocabulary

First, the regression model was run to examine the Turkish vocabulary scores of children. After the entry of block 1 (age-adjusted non-verbal abilities), the proportion of variance explained was 4% and this model did not have a significant effect on the Turkish vocabulary knowledge of children [$F(1, 65)=2.760$, $p=.101$]. After block 2 including the indicators of family characteristics had been entered into the model, the model as a whole explained 10% of the variance and this model was also nonsignificant [$F(4, 62)=1.631$, $p=.178$] and the R Square change value was not significant ($\Delta R^2=.054$, $p=.301$). When the block 3, which includes the micro-level factors, was added in the model, the total variance explained rose to 23% and the model became significant [$F(6, 60)=3.049$, $p=.011$]. The R square change value was also significant when the micro-level factors added in the model ($\Delta R^2=.138$, $p=.007$). Lastly, when the block 4, which includes the indicator variable for the proximal processes, was added in the model, the total variance increased to 30%. The final model indicated the highest level of significance [$F(7, 59)=3.679$, $p=.002$] and the change in explained variance was also significant ($\Delta R^2=.070$, $p=.018$). See Table 4.30. below for the outcomes of the regression analysis predicting Turkish vocabulary scores.

Table 4.30. Hierarchical regression analysis predicting Turkish vocabulary

	Turkish Vocabulary		
Predictor Order	B	SEB	β
Step 1: Child			
Intercept	**42.627*** **	2.056	
Non-verbal abilities	3.469	2.088	.202
R2	.04		
Step 2: Family			
Intercept	**34.467** **	10.679	
Non-verbal abilities	3.273	2.335	.190
Parent education	.330	1.916	.025
Material well-being	.384	.475	.105
Social integration	-4.336	2.282	-.262
R2	.10		
ΔR2	.05		
Step 3: Home			
Intercept	22.573	24.493	
Non-verbal abilities	4.358	2.236	.254
Parent education	-.917	1.903	-.070
Material well-being	.164	.451	.045
Social integration	1.293	2.798	.078
Language and literacy activities	-.152	1.346	-.015
Language use	**3.757** **	1.201	.468
R2	**.23** **		
ΔR2	**.14*** **		
Step 4: Proximal Processes			
Intercept	-46.828	36.727	
Non-verbal abilities	3.419	2.181	.199
Parent education	.285	1.892	.022
Material well-being	.310	.437	.085
Social integration	1.547	2.689	.094
Language and literacy activities	-.080	1.293	-.008
Language use	**3.351** **	1.165	.417
Language quality in maternal speech	**17.485** **	7.106	.297
R2	**.30** **		
ΔR2	**.07***		

N=67. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

The first model of the analysis indicates that non-verbal abilities of children were not a significant contributor in explaining the Turkish vocabulary scores of children (β=3.469, p=.101). After adding block 2, the non-verbal abilities of children remained nonsignificant, alongside the indicators of family

characteristics. After the entry of block 3 variables, the non-verbal abilities demonstrated a visible increase in its effect size and the p-value was almost significant (β=4.358, p=.056). In this new model, the home language use was also a significant contributor in explaining children's Turkish vocabulary (β=3.757, p=.003). This finding suggests that when children are exposed to Turkish at home, their non-verbal abilities may play an important role in their Turkish vocabulary acquisition. Among the predictors of the final model, the home language use was again a significant predictor of children's Turkish vocabulary (β=3.351, p=.006) and language quality in maternal speech was also significant (β=17.485, p=.017). The positive beta weight of home language use in explaining Turkish vocabulary scores suggested that children from home environments, where Turkish is the dominant language, were more likely to have larger Turkish vocabulary. Similarly, children, who were exposed to a more diverse language at home, retained a larger Turkish vocabulary.

4.10.3.2. Turkish Sentence Repetition

Next, the regression analysis was run to examine the Turkish sentence repetition scores of children. After the entry of block 1 (age-adjusted non-verbal abilities), the proportion of variance explained was 0% and this model did not have a significant effect on the sentence repetition scores of children [F(1, 65)=.026, p=.873]. After block 2 including the indicators of family characteristics had been entered into the model, the model as a whole explained 2% of the variance and this model was also nonsignificant [F(4, 62)=.309, p=.871] with a small but nonsignificant change in R Square value (ΔR^2=.019, p=.750). When the block 3, which includes the micro-level factors, was added in the model, the total variance reached to 11%, however remained nonsignificant [F(6, 60)=1.167, p=.336]. The addition of block three almost brought a significant change in the variance explained (ΔR^2=.085, p=.066). Lastly, when the block 4, which includes the indicator variable for the proximal processes, was added in the model, the total variance increased to 16%. The final model was also nonsignificant [F(7, 59)=1.554 p=.167]. The change in explained variance, however, was almost significant this time (ΔR^2=.051, p=.064). Among the indicators

of the model as a whole, only home language use made a significant contribution to the model predicting Turkish sentence repetition scores (β=.200, p=.010). See Table 4.31. below for the outcomes of the regression analysis predicting Turkish sentence repetition scores.

Table 4.31. Hierarchical regression analysis predicting Turkish sentence repetition scores

	Turkish Sentence Repetition		
Predictor Order	B	SEB	β
Step 1: Child			
Intercept	-6.641E-17	.122	
Non-verbal abilities	-.020	.124	-.020
R2	.00		
Step 2: Family			
Intercept	.090	.648	
Non-verbal abilities	.006	.142	.006
Parent education	-.030	.116	-.039
Material well-being	.000	.029	.001
Social integration	-.117	.138	-.121
R2	.02		
ΔR2	.02		
Step 3: Home			
Intercept	-1.203	1.537	
Non-verbal abilities	.047	.140	.047
Parent education	-.103	.119	-.135
Material well-being	-.010	.028	-.046
Social integration	.127	.176	.132
Language and literacy activities	.039	.084	.067
Language use	**.180***	.075	.385
R2	.11		
ΔR2	.09		
Step 4: Proximal Processes			
Intercept	2.208	2.350	
Non-verbal abilities	.093	.140	.093
Parent education	-.162	.121	-.212
Material well-being	-.017	.028	-.080
Social integration	.114	.172	.119
Language and literacy activities	.035	.083	.061
Language use	**.200****	.075	.427
Language quality in maternal speech	-.859	.455	-.250
R2	.16		
ΔR2	.05		

N=67. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

4.10.3.3. English Vocabulary

Lastly, the regression analysis was repeated for the English vocabulary scores as the dependent variable. After the entry of block 1 (age-adjusted non-verbal abilities), the proportion of variance explained was 11%. The first model accounting for the individual-level differences had a significant effect on the English vocabulary knowledge of children [$F(1, 65)=8.221$, $p=.006$]. After block 2 with the indicators of family characteristics had been entered into the model, the model as a whole explained 33% of the variance and this model was also significant [$F(4, 62)=7.614$, $p=.000$]. The R Square change value added by the block 2 was significant as well ($\Delta R^2=.217$, $p=.001$). The significant change in the R Square value suggested that when the effects of individual-level differences was controlled for, the family background characteristics had a significant effect in explaining the English vocabulary scores of children. When the block 3, which includes the micro-level factors, was added in the model, the total variance explained rose to 44% and the model remained significant [$F(6, 60)=7.684$, $p=.000$]. The change in R square value was also significant when the micro-level factors added in the model ($\Delta R^2=.105$, $p=.006$), suggesting that home language and literacy activities and language use made a significant contribution in explaining the English vocabulary knowledge of children after controlling for individual- and family-level differences. Lastly, when the block 4, which includes language quality in maternal speech, was added in the model, the total variance increased to 50%. The final model was significant in explaining the English vocabulary knowledge of children [$F(7, 59)=8.442$, $p=.000$], and it led to a significant change in the R Square value with the addition of block 4 ($\Delta R^2=.066$, $p=.007$). See Table 4.32. below for the outcomes of the regression analysis.

Table 4.32. Hierarchical regression analysis predicting English vocabulary

	English Vocabulary		
Predictor Order	B	SEB	β
Step 1: Child			
Intercept	**52.567*** **	2.263	
Non-verbal abilities	**6.588** **	2.298	.335
R2	**.11** **		
Step 2: Family			
Intercept	**61.018*** **	10.471	
Non-verbal abilities	**6.297** **	2.289	.320
Parent education	-.186	1.879	-.012
Material well-being	-.411	.466	-.099
Social integration	**9.518*** **	2.238	.503
R2	**.33*** **		
ΔR2	**.21*** **		
Step 3: Home			
Intercept	**49.365***	23.971	
Non-verbal abilities	**5.000***	2.188	.254
Parent education	.489	1.863	.032
Material well-being	-.203	.442	-.049
Social integration	3.852	2.738	.204
Language and literacy activities	1.535	1.318	.134
Language use	**-3.259** **	1.175	-.355
R2	**.44*** **		
ΔR2	**.11** **		
Step 4: Proximal Processes			
Intercept	-25.460	35.549	
Non-verbal abilities	3.987	2.111	.203
Parent education	1.782	1.831	.119
Material well-being	-.046	.423	-.011
Social integration	4.126	2.603	.218
Language and literacy activities	1.612	1.252	.141
Language use	**-3.697*** **	1.127	-.402
Language quality in maternal speech	**18.851*** **	6.878	.279
R2	**.50*** **		
ΔR2	**.06** **		

N=67. *p ≤ .05, **p ≤ .01, ***p ≤ .001, two-tailed

The first model of the analysis indicates that non-verbal abilities of children predicted English vocabulary significantly (β=6.588, p=.006). After adding block 2, the non-verbal abilities of children remained as a significant predictor of English vocabulary with a decrease in its effect size (β=6.297, p=.008), alongside the social integration variable, which is included in the new model (β=9.518,

p=.000). After the entry of block 3 variables, which include the language and literacy resources at home, family social integration became nonsignificant (β= 4.126, p=.118) and non-verbal abilities of children demonstrated a decrease in its effect size (β=5.000, p=.026). In this new model, the home language use was a significant contributor of children's English vocabulary (β=-3.259, p=.007). In the final model, home language use remained significant with an increase in its effect size (β=-3.697, p=.002) and the language quality became a significant predictor of children's English vocabulary (β=18.851, p=.008). The positive beta values suggested that children, who were exposed to a more diverse language and English exposure at home, retained a larger English vocabulary.

4.10.4. Summary

The findings of the regression analyses reported in this section indicate that the overall model of family characteristics was able to explain 30% of the variance in Turkish vocabulary, whereas the variance explained by the model was 50% for the English vocabulary of children. The final model predicting Turkish sentence repetition scores was nonsignificant, although it accounted for the 16% of the variation. For both Turkish and English vocabulary, diverse language use and language exposure at home were significant factors in explaining children's language skills after controlling for child and family characteristics. For Turkish sentence repetition, however, only home language use was a significant predictor of children's language outcomes after controlling for individual and macro-level factors. Both child- and family-characteristics played a more significant role in the model predicting children's English vocabulary.

4.11. Summary of the Findings I and II

The findings of this chapter have shown that some of the macro-level factors in family characteristics predicted the resources in the micro-system of language development depicted by the home language and literacy environment in this study. The regression analyses on home language and literacy activities and

home language use indicated that the family characteristics model as a whole significantly predicted the frequency of language and literacy activities and the language use at home. Parental education was the only significant predictor in the model in determining the frequency of language and literacy activities at home. This finding suggested that parents from higher education backgrounds performed language and literacy activities with their children more frequently. For the home language use, parent's social integration made a significant contribution to the model in explaining the differences in the language preferences of families. This finding suggested that parents from well-integrated backgrounds preferred to use English as the language for communication and literacy activities at home. For language quality in maternal speech, findings demonstrated that none of the family background characteristics was a significant predictor of the language characteristics of maternal speech.

The findings on Turkish language skills of children have demonstrated that microsystem resources provided for children were the most important contributors to children's language skills. The regression analysis on Turkish vocabulary indicated that the bio-ecological model as a whole significantly predicted the vocabulary size of children. Exposure to Turkish language and the diverse language use at home were the significant predictors of children's vocabulary in Turkish. One interesting finding from the examination of the levels of the regression indicated that the addition of language and literacy resources at home in the model made the non-verbal abilities of children almost significant in predicting the Turkish vocabulary. For Turkish sentence repetition, the findings suggested that language exposure was key to children's Turkish abilities in the language and child and family background characteristics were not significant in predicting the variations in children's Turkish skills.

The findings of the regression analysis on English vocabulary were similar. The extent to which the model explained the English vocabulary of children was larger. The findings from the final model demonstrated that English exposure at home and diverse language use in exposure were important predictors of children's English vocabulary. The first two levels of the model suggested that child abilities

and family background characteristics played an important role in predicting children's English vocabulary. Their significance, however, diminished once the micro-level factors were added in the model.

4.12. Chapter Summary

This chapter first presented the results of the quantitative data analysis investigating the characteristics of the resources provided to children in their microsystem and through proximal processes and then demonstrated how these resources explained the language skills of children controlling for child and family background characteristics. Prior to the analysis results, the chapter demonstrated the analytical framework and the stages of analysis used in the chapter. Then, the analytical procedures used in developing the study variables were shown. The main results of the present chapter indicated that the family background characteristics explained a significant portion of the variance in the resources that are important for the language development of children and the variations in children's home language and literacy environment, in turn, significantly accounted for their Turkish and English language skills.

5. BILINGUAL LANGUAGE DEVELOPMENT AND LANGUAGE ATTITUDES

5.1. Introduction

Drawing on both the interview and observation data recorded in the field, this chapter answers the following research questions:

> *Research Question 3: What is the role of language experiences and attitudes in children's bilingual language preferences?*

The findings presented in this chapter address the research questions stated above by exploring children's language preferences and attitudes related to their experiences with bilingualism. In so doing, a semi-structured interview was carried out with children investigating (1) how children perceive and make sense of their language preferences and attitudes in the context of their primary social environments and (2) the factors that are associated with their experiences with using Turkish and/or English in these social contexts. By presenting children's own accounts of being bilingual, the findings in this chapter acknowledge children as the main source of knowledge about their experiences (Docherty & Sandelowski, 1999). During the interviews children's insights provided an in-depth source of knowledge on what it *actually* meant to speak two languages as an ethnic minority child, which is rarely available in the literature. Furthermore, it allowed this thesis to present a multifaceted understanding of bilingual language development by combining the information presented in the previous chapter on children's language skills and family environment with children's first-hand experiences with being bilingual.

The data reported here underline the patterns in children's language preferences and attitudes that can play an important role in their bilingual language development. Despite the multifaceted nature of bilingualism, the analysis of the interviews provided information on the shared experiences of children who were in the process of becoming bilingual with a focus on the home environment. It is important to

note that the information presented in this chapter aims to conceptualise essential features of young children's experiences with bilingualism. Although the experiences of children are reduced to the themes captured in the interviews, this categorisation does not ignore the idiosyncrasies of bilingualism; instead, it aims to demonstrate the distinctive elements of bilingualism, while capturing the bigger picture. In doing so, the chapter presents the essence of the experiences of children under two themes labelled as '*Language preferences and attitudes as perceived through the self*' and '*Language preferences and attitudes as perceived through social interactions*'. In presenting these findings, this chapter contributes to the previous chapter in three significant ways: (1) it unearths the psychosocial factors relevant to child characteristics that were not captured by the quantitative data; (2) it proposes some explanations of children's experiences with being/becoming bilingual through their own words; and (3) it offers a more multifaceted understanding of the factors supporting or hindering children's bilingual language development.

The presentation of the findings starts with the analytical strategies adopted to describe and interpret children's experiences of speaking Turkish and English. The section on 'Analytical Strategies' lays out the epistemological framework, thematic analysis in the study of children's interviews, as well as the methodological strategies used to establish the integrity of the analysis. The next section examines the theme of '*Languages preferences and attitudes perceived through the self*', which describes how children explain their language use in relation to their perceived linguistic and cultural identities and interprets the ways that children made sense of their cultural and linguistic identities in relation to their language preferences. The next part of the chapter examines the theme '*Language preferences and attitudes as perceived through social interactions*', which demonstrates how children's social interactions with the primary social figures influence their language preferences and attitudes. Thereafter, the influences of these experiences on children's language preference are elaborated through the interviews. The presentation of the themes also draws on the field notes taken during home visits as well as the data on family characteristics to demonstrate how identifying the distinct attributes of children's home environments can help explain their

language experiences and preference(s) within the family context. In the final part of the chapter, an overview of the themes is provided in relation to the research questions of the thesis, demonstrating how these findings add to the findings of this study in understanding bilingual language development. The chapter ends with concluding remarks on how the findings from this chapter can enrich the practice with ethnic minority children and help research to conceptualise the experiences of children growing up in immigrant families.

5.2. Analytical Strategy

This section elaborates the theoretical framework that guided the analytical decisions and the methods followed during the analysis of the interviews. In contrast to the analyses in the previous chapters, the analytical decisions outlined in this chapter did not follow a linear process along set assumptions. The analysis of the interviews vacillated between plausible themes that emerged from the interviews and evidence informed by the literature. The exploratory inquiry in this chapter aimed to present the diversity in children's experiences. At the same time, it identified the patterns that explain their language preferences and attitudes, and which might facilitate or hinder their bilingual language development. In doing so, the analysis aimed to (1) organise the data from semi-structured interviews into representative themes, and to review and analyse the patterns emerging from the experiences of children, (2) capture and evaluate the idiosyncrasies in their experiences of speaking Turkish and English.

The analytical decisions originate from the premises of phenomenological epistemology, which prioritises human experience in its understanding of 'the 'structures' and the 'textures' of a phenomenon' (Holloway & Todres, 2003, p. 351). Through the study of 'structure' in human experience, the phenomenological research strives to depict the 'essences' of a phenomenon, whereas by the study of 'texture' it seeks to capture the unique characteristics of human experience. In doing so,

phenomenological research draws on 'a conception of the person as inherently self-reflective who, when faced with difficulties or unexpected events, quite naturally attempts to make sense of what is happening' and views self-reflection as an automatic act and an inherent condition to human nature (Smith, 2018, p. 1955). In this regard, this chapter unpacks/analyses the early stages of self-reflection, where a minority children attempt to make sense of their emerging bilingual identity as they start to spend more time using English. The phenomenological perspective in the analysis of the interviews adds another layer to understanding bilingual language development by grounding the quantitative evidence presented in the previous chapter to the accounts of children analysed in this chapter. Although the phenomenological research methods adopted in this chapter aim to provide a sense of coherence and wholeness in the data to help the understanding of bilingual language development in the minority context, it also presents ambiguities and untouched themes in bilingualism that can guide future research in bilingual language acquisition.

Although phenomenological analytical methods give freedom to researchers to tailor their methods of inquisition of the data, the findings presented in this chapter draw on the analytical strategies provided by thematic analysis as outlined by Braun and Clarke (2006). To explain the reasons behind this decision, the following section provides a description of thematic analysis and its relevance to the research questions addressed in this chapter. Following that, the stages of data analysis and the procedures are outlined to demonstrate how the analysis presented in this chapter deals with issues pertaining to analysis validity, reliability, and credibility.

5.2.1. Thematic Analysis and Its Use

Though its epistemology is not defined by an ideal framework, many of the key tenets of thematic analysis draws on a qualitative method grounded in phenomenological epistemology (Braun & Clarke, 2006). The

analytical strategies in thematic analysis can utilize both realist and constructionist frameworks, however, the characteristics of the analysis and interpretation vary depending on the framework chosen by the researcher. By not setting an *a priori* theoretical framework, thematic analysis allows researchers to benefit from various analytical strategies depending on their research premises. In that sense, the adaptability of this method offers an analytical perspective for researchers, which can sustain a pluralist approach to the analytical methods in qualitative research.

As the analytical framework of thematic analysis can be aligned with the views and needs of the researcher, it requires some decisions to be made before the analysis. In thematic analysis, themes are defined as the emerging patterns that illustrate the shared elements of an experience, which bear relevance to the research question(s) (Braun & Clarke, 2006). Such patterns are considered as themes if they are prevalent within the accounts of the interviewees, and across the dataset. After examining the dataset for the prevalence of themes and sub-themes, the researcher finalises the core themes of the study that are relevant to the research question. This decision depends on the researcher's judgement on the importance of presenting the dataset in its diversity and emphasising the salient aspect(s) of the study. Another decision that the researcher should make is on the analytical methods to adopt when interpreting the data. Analytical methods in thematic analysis can be inductive as well as theoretical. However, decisions regarding the analytical methods need to correspond to the expectations of the theoretical and epistemological frameworks in which the study is grounded. The inductive approach enables the researcher to align their approach in analysis with the dataset, whereas in theoretical analysis, the researcher is usually bound to predetermined themes that are drawn from the literature. After the decision is made on the analytical method, the researcher needs to consider the strategies in the analytical procedure. The analytical strategies followed in thematic analysis can focus on semantic-level analysis as well as latent-level analysis. The semantic approach aims to capture the explicit statements that connect to a theme without deciphering the meaning or the intention behind, whereas the latent approach is occupied with the interpretation of the patterns found in the dataset. In the latent approach, the researcher

aims to conceptualise the themes drawn from the study and elaborate on their meaning drawing on the underlying factors.

The findings in this chapter are generated through thematic analysis drawing on a set of principles developed in line with the aims of the analysis. The analytical framework or the possibility of frameworks provided by thematic analysis enabled this chapter to capture the essence of children's language preferences and attitudes, while also depicting the 'textures' in these experiences. In order to convey the depth of information from the interviews, four research premises were followed that guided the analytical methodology as discussed in detail below.

Premise 1: *Phenomenological approach guides the analytical framework*

As noted, phenomenological epistemology guided this chapter's framework of analysis. The phenomenological approach is grounded in the idea that there are 'essences' to every human experience shared by individuals, labelled as phenomena, and research can make sense of the essences of these phenomena through language and interpretation. This approach influenced the analytical procedures adopted to understand the language preferences and attitudes of children in this chapter. In order to elucidate the essence of being/becoming bilingual, there was a focus on the patterns and similarities in children's experiences and themes were developed to explain children's language preferences and attitudes towards Turkish and English. Then, to add depth to these themes, focus was placed on the 'textures' in the data that provide diversity to children's experiences. These textures were interpreted within the contexts of experience. To provide an in-depth understanding of children's experience of bilingualism, the description and interpretation of the findings were explained drawing on the characteristics of children's families and home environments.

Premise 2: *All data are analysed with an objective level of importance*

As the findings from the interviews were cross-checked with the other sources of information collected during the fieldwork, it emerged that the contextual factors in children's family life became central to understanding children's experiences. For this reason, the analysis gave equal importance to all data gathered. Thus, equal attention was paid to children's answers to interview questions as well as their language preferences during and after the interviews. Furthermore, children's answers were compared and contrasted with the information collected on their home environment including the structured and unstructured observations of the interactions between mothers and children. By doing so, the findings presented in this chapter provided an analytical perspective in the interpretation of interview data. This approach facilitated a more comprehensive understanding of children's accounts and also supported the credibility of the findings as described in Section 5.2.3. on 'Trustworthiness in Qualitative Analysis'.

Premise 3: *Themes are formed through inductive, deductive, and cyclical analysis*

As the thematic analysis does not oblige researchers to commit to a pre-determined analytical framework, the analytical methods can be decided in line with the research questions and the characteristics of the dataset. Due to the explorative nature of the research questions addressed in this chapter, the data analysis did not follow a linear path. In order to maximise the information drawn from the interview data, a cyclical method of analysis was used (Hennink, Hutter, & Bailey, 2011). This analytical procedure involved both inductive and deductive methods in the examination of the interviews and grounded the analysis within the data as well as the literature. This method of analysis allowed for a flexible examination of the interviews to depict the essence of children's language preferences while also capturing the unique experiences of children.

Premise 4: *The findings draw on the interpretive thematic analysis*

The analytical approach was based on interpretive thematic analysis. Interpretive thematic analysis depicts the patterns in a dataset through the interpretation of recurring themes. Hence, the findings presented draw on 'a reconstruction of those constructions' made by the children regarding their experiences with bilingualism (Lincoln and Guba 1985, p.332). Although the findings draw on interpretations of interview data, the main objective of the analysis was to demonstrate a valid and credible representation of the factors explaining children's language preferences and attitudes. Therefore, children's experiences were initially described with reference to the raw data by presenting the verbatim excerpts from the interviews. The interpretation of these descriptive findings was presented in conjunction with supporting evidence from the interviews and other fieldwork data.

5.2.2. Stages of Analysis

This section describes the procedures followed during the analysis of the interviews. The first subsection lays out the analytical framework set up to identify the initial sub-themes emerging from the interviews. The second subsection describes the inductive methods used in the coding process to produce the initial memos emerging from the interviews. The third subsection outlines the deductive methods used in the coding process, which draw on the themes that emerged from the inductive analysis. Lastly, the fourth subsection covers the allocation of sub-themes to a core theme capturing the essences of children's experiences as bilingual language speakers.

Setting up the analytical framework. Although the author carried out the data collection and transcription herself, she immersed herself in the data before embarking on the data analysis (Braun & Clarke, 2006). This process allowed familiarisation with the experiences of children to help build an analytical perspective that allowed interpretation of the children's experiences (Bird, 2005). After initial

orientation with the data, two aspects of the dataset were identified that shaped the following steps of the analysis. First, it was recognised that some experiences recounted by the children were not common across the sample. Thus, children's interpretations of their experiences were diverse even in a small sample (N = 27). Reading them contributed to the analytical perspective in order to demonstrate the diversity in children's experiences with being bilingual. The second aspect was the recurring importance of children's social interactions with other individuals as they made sense of their language preferences and attitudes. This aspect of the dataset has shown that it was possible to capture the commonalities in children's experiences with bilingualism regardless of their unique experiences with the languages.

Inductive Analysis. After initial familiarisation with the interview data, the data analysis proceeded by inductively coding the interviews. The inductive analysis began with a search for meaning in the interviews that explains children's language preferences and attitudes to organise the information in the dataset into meaningful clusters (Tucket, 2005). This stage of the analysis aimed to understand the complexity of children's experiences and translate it into patterns of meaning derived from children's own accounts. The analysis examined the patterns in the data to understand the essence of an experience and to organise these patterns into themes to convey the meaning behind children's experiences with being bilingual. For this purpose, first, a list of codes was produced to depict 'the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon' (Boyatzis, 1998, p. 63). Some of the codes depicted behavioural information and were assigned directly, whereas other codes required further analysis as they carried multiple meanings within them. Equivocal statements were further examined to decipher the meaning behind a particular statement pertaining to child's language preferences or attitudes towards it. These statements were first coded drawing on an initial interpretation of the child's statement on their language preferences and/or attitudes. After the initial coding, several rounds of inductive analysis were carried out to evaluate the coding of equivocal statements. After each round of coding, the suitability of the possible codes was assessed drawing on the characteristics of the interview and the child to take account of the context (Bryman, 2001). After

many rounds of coding, a list of codes was finalised to encapsulate the emerging patterns in the interviews, and which held the potential to become themes (see Figure 5.1.)

Deductive Analysis. After finalising the preliminary codes of the inductive analysis, deductive coding analysis was used to detect the relevant experiences of children that could be explained by the initial codes of the analysis. In this phase, a theory-driven analysis was conducted drawing on the theories explaining children's language preferences, including 'Family Language Policy' by Spolsky (2009; 2012), 'Language Socialisation Theory' by Schieffelin and Ochs (1986), and 'Ideological Becoming' by Bakhtin's (1981). In this phase of the analysis, the data were screened for evidence supporting the current literature on children's language preferences and attitudes. Following the deductive analysis, some of the existing codes received additional labels linking them to a relevant theory. During this phase, the analysis followed was cyclical rather than linear through recursive evaluation, the codes were reassessed first within the context of the interview and then the dataset, and lastly within the context of the literature. At the end of this deductive phase, the codes were reformed for synthesis into the core themes of the study (see Figure 5.1.).

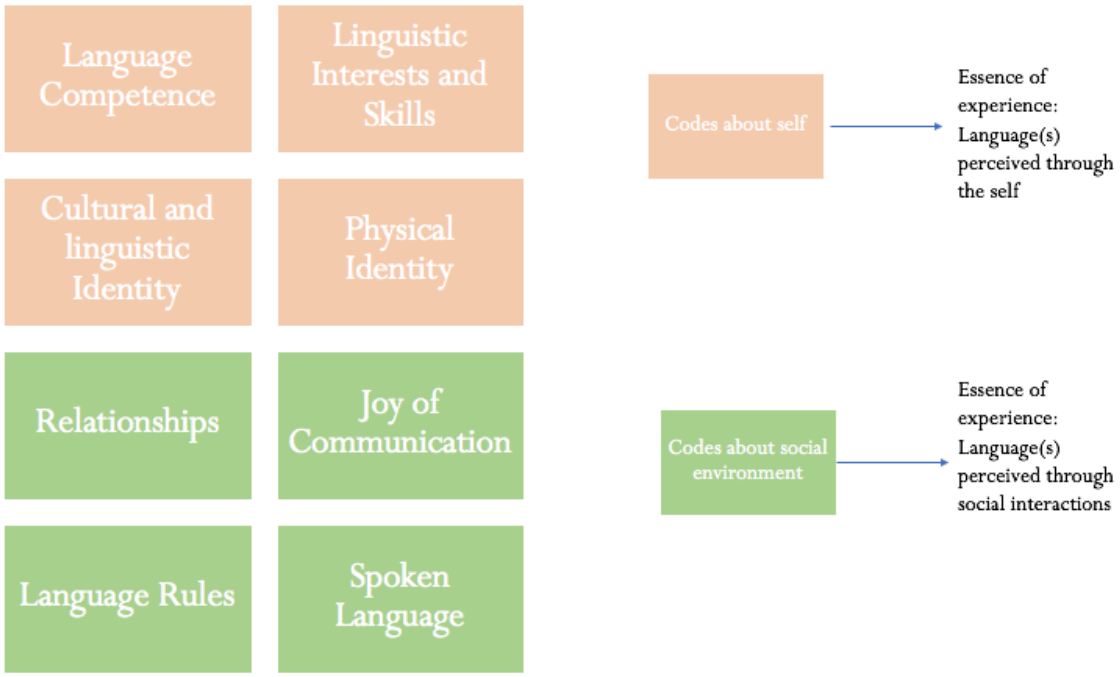


Figure 5.1. Mind map prepared and used during inductive and deductive analysis cycles

Synthesis. This phase of the analysis focussed on the overarching themes emerging that described and interpreted the shared experiences of children. In order to define the themes and connect them with the codes, the mind-map as seen in Figure 5.1. was used. In this mind-map, the codes were first organised into meaningful clusters linking them together. Then, the clusters that share a thematic meaning were combined together to form the initial themes of the study. Thereafter, the initial themes were evaluated for their internal homogeneity and external heterogeneity (Patton, 1990). For internal homogeneity (internal consistency), the coherence among the clusters of the theme was examined, whereas for external heterogeneity (external validity), the capacity of each theme for offering a distinctive answer to the research questions was considered. Two core themes were formed clustering the emerging themes in a coherent manner and representing a range of topics describing the children's experiences. In the final step of this phase, the codes and themes were re-evaluated for their accuracy in defining what they intended to define and their relevance to the dataset as a whole. In this stage, a final round of analysis of the interviews was carried out to detect the relevant input in the data and to re-evaluate the theme-clusters in relation to

the core themes of the study. Once this process was completed, the themes were labelled with names depicting the essence of children's experiences with bilingualism. See Table 5.1. for the recurrence of themes and sub-themes in the interviews.

Table 5.1. Recurrence of themes and sub-themes in the interviews

Theme	Recurrence (N = 26)	Side themes
Language perceived through the self	20	
Language Skills	17	*Language Competence* • Language abilities/difficulties • Language loss/confusion *Linguistic Interests and Skills* • Balanced bilingualism • Love/interest for languages
Cultural Identity	13	*Cultural/linguistic Identity* • Being Turkish • Having Turkish parents • Learning/speaking English *Physical Identity* • Skin/Hair colour • Not fitting in
Language perceived through the others	26	
Social Connections	26	*Relationships* • Parents • Grandparents/siblings • Turkish and/or English-speaking Friends *Communication Joy* • Activities with mother • Playing games

		• Holidays in Turkey
Social Expectations	10	*Language Rules* • Language appropriateness • Family language policy • Self-restriction *Spoken Language* • Being understood • Language skills of others

5.2.3. Trustworthiness in Qualitative Research

Dealing with the issues related to research reliability and validity in qualitative analysis can be challenging as the traditional methods for ensuring research rigour do not readily apply to non-linear analytical methods in qualitative research (Lincoln & Guba, 1985). However, the literature offers some strategies to establish research rigour in qualitative analysis (Cohen et al., 2017). According to Lincoln and Guba's (1986) guidelines, researchers should consider the following four criteria to ensure research rigour in qualitative inquiry: credibility, transferability, dependability, and confirmability. These terms were coined to reflect the matters of research validity and reliability and to guide methodological and analytical practices to ensure trustworthiness in qualitative research.

To demonstrate validity, qualitative research needs to be credible and transferable. To ensure credibility, a study should evaluate the internal validity of the information obtained from the respondents. Credibility in qualitative studies can be attained by methodological decisions taken to minimise the study-specific factors that may threaten the trustworthiness of the answers (Patton, 2002). To attain credibility in analysis, the findings can be verified through the triangulation of methods. Triangulation allows

researchers to examine the coherence between the qualitative data and the information from other sources of research methods (Padgett, 2008).

To attain external validity, researchers need to demonstrate the transferability of evidence. Research transferability seeks to understand if the findings of a study are applicable and useful for future research and practice (Lincoln & Guba, 1986). To establish transferability, findings should demonstrate some level of generalisability to a wider population. Although it is often challenging to establish this goal, a qualitative study can begin to clarify and explain a phenomenon as experienced by a representative sample of the population (Denzin & Lincoln, 2011).

For reliability, qualitative research should demonstrate that the findings are dependable and objective. Research dependability is ensured through the replication of a study or when the analysis of a dataset generates similar results with a comparable sample. To attain dependability, researchers should demonstrate self-reflection and self-assessment to establish a stable analytical strategy that would produce reliable results when the study is replicated (Lincoln & Guba, 1986).

Research objectivity refers to the coherence between the research findings and the evidence. To establish research objectivity, a study should demonstrate that the research findings are made drawing on an unbiased interpretation of the data (Miles & Huberman, 1994). The epistemological position of the research is important in determining matters of research objectivity in qualitative analysis. For this reason, researchers need to establish their epistemological stance on research objectivity in discussing the reliability of their findings (Shenton, 2004).

Research Credibility and Transferability. In this research, trustworthiness has been established by following the guidelines provided by Lincoln and Guba (1986). In order to attain credibility,

the interview questions were designed to minimise possible threats to the credibility of the answers. The interviews were conducted using open-ended questions. As the literature on qualitative research with children has shown, open-ended questions were more likely to provide accurate information close-ended questions (Lamb et al., 2007). In order to reaffirm the credibility of the answers, a comparison was made to assess the coherence between the answers given to the facial expression card and the answers given to the open-ended questions. All children (N = 26) except for one provided coherent accounts throughout their interviews. As demonstrated in the excerpt below, one of the interviews failed to ensure research credibility, as they did not provide coherent answers to the interview questions, and interviewee was dropped from the analysis:

P: When you speak Turkish at home how do you feel?
P: So, you are happy when you speak Turkish, but you just don't like it?
C: I like Turkish
P: But you said you hate it?
C: I hate it
P: But I'm confused
Child giggles
P: Can you please tell me the truth
C: I hate it
P: XXX I really need your opinion
Child giggles
(Interview 010 – conducted in English)

In some interviews, intrusion by mothers was a threat to the credibility of the answers, although the child's answers showed coherence. As demonstrated in the excerpt below, the child was interrupted by her mother during the interview questions on how she felt about speaking Turkish in the presence of other people outside her home environment. In this instance, the mother intervened with a surprised reaction and a tone suggesting the child's answer was unexpected. Furthermore, the mother offered an encouraging statement on the child's perception of her ethnic language. Such interruptions can have a negative effect on the credibility of the interviews as they can manipulate the direction of the answers provided by the children. As shown in the excerpt below, the child complied with her mother following her intervention and did not provide any further information on her previous statement:

P: Do you like speaking Turkish? Or do you want to hide it from your friends at school?
C: I think you don't tell people
P: You don't tell people?
Mum interrupts: What you are embarrassed that you know Turkish?
C: No Mum.
Mum: Exactly you are proud isn't it cause you know a second language
C: Yeah okay yeah… so proud
P: I'm curious do you ever hide it… from your friends?
C: No
P: you can tell me
C: I really don't
(Interview 040 – conducted in English)

To establish the credibility of the analysis, a triangulation of methods was used (Padgett, 2008). The segments were evaluated, first, for their coherence with children's other answers, then, drawing on multiple sources of data collected during the fieldwork including researcher's impressions of the families. During the fieldwork, data was collected on the interactions between children and their mothers, which provided valuable information on the language preferences of children. By illustrating the interactions between children and their families, field notes provided additional data on children's language preference at home as well as their willingness to speak in a particular language during the interviews. This information allowed verification of children's answers on their language preferences. For instance, in one interview, a child continued to speak in English with the researcher, although he expressed his willingness to carry out the interview in Turkish. Knowing that the communication among the family members predominantly took place in/occurred in Turkish, the researcher asked him why he spoke English in the interview even though he expressed his preference to speak in Turkish. As shown in the excerpt below, his response not only clarified the inconsistency between his answers and his language preferences but also further elucidated the reasons behind his actual language preferences during the interview:

P: So, you would like to speak Turkish more often?
C: Yes
P: But then why did you prefer to speak English with me in the beginning?
C: I get confused, I want to speak English mostly

P: So, you get confused and want to speak English, why?
C: Do you want me to tell why I want to speak English?
P: Yes
C: Because I don't understand when it's Turkish, when, I don't understand what you will say.
(Interview 033 – Translated from Turkish)

When any inconsistency in children's answers was noticed, they were asked for clarification. This provided a more elaborate answer that allowed the researcher to rule out alternative interpretations (e.g., child's dislike towards a language). During the analysis, some statements appeared to have multiple meanings either related to self or social interactions. In order to interpret these statements, methods were triangulated, drawing on the observational data collected on children's language preferences in the interviews and their interactions with the family members and the researcher. Lastly, the negative cases in the data are presented, i.e., the cases that did not fit into the themes of the study (Denzin, 1989). Negative cases contributed to research credibility by demonstrating the deviance in the data, which did not fit into the dominant patterns that summarise the experiences of children with bilingualism. "The exception that proves the rule", as said in common parlance (Fowler, 2009, p.157), these cases not only provided information on the idiosyncrasies in children's experiences with bilingualism, but also underlined the possibility for multiple realities within these experiences. Although research transferability is one of the more challenging aspects of qualitative research, Patton's (2002) guidelines were followed to demonstrate the applicability of the findings to a wider population of bilingual children. One method of evaluating research findings for transferability is *extrapolation*. Extrapolation allows researchers to extend the utility of their findings to similar contexts and time periods without over-generalising (Patton, 2002). In so doing, this chapter draws on previous fieldwork within the Turkish community in England to further validate the findings of this project. Throughout the DPhil fieldwork, the researcher collaborated in the ISOTIS project, which required meetings with the gatekeepers of the Turkish community including some of the most influential community centre leaders. In some of these meetings, the researcher carried out interviews to understand the problems Turkish families encountered in their children's bilingual language

development. The knowledge that the researcher gained from the time spent with the people in the community outside the study sample provided an outlook to reflect on the utility of the research findings. For this reason, in presenting the concluding remarks of this chapter, the researcher draws on her knowledge on the wider Turkish community and its alignment with the findings of this chapter. Furthermore, in Chapter 6, the findings are discussed in relation to the literature on immigrant children in England and Europe.

Research Dependability and Confirmability. In constructivist and interpretivist analytical approaches, examining research dependability is critical for evaluating the trustworthiness of a study. As Holloway and Todres (2003, p.355) point out, 'whilst we may not like the terms 'validity' or 'reliability', we believe that we are accountable to be explicit about the epistemological status of our outcomes, and what we are claiming for these outcomes'. Although the premise of the interpretivist paradigm is foregrounded in its subjectivity, researchers can still evaluate the dependability of their findings drawing on the methodological and analytical decisions made in the study (Morse, Barrett, Mayan, Olson, & Spiers, 2002). For instance, representativeness of a sample can play an important role for the dependability of the research findings. In this chapter, the interviews were derived from a sample of children who came from diverse socio-demographic backgrounds representing the wider Turkish community in England (see Section 3.4.3.). Furthermore, the findings were discussed within the context of the characteristics of each of the children's families, which added perspective to the researcher's interpretations.

Another method for establishing dependability in qualitative research is following an analytical strategy that prevents researchers from cognitive leaps in the analysis of the data. In order to refrain from cognitive leaps that lead to swift conclusions, the analysis in this chapter followed a cyclical strategy by interchangeably focusing on macro- and micro-level themes derived from the data. This strategy was designed to reduce the likelihood of taking cognitive leaps by incrementally building an elaborate

foundation drawing on both data-driven and theory-driven methods in analysis. The findings derived from the analysis are presented with supporting evidence from the interviews. A group of researchers including the thesis supervisors, the Confirmation of Status committee, and the ISOTIS team have, furthermore, been involved in verification of the analytical decisions made in this chapter. The preliminary findings were presented at the Equality and Inclusion Conference (2019) in Utrecht and received supporting feedback from professionals and policymakers who work with minority children. These discussions nurtured research reflexivity in the analytical process and strengthened the dependability of the research findings by involving multiple perspectives in data interpretation (Malterud, 2001).

One of the issues with trustworthiness in qualitative research is the subjectivity of the researcher. Some researchers argue that, in interpretivist inquiry, it is more important for researchers 'to identify their personal narratives (the stories they tell themselves) as this contributes to their understanding of how meaning is created (or constructed)' rather than striving for objectivity (D'Cruz, Gillingham & Melendez, 2007, p. 79). The meaning-making process in interpretivist analysis is not only influenced by the cognition of the researcher, the researcher also makes sense of the data through their perspective. In order to find a balance between research objectivity and subjective ways of thinking, the researcher endeavoured to remain true to the reflections of the participants (Lincoln & Guba, 1985). In order to do so, the interpretations in this chapter were supported with excerpts from the interviews. Balancing researcher subjectivity with analytical objectivity required ongoing reflexivity on the part of the researcher. For this reason, the researcher continuously evaluated the ways in which her own positionality impacted the approach to data analysis.

5.2.4. Summary

This section illustrated the analytical framework of the chapter by drawing on the theoretical and analytical frameworks that guided the analysis. The thematic analysis and its use in this chapter were discussed in relation to the phenomenological approach and interpretive methods in qualitative analysis. The issues of

research validity and reliability were evaluated and discussed by drawing on the methodological and analytical characteristics of the study. The following two sections describe and present the findings of the analysis.

5.3. Findings I: Language preferences and attitudes as perceived through the self

One of the core themes that emerged from the analysis was that children's language preferences and attitudes were intertwined with their own perceptions of their identity and language skills. The children interviewed described their language preferences and attitudes with reference to their language proficiency and cultural identity. Some children connected their perception of self and language skills to their somatic features such as skin/hair colour. The relationship between children's language preferences and attitudes and their self-perception of language competence and cultural identity is, however, largely under-researched. Some of the case studies conducted with young children on language preferences and attitudes suggests that internal factors such as children's perception of their communication and comprehension abilities plays an important role in the construction in their language attitudes and is influenced their language preferences (Jia & Aaronson, 2003; Ro & Cheatham, 2009). The findings in this chapter underline the role of perceived internal factors such as language competence and cultural identity in children's language preferences and attitudes towards Turkish and English.

The results showed that children's language preferences and attitudes were embedded in their self-perception of their language skills and identity. Experiences of problems with speaking the language and interacting with other speakers influenced children's language preference as well as their attitudes towards the language, although their language skills were constantly changing. Some children described their language skills in conjunction with their cultural identity even though identity perception was multifaceted and diverse for many children. In order to provide an elaborate understanding of how children conceptualize themselves as bilingual speakers, this section demonstrates the interconnectedness

between children's self-perception of their language skills and identity, as well as their language preferences and attitudes. The findings are presented under two sub-themes; children's self-perceptions of (1) language competence and (2) cultural and linguistic identities; and evaluated drawing on other sources of information from the interviews and fieldwork.

5.3.1. Language Competence

The analysis of the interviews and observations has shown that the majority of children (N = 21) had a strong preference for one language over the other in their daily lives. The most frequent sub-theme that emerged from the interviews in explaining their language preference was children's language skills. Children often talked about their language preferences and attitudes towards Turkish and English with reference to their ability to communicate in the language. The excerpt below elucidates the role of language skills in children's language preferences:

> P: Yeah, I know but when someone who can speak English and Turkish like I do, why do you want to speak to them (parents) in English?
> C: Because I want to speak in English
> P: But why, I wonder?
> C: Because I'm better in English
> P: you are better in English?
> C: Because I sometimes don't know words in Turkish.
> P: Okay
> C: How do you say rainbow in Turkish?
> P: Gökkuşağı. So, you find it difficult in Turkish and you prefer English, is that the case
> C: yeah
> (Interview 040 – Conducted in English)

This is not a new finding in the literature. In a previous case study on a 10-year-old American-born Korean child, the researchers depicted a similar finding when the child explained his affinity for English in comparison to Korean as in the following quote: "It is so difficult when I write [in Korean]… It's easy to write in English … I can just write. But it is difficult when the sound and writing is different in Korean.

And I don't know many words in Korean, so I have to ask [for help]." (Ro & Cheatham, 2009; p.300). This was also the case for children's language preference during the interview. The majority of children preferred to communicate in English throughout the interview (N =15 of 26). Some of them explained that they preferred to speak in English as it was easier. For instance, the child from the excerpt above (Interview 040) stated that she preferred to speak in English during the interview as it was more comfortable for her:

> P: Okay why did you want to speak English with me but not Turkish?
> C: Because maybe I want to now
> P: Why?
> C: Because we are not in Turkish club
> P: Yeah, I know but when someone who can speak in English and Turkish like I do, why do want to speak to them in English
> C: Because I want to speak in English
> P: but why, I wonder?
> C: Because I'm better in English
> (Interview 040 – Conducted in English)

This finding was observed in the majority of the home visits. Although many families dominantly used Turkish in their home environment, children preferred to reply their parents in English, even when their parents corrected their language use. In fact, some children, who had Turkish friends, preferred to communicate with in English with their friends. The researcher had the opportunity to observe some Turkish children together as in some of the home visits Turkish friends of the family came for a visit while the researcher was there. In these cases, the children dominantly spoke to each other in English while they played with each other in the same room as their parents, who were speaking Turkish to one another (Fieldwork notes, 2018; 2019). The reason behind this behaviour was captured by the interviews, which demonstrated the language transition that the children were undergoing. Going to school full time, some of the children (N = 9) experienced a change in their language skills in both Turkish and English. For instance, one child expressed her wish to speak more Turkish with her friends, although she felt her vocabulary was diminishing in Turkish, as in the following excerpt:

P: Do you sometimes wish you could speak Turkish to them (friends)?
C: Yeah
P: Why?
C: I like speaking in Turkish to people, just lot of words to say in Turkish, I don't know a lot of words that are English
P: So, you know a lot of words in Turkish and you want to say it, right?
C: Yes
P: I see
C: Sometimes I forget Turkish words
P: Really why?
C: Because sometimes I don't remember
(Interview 021 – Conducted in English)

Children explained their experiences with language loss by referring to the increased amount of exposure to English at school. This transition made switching from English to Turkish more difficult for them. Connecting this experience to sadness, a child, who preferred to speak in Turkish, explained that the school was taking up all his daytime and restricted him to English until the end of the school day.

P: I got it; this is very interesting. So, you wanted to speak to me in English because you understand it easy
C: yeah
P: but you like Turkish more
C: Yes
P: but English is easier for you…I got it now
C: You got it?
P: Yeah…then why is it difficult to understand Turkish?
C: You want me to tell you why? I always talk in English at school, then I do a lot of English speak. Do you know what time I go back home? I go home at 3.
(Interview 033 – Conducted in English and Turkish through codeswitching)

Although this child was fluent in Turkish and enjoyed speaking it, the time spent at school had a profound effect on his language preferences. This finding appears to apply to many individuals who grew up with a heritage language in a minority context. In an autobiographical study of heritage language loss, researchers identified the effects of school on their own language transition and heritage language loss in early childhood (Hsieh et al., 2020). The excerpt below demonstrates this experience as narrated to one of the authors:

> "Although Korean was my first language (I was born and raised in Korea until age 4), English quickly overtook Korean once I started school. Attending Catholic schools for grades K–8 (Korean Catholics are a religious minority), with immigrant parents working 12–14 hours six days a week, there was little actual exposure to Korean. Although I technically spoke Korean to my parents, we had little time together and were not super-communicative, so my Korean deteriorated. Because of our Catholic faith and the church-based nature of many HL schools, we lacked easy access to traditional Saturday schools. Two hours of weekly church-related activities were not enough to maintain my proficiency." (Hsieh et al., 2020, p.574).

The relevance of the time spent at school was not only reported to have an influence on the children's language preferences. In some cases, its effects were said to extend to the home environment and the communication language between parents and children. For instance, in one of the interviews, a child expressed that her Turkish vocabulary was shrinking as a result of the diminished Turkish use at home, as demonstrated in the excerpt below:

P: And how do you feel when you speak English?
C: Happy
P: Happy why?
C: Because I understand but in Turkish, I forget some of the Turkish stuff
P: You forget some of the Turkish stuff?
C: Yeah
P: Do you ever speak to your mum in Turkish
C: Yeah, but I forgot it cause I didn't speak it in a long time
P: Oh, you didn't speak it in a long time?
C: I forgot some of the names but not all of them
(Interview 041 – Conducted in English)

This might be a result of a cyclical interaction between family language shift and heritage language loss. As children spend more time at school, they tend to struggle more with their heritage language. Parents may notice this change and adjust their language use according to their children's communicative needs, leading to a reduced language input in heritage language (e.g., Park et al., 2012). This interaction may speed up the process of heritage language loss as seen in the example above. The connection between children's experiences with language transition and the changes in the home language also depended on the language skills and preferences of their parents. Children (N = 5), whose parents were unable to communicate in

English or were strict with the use of Turkish at home, continued to communicate in Turkish at home. Some of these children emphasised these factors as discussed in the forthcoming sections on social interactions (see Section 5.4.1.).

The experience of heritage language loss was not the only issue linked to children's perceptions of their language skills. Some children (N = 5) reported difficulties in learning English and described themselves as new learners. Four of these also described confusion as a result of this transition and shared their difficulties when maintaining conversation without 'mixing up' the languages. In the excerpt below, a child, who spoke in Turkish with her parents, shared her experiences with maintaining conversations in English:

> P: So, you like speaking English? Do you get shy at all?
> C: I don't get shy. I only get shy when I ask questions to my friends in Turkish.
> P: Why?
> C: Because they speak English, and they don't know Turkish at all.
> P: And it makes you shy when you speak Turkish. Do you ever speak with your friends in Turkish?
> C: I get confused and when I'm confused, I don't want it at all
> P: What is that you don't want?
> C: Speaking Turkish
> (Interview 014 – Translated from Turkish)

As shown in the literature, feelings of embarrassment or incompetence can lead to issues with children's second language acquisition at school (e.g., Park et al., 2012). Feelings as such may be exacerbated by negative experiences with peers, as discussed in Section 2.4.2. However, not all children experience difficulties with their languages. In this study sample, five children expressed positive feelings towards both Turkish and English. They also mentioned that they were comfortable in both languages and did not struggle communicating with other people. One of them expressed that speaking Turkish was making him 'happy' and 'excited', hence he enjoyed speaking it (Interview 029 – Conducted in English).

In another example below, the child expressed her ease with communicating in Turkish and English without any difficulties:

> P: And how do you feel when you speak Turkish with her
> C points at happy face
> P: Happy…But what about when you speak English with her how do you feel?
> C points at happy face
> P: Happy, equally? … So, as far as I understand you like Turkish and English equally… What do you think about them? Do you find one more difficult than the other or easy?
> C: Easy peasy
> P: Which one is easy peasy
> C: Both of them
> P: You like both of them?
> C: Yes
> P: Do you have a preference…do you prefer one over the other
> C: ummm… nope…
> (Interview 022 – Conducted in English)

When the fieldwork notes and the data from interviews with parents were examined, two family characteristics were found to be common among these four children. All had mothers who reported English skills that were above average in this sample. Similarly, their families either had a prolonged length of residence in England and/or high socioeconomic background. Among these four families, two of the mothers have been living in England for 24 and 25 years respectively, well above this sample's average length of residence at 14.7 years and they were able to communicate with their children both in Turkish and English. Although the parents' language preferences have been shown to incline towards English the longer, they live in the UK (see Section 4.9.2.2. in Chapter 4), its effect on children's bilingual language skills is not straightforward as seen in these examples. A measurement of language and cognitive skills has shown that these children also demonstrated above-average level non-verbal abilities and oral language skills in comparison to the second sample of the study. Non-verbal skills have been shown to play an important role in code-switching and the maintenance of bilingual language skills (Kuzyk, Friend, Severdija, Zesiger, & Poulin-Dubois, 2020). In fact, some of these children mentioned their interest in

switching between languages for amusement. The excerpt below is from an interview with one of the children, who demonstrated similar levels of competence in Turkish and English:

> P: But you know sometimes I see Turkish-speaking children speaking in English with each other. Do you ever do that with your Turkish friends?
> C: Yeah
> P: Why?
> C: Because I get bored talking in Turkish sometimes and I tell them English stuff
> --
> P: But do you think Turkish is boring?
> C: No but I get bored sometimes when I talk English as well
> P: Oh, okay so you like speaking languages?
> C: yeah
> (Excerpt from interview 041 – Conducted in English)

This child later emphasised her fondness for speaking multiple languages and expressed her aspiration to learn more as depicted below:

> P: Oh, okay so you like speaking languages?
> C: Yeah
> P: Do you wanna learn another language?
> C: Yeah
> P: What do you want to learn?
> C: At school merci means thank you and bonjour means hello and…
> P: Oh merci you said merci… you want to learn French?
> C: No, I wanna learn… yeah I wanna learn lots of different ones
> (Excerpt from interview 041 – Conducted in English)

As these excerpts demonstrate, language competence was an important factor in children's language preferences, particularly in communication with other individuals. The interviews have shown that children's fondness of a language usually stemmed from their perceived abilities to communicate in that language and their positive attitudes encouraged them to use the language further in their communication with other individuals. Negative perception of language skills, on the other hand, led children to refrain from using the language or feel upset when they try to do so. Only a few children found it easy to communicate in both languages and their language skills and interest played an important role in their

abilities. Children's language preferences were found to depend on other external factors including increased time spent at school, as did their family environment, which will be discussed in the section on social interactions. The next subsection presents the findings on the role of perceived identity within children's language preferences.

5.3.2. Cultural Identity

Cultural identity was one of the defining themes of children's language preferences. Along the continuum of identities between Turkishness and Englishness, children's identities varied between imposed, assumed, and negotiable identities depending on their meaning-making processes (see Pavlenko & Blackledge, 2004). Though neither this chapter nor the thesis is about how the cultural identities of children are constructed, it is important to note that children's perceptions of their identity were multifaceted and were related to both internal (e.g., language competence) and external factors (e.g., parents' identities). In this regard, children explained their language preferences drawing on their cultural identity, which was in many ways still being formed. This subsection presents the findings on the role of perceived identities of Turkishness and Englishness in children's understanding of their language preferences.

A group of children (N = 6) explained their uses of English and Turkish drawing on their perceived cultural identity. These children described themselves as either Turkish or English to justify their language preferences in a given social environment. As demonstrated in the excerpt below, a child explained his decision to speak Turkish during the interview drawing on his perception of both his identity as well as the researcher's:

P: … Would you like to speak in Turkish or English with me?
C: Turkish
P: Why?
C: Because we are Turkish
(Interview 066 – Translated from Turkish)

As seen in this excerpt, being Turkish was almost inherent to being able to speak Turkish. This provides an example of a perception of fixed or assumed identity, which assigns individuals to pre-determined external categories such as spoken language and country of origin (Pavlenko & Blackledge, 2004). This experience was visible among other respondents as well. For example, another child mentioned that he would speak in Turkish to his 'baby' brother when he talked to him. When he was asked why, he offered a similar reasoning by drawing on his inherited Turkish identity/the Turkish identity he inherited from his parents:

> P: Okay, that's very good…let's move on to the next Picture…this is you with your friend
> C: My baby brother
> P: Which language do you speak to him?
> C: Baby language
> P: No (giggles) do you speak to him in Turkish or English
> C: Turkish
> P: Why do you speak to him in Turkish?
> C: Because he will understand what I say.
> P: In Turkish? What about if you speak to him in English would he understand?
> C: No
> P: Why?
> C: Because he is a Turkish one
> P: He is a Turkish one… okay… what about you, are you a Turkish one or English?
> C: Turkish
> P: Do you see yourself as a Turkish person
> C: Yeah because my mum and dad Turkish
> (Interview 033 – Conducted in English)

Although the perception of cultural identity first emerged as a fixed concept in the early stages of the analysis, further evidence from one child, who defined himself as Turkish, demonstrated that children's sense of cultural identity was more complicated than it initially appeared. In these examples, the evidence has shown that children's language skills also played a role in their identity. For instance, the child, who initially preferred Turkish for the interview, later indicated that he perceived himself as English. When I asked him why he thought he was English, he emphasised his language skills. As he was

elaborating on his identity by drawing on his language skills, his mother intervened in the interview to correct him affirming that they were Turkish, as demonstrated in the following excerpt:

> P: … So, you both – you have both Turkish and English friends. Then how do you see yourself? Turkish or English?
> C: English
> P: English. Okay, Turkish, do you never see yourself as Turkish?
> C: No
> Mother intervenes: But we are Turkish
> C: Because I'm better at English
> P: You are better at English, I see. Then you can speak English with me.
> C: No
> (Interview 066 – Translated from Turkish)

Although, his statements on identity demonstrated inconsistency, they underlined the complexity of the relationship between language and identity. Although the child defined himself and the researcher as Turkish in the beginning of the interview and preferred to conduct the interview in Turkish, and he later told the researcher that he was more comfortable in English. When the researcher asked him why he did not prefer to speak in English during the interview, he explained his reasoning drawing on the researcher's identity as he perceived it:

> P: Are you having difficulties with speaking Turkish?
> C: Yes, I do.
> P: Why?
> C: When I read a Turkish book, I say some words wrong.
> P: But you are more comfortable in English?
> Child nods as in yes.
> P: Then why don't you speak English with me?
> C: Because you are Turkish.
> P: But I do speak English as well.
> C: But your Turkish is better.
> P: Is that so? Then would you speak English with me if my English was better?
> C: No.
> P: Why?
> C: Because you are Turkish
> (Interview 066 – Translated from Turkish)

This example has shown that the relationship between children's language skills and their cultural identity could be more complex than it initially appeared. As the mother's interruption and the child's interaction with the researcher indicated, the child's initial perception of his cultural identity drew on his 'assumed' and 'imposed' identity that stemmed from speaking Turkish and being born into a Turkish household (Pavlenko & Blackledge, 2004). However, his later inference on his identity has shown that his language skills played an important role in the construction of his cultural identity, referring to himself as English, despite being born into a traditional Turkish household. This finding suggested that the relationship between children's language preferences and identities were neither linear nor unilateral and the interactions between the two were influenced by children's language skills and the social environments they were in. In fact, even the idea of 'assumed' or 'imposed' Turkishness of children was more multifaceted than it initially appeared. Children's given identity of being born into a Turkish household later morphed into a 'negotiable' identity as the child became more aware of the multicultural life that they have:

> P: I have one more question, do you think you are Turkish or English
> C: I'm both
> P: You are both how come?
> C: Because my dad t… My mummy made born in England and my dad taught me words in Turkish cause he was from Turkey.
> (Interview 040 – Conducted in English)

These interactions between the cultural and linguistic identities, in turn, influenced children's language preferences and consolidated their perceptions of the self in relation to language and culture. In so doing, it made the connection between cultural and linguistic identities stronger. For instance, one of the children, who was competent in both Turkish and English, described her identity drawing on her perception of her language skills (as demonstrated in the following excerpt):

> P: So, you think you are both Turkish and English. Do you like being Turkish and English, which one do you like the most?

C: English is this side and Turkish is this side (shows that bigger part of her body as the English side).
P: How come, can you explain? What do you mean this side English and this side Turkish?
C: So, I like English more
P: You like English more, why?
C: Because I know more words in English, and I don't know some words in Turkish
P: So, you feel more English because of that?
C: Yeah.
P: And because you know more words in English than Turkish you define yourself as more of an English person than a Turkish person?
C: Yeah, just a tiny bit more words.
(Interview 040 – Conducted in English)

Perceived cultural identity of children as interpreted through the representation of languages in different body parts was not new in the literature. In a previous study conducted in Italy on the language practices and cultural identities of immigrant children, some made connections between the parts of their body and their languages drawing on their self-perceived language competence and cultural identity (Favaro, 2011). See the Figure 5.2. below for a drawing by P., a 12-year-old Indian girl living in Italy, depicting herself as half Indian half Italian using the national flags of the countries.

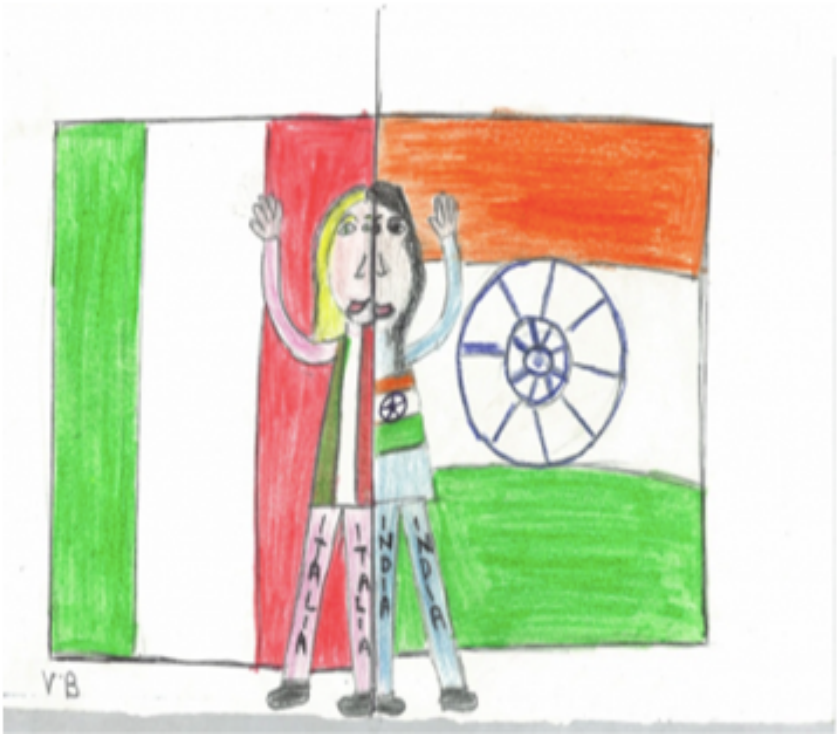


Figure 5.2. Child drawing depicting dual identity[19]

This connection was a visible outcome of the bridge between cultural and linguistic identities of children. Similar example was also captured in this study. In an interview, one child not only defined her language preferences through her identity but also emphasised her somatic features to justify her use of English, as demonstrated below:

P: So, you know that I speak two languages
C: English and Turkish
P: What about you, which languages do you speak
C: Uhmm… I don't know what kind of skin I've got
P: Hmm?
C: I don't know if I'm English because I was born here
P: Yeah
C: So, I'm English not Turkish
P: Yeah
C: I'm learning Turkish
P: What did you say about the skin?
C: Is it an English type of skin?
P: What about Turkish type of skin?

[19] Taken from Favaro's study (2011) shared at an ISOTIS meeting in 2019

C: My mum's type of skin is darker.
P: And it's Turkish, do you think you have it?
C: I don't know if we turn the lights on, we will see (Turns on the lights).
C: I have no idea if I have dark skin… I have light skin, I'm an English person.
P: Okay. So, you don't feel Turkish at all?
C: No
(Interview 035 – Conducted in English)

This child is from a multicultural and bilingual household; her mother is a first-generation Turkish immigrant, and her father is English. During the visit, the children usually used English at home, although the mother spoke in Turkish with her children and the father was proficient in Turkish. When the child was asked to elaborate on her experiences of speaking Turkish, she explained that she often struggled when her mother spoke to her in Turkish. When she was asked to explain reasons for her difficulties with the language, she explicitly stated that '…because I'm not a Turkish person' (Interview 035 – Conducted in English). These findings suggest that the connection between children's linguistic, cultural, and physical identities are embedded in one another and serve as a source to children's perceived identities. The interconnectedness between the different forms of identities help children to make sense of their language preferences and justify their language preferences.

Thus, there appears to be a complex relationship between children's cultural identity and their language preferences, which involves a possible mediation of other individual and contextual factors. Children's identity is deeply embedded in their language preferences, although the relationship between the two is in the process of becoming and, thus, everchanging. This interaction is also influenced by children's changing language skills. As ethnic minority children become a part of the British society through schooling, they experience changes in their perceived identity, as well as their language skills. Their interactions with other individuals as depicted in the next section feed their interpretations of their linguistic and cultural identities and lead to changes in their language preferences. The outcomes of children's interactions with these changes, however, vary according to the cultural perceptions and linguistic abilities of the child, although not only limited to that. As seen in the interviews, the process of

becoming bilingual involves children's perception of their cultural and linguistic selves constructed through the interpretation of their reality. This is furthermore impacted by external factors. For this reason, it is important to acknowledge how the boundaries between the self and others are created and interpreted by children as they make sense of their bilingual identity, and how this awareness influences their language preferences, and thus language acquisition. Hence, the next section on children's language preferences describes how the meaning-making process interacts with children's language preferences through their experiences in the external world.

5.4. Findings II: Language preferences as perceived through social interactions

As briefly mentioned in the previous section, children's ideological and linguistic becoming is related to transactional interactions between children and their environments. Social interactions comprise broad systems of ideas and practices that contribute to children's perceptions of their reality (Maguire & Curdt-Christiansen, 2007). This section discusses how the social interactions in the children's primary environments are interpreted, negotiated, appropriated and resisted in the form of their language preferences and attitudes. As scholarship in language socialisation theory posits, language acquisition involves processes that are defined as "*socialization through the use of language* and *socialization to use language*" (Schieffelin & Ochs, 1986, p. 161). The findings presented in this section draw on how the children interpreted and adjusted their language preferences in interaction with the people in their social environments and how these experiences appeared to shape their attitudes towards the language.

5.4.1. Social Connections and Activities

One of the emerging themes that depicted children's perceptions of their language preferences and attitudes was the role of language in social connections, activities, and practices. Children explained their

language preferences and attitudes in relation to their social connections. As argued by Gardner and Lambert (1972), children's motivation to either speak their heritage language or English had an integrative motivation to become a member of the linguistic group or culture. These motivations affected children's emotional attitudes towards the language and influenced their language practices. For instance, children's positive experiences with family members, especially mothers, played an important role in their attitudes towards Turkish. Many of the children (N = 7) elaborated on their relationship with their mothers in explaining their preference to speak in Turkish at home. Some explained that they enjoyed talking to their mothers and/or performing activities with them, others expressed their affection towards their mother while describing their positive attitudes towards Turkish (as delineated in the excerpt below):

P: Okay how do you feel when you speak Turkish?
C: Good
P: Why do you feel good?
C: Because my mum makes me soups that I like
P: And what else?
C: And she got me my favourite toy and I see it in the films, and I feel happy
(Interview 014 – Translated from Turkish)

Other comments were linked to feeling peaceful at home, being able to communicate with other family members such as their grandmothers and admiring their mother's Turkish use. Such experiences were related to children's positive attitudes towards Turkish and contributed to heritage language maintenance at home. Family time and its influence on children's language attitudes were not only limited to the domestic space. Two children mentioned their family holidays in Turkey when explaining their affection towards Turkish:

P: When you speak in Turkish how do you feel?
Child points at happy face
P: What is that?
C: Happy
P: When you speak Turkish you feel happy then, why?
C: Cause I love Turkey
P: What makes you happy about Turkish?

C: Cause there is a beach lots of slides
P: What else but what about speaking Turkish, do you like speaking Turkish?
C: I already told you I love Turkey
P: You love Turkey that is why you like Turkish, okay.
(Interview 017 – Conducted in English)

These findings suggest that the family environment and children's experiences with family members play an important role in the development of children's attitudes towards their heritage culture. As the majority of children in this study stated that they used Turkish only at home, their family environment was a central source for their Turkish language socialisation. For this reason, children's social and emotional connections to their family members are fundamental to their social construction of Turkish.

Another frequently emerging theme from the interviews was peer relationships (N = 7). In line with the literature, the children in this study showed a preference for English drawing on the influence of the school environment (Michel et al., 2012). They explained that they preferred to speak English because the majority of their friends were 'English'. Their positive attitudes towards English mostly stemmed from constructive experiences with their friends. The excerpt below captures this well:

P: In which language do you speak to your (friend's name)?
C: English
P: How do you feel the most? (points at the facial expression card)
C: Happy because (friend's name) plays with me because like touch but not the same and I like that game
(Interview 014 – Translated from Turkish)

Another reason given for a preference for English over Turkish was its utility in their social environments. This may have originated in a desire to fit into their social environments, as described in other studies (Hsieh et al., 2020; Shin, 2010). For instance, one of the children noted that he preferred to speak in English because his friends were able to understand him:

P: Which language do you like the most?
C: English
P: Why?

C: Cause when I talk English my friends understand
P: But do you think it's a better language than Turkish
C: Little bit
P: Why?
C: Cause when I speak Turkish to (friend's name), he don't really understand
(Interview 017 – Conducted in English)

Reflecting findings from previous research, the children in this study described language as an asset through which to connect with the others. They judged the value of a language by drawing on its ability to fulfil this purpose. Because most of the children only had English-speaking friends, English was a more valuable language. This was in line with Vygotsky's theory of language acquisition underlining the social value of a language, which served for the process of becoming "a competent member of society" (Vygotsky, 1978, p. 168). In line with this finding, in other interviews children (N = 2) expressed negative feelings towards Turkish as they didn't have friends to speak the language with, as in below:

P: I don't know… Do you like speaking Turkish?
C points at sad face
P: Why are you sad when you speak Turkish?
C: Because I don't like it
P: Why don't you like it?
C: Because I have a few friends
P: You mean friends who speak Turkish?
C: Yes, only one
P: Would you like Turkish if you had more friends?
C: Yes, I would
(Interview 034 – Translated from Turkish)

Peer interactions and friendships did not only contribute to the value of a language and children's language attitudes, but also consolidated their perceptions being an ethnic minority. For instance, a child who experienced social exclusion at school discussed her language skills and somatic characteristics to make sense of negative experiences:

P: So, how do you feel when you speak English
C: Pretty happy, I like speaking Turkish but still I speak English because I have my English school there, some of my friends don't like me because some of them treat me badly but…
P: Why?
C: Because they don't like me
P: Why?

…
C: Because I started new, when you are new, they begin to dislike you because I'm a brunette and their skin is a little white, I think, I don't know what happens
(Interview 026 – Translated from Turkish)

The child explained that she enjoyed speaking English even though her negative experiences at school made her feel sad and lonely. This was not an unexpected finding. Throughout the fieldwork of this study, the community centre leaders, whom the researcher got engaged with to recruit parents, underlined that the most pressing issue experienced by the Turkish families with raising bilingual children was children's embarrassment of speaking Turkish outside the home environment (Fieldwork notes, 2018; 2019). This issue especially became apparent when the researcher was talking to the manager of one of the biggest community centres in London on a different research project targeting ethnic minority children's English skills. He noted that children needed more help with their heritage language skills as they refused to speak their heritage language with their parents. According to him, this was why many parents sent their children to weekend schools run by the community to teach Turkish to their children. He argued that children were embarrassed of their Turkish identity, hence they did not want to be seen speaking Turkish by their friends. The feeling of embarrassment might result from being 'different' and have been exacerbated by the negative experiences in peer relations as captured in the excerpt above. Although this finding was not a reoccurring theme in the interviews, it has captured the possible repercussions of social exclusion experienced as an ethnic minority child.

The findings in this section suggest that language is seen as a tool to connect children with the social world. Furthermore, children's social connections played an important role in the perceived value of the language. It appears that close relationships with family members played an important role in children's use and perception of Turkish. Relationships with their mothers were frequently identified as a factor to explain children's positive attitudes towards speaking Turkish. However, children's peer friendships were mentioned frequently in relation to their preference for English over Turkish. They explained their preference for English by drawing on its utility in interactions with their peers, though not

abundant, there was some evidence suggesting that children's negative experiences with their friends could lead them to position their cultural and linguistic selves in their understanding of their social interactions.

5.4.2. Socially Assumed or Imposed Language Expectations

Another theme that emerged from the interviews was the way in which children interpreted both the assumed and imposed language expectations in their social environments. They described how they were influenced by the explicit and implicit language expectations in interaction with their family members and with friends. The explicit language rules and practices valid at home were depicted in the home environments of some children, whereas implicit language policies were assumed and derived by children drawing on the characteristics of their social environments.

An implicit language policy stemmed mainly from their perception of the language skills of their mothers. Mothers' perceived inability to speak English was a recurring theme in the explanation of children's Turkish use at home. Four children mentioned that they preferred to speak Turkish at home as their mothers struggled with understanding English. One of the children expressed this situation compassionately drawing on her mother's attempts to learn English:

> P: hmm…Would you like to speak English with your mum?
> C: I would but it's better if I speak in Turkish
> P: why?
> C: Because I learnt Turkish first and now, I speak English but still I don't speak English because my mum goes to school and learns English, but she can't learn very well so that's why I don't really speak English at home.
> (Interview 026 – translated from Turkish)

In another interview, a child brought up the fact that he wouldn't speak English with his mother as she wasn't 'even that good at talking in English'. He further drew an analogy between him speaking Spanish at home and him speaking English with his mother as demonstrated below:

> P: This is let's say- let's say this picture is showing you at home with your mom. What language would you speak to your mom?
> C: Turkish, of course.
> P: Turkish. Why?
> C: Because my mom doesn't even that good at talking in English.
> P: Okay, and you- what else?
> C: And I- I would not speak to her Spanish because I don't even how to- to say something in Spanish.
> (Interview 065 – conducted in English)

Assumed language policies in the social environments of children also interacted with children's perceptions of their language and cultural identity in relation to others. A few children had experiences with English that led them to question or hide their identity. Although the interviews did not offer many examples, one child reported that she actively avoided using Turkish at school to hide her identity. She explained that she used English with her Turkish friends at school to avoid being labelled as Turkish:

> P: Oh, okay but you speak English to her why not Turkish
> C: Sometimes I do because then everyone will look at us, they will say 'hey now we know you guys are Turkish' because we want to keep it secret that we are Turkish because our whole school is English. I have two friends that are Turkish and some more friends and my brother's friends, some of them are not my brother's friends
> P: Okay so you don't speak Turkish to (her friend's name) because you want to keep it secret
> C: Yeah because I told if kids hear us, they will say 'now we know they are Turkish'
> P: And what happens if they know that
> C: … mmm they will tell our friends that we are Turkish
> P: And is this a bad thing?
> C: No - I just want to keep it a secret, so let's keep it a secret
> (Interview 021 – Conducted in English)

This finding was in line with the previously depicted experience of social exclusion in ways in which it informed the researcher on the assumed social expectations perceived by children. In the previous

example, the child connecting her negative experiences with a friend to her darker skin colour demonstrated that the child perceived having a darker skin with being the 'other', whereas in this example the child perceived speaking a different language than English as a behaviour that needs to be avoided to blend in and not to be the 'other'. Drawing on these examples one could argue that children's perceptions of their differences could have a negative effect on their perceptions of their heritage language or even culture and lead them to behave in particular ways to fit into their environment. In fact, in another interview, a child shared her experience of 'almost' speaking Turkish with her English-speaking friends at school, which caused her fear:

C: Because there is a child at my school, whose name is (Turkish name)
P: So, you speak Turkish with them?
C: Yeah
P: And when the teacher comes you get confused?
C: Yeah
P: Do you try to speak Turkish?
C: Yeah
P: And is it bad?
C: Yeah, once I almost said something in Turkish
P: Then what happened?
C: Then I closed my mouth
P: Why
C: Because I was about to speak Turkish
(Interview 018 – Translated from Turkish)

In this interview when the child was describing what happened when she almost spoke Turkish, she used her hands to cover her mouth with her eyes wide open to imitate her feeling of possible shock, fear, or confusion when the incident occurred (Fieldwork notes, 2018). That moment in the interview looked as if the child did something that was unacceptable according to the assumed rules of her social environment. As seen in these examples, speaking English among the other children at school was an expected behaviour and this interpretation influenced children's language preferences in interactions with their English-speaking friends. However, it is important to note that this experience was not a shared one among all the

children interviewed in this study. On the contrary, some (N = 3) described positive experiences sharing their Turkish knowledge and identity with their English-speaking friends:

> P: And you speak Turkish when you don't wanna tell her something? Ooh, very cheeky. And uhm, do they know that you are Turkish? And uhm, do you tell your friends that you speak Turkish?
> C: Sometimes I remind them.
> P: Why?
> C: Because sometimes they say, "Are you Turkish?" sometimes people ask me "Are you Turkish?", and I say, "Yes.". Those people are sometimes S and R, only S and when S says it, I say "S don't you know I told you lots and lots of times!".
> P: Yeah, and how do they react when you say that you are Turkish.
> C: They say ''Oh.''
> P: Oh, I mean, they react normally. (Child nods) Okay, yes, okay.
> (Interview 048 – Conducted in English)

The school environment was not the only one where children had to contend with external expectations of linguistic practice. The home environment was also important. In some of the families, children understood that there was an explicit language policy. In these families, parents expected their children to speak Turkish and reprimanded them when they did not. Children from these families drew on the interactions with their parents when they described their language preferences and attitudes. For instance, two children mentioned that their parents requested them to speak Turkish at home. One reported that she felt distressed when speaking English because of her father's explicit language policy at home, as demonstrated in the excerpt below:

> P: …okay do you ever speak English at home?
> Child nods negatively
> P: You never do?
> C: Because my dad might get angry that's why
> P: Your dad might get angry when you speak English, why?
> C: Because I speak English, but I see when my brother's friend is here, and he speaks English my dad tells him to speak Turkish
> P: Hmm why do you think your dad says that?
> C: Because my dad doesn't want him to learn English when he grows up
> P: Hmm he wants him to learn Turkish?
> C: Yes
> (Interview 018 – translated from Turkish)

Later she made it clear that her father told her to "never speak English". The restrictive language environment at home created by the father led the child to feel at unease when she spoke English, even outside the home environment, as depicted below:

> P: How do you feel when speak English?
> C points at sad face
> P: Sad, why?
> C: Because my dad tells me 'never speak English'
> P: He tell you not to speak English, why?
> C: He doesn't want me to go with English kids when I grow up
> P: You mean he doesn't want you to become like English kids when you grow up?
> C: No, he doesn't want me to go after English people and he doesn't want me to learn English
> (Interview 018 – translated from Turkish)

The experience interviewing this child was compelling. The interview revolved around her father's restrictive remarks on speaking English at home. Observing that Turkish children tend to speak to each other in English when playing, the researcher, then, asked her if she spoke English with her Turkish friend with whom the researcher knew that she had playdates. She explained that she spoke to her friend in English occasionally, but she had to do it in secret, as explained in the following excerpt:

> P: Okay I will ask something else. This is you and your friend (points at the drawing) Which friend is this?
> C: (Turkish friend's name)
> P: Do you speak Turkish or English?
> C: Turkish
> P: Do you ever speak English?
> C: Only in my room keeping it secret from my dad.
> (Interview 018 – translated from Turkish)

After completing this interview, the family asked the researcher to join them for the dinner. Accepting their invitation, the researcher spent dinner time with the family observing their social interactions. The children spoke Turkish throughout the dinner and the family exhibited a cultural atmosphere that was

traditionally Turkish marked further by the food that was served and their social gestures during the conversations (Fieldwork Notes, 2018). Midway through the dinner, the father started to talk about his identity and his wishes for his children to embrace their Turkish identity, "not English". When asked why, he explained that he did not like the British culture (e.g., alcohol use) and hence did not want his children to grow up to become British. Although his remarks were unusual, the traditional atmosphere of Turkish family life captured during this dinner was not an uncommon one. In fact, the majority of the families that the home visits involved maintained their cultural way of living as well as their heritage language. In another interview a child brought up a similar approach followed by his parents, as demonstrated below:

P: do you prefer to speak to her in Turkish or English
C: Turkish
P: Why?
C: because they (parents) all the time tell me to speak in Turkish
P: and?
C: just that
(Interview 033 – conducted in English)

The parents were both first-generation immigrants in England, and despite both being proficient speakers of English, they used Turkish as the main language of communication at home. Their son preferred to speak in English during the interview, as he later explained it was easier for him. Although English was an easier option for him to communicate in, he still favoured Turkish over English:

P: do you think you speak Turkish and English equally well?
C: I speak both of them
P: Okay… Do you think one is better than the other?
C: Yes. Turkish.
P: why?
C: Because I love Turkish
P: What do you think of English?
C: English boring
P: Why?
C: Because I want to speak Turkish because I love Turkish and I don't like English
P: Why don't you like English
C: Because what I said
(Interview 033 – conducted in English)

These findings demonstrate the multifaceted nature of growing up bilingual as the children navigate their social interactions with and beyond their family members. The findings capture how children's language attitudes and behaviours are shaped in line with their social environments and the norms and expectations in these contexts. It is likely that external language expectations within children's social environments are an important factor in understanding their language preferences and attitudes when interacting with others. Children's language preferences and attitudes were not only related to their cultural identity but also to how language practices were assumed and imposed in different social settings. Furthermore, the interviews have shown that children navigated their language preferences according to the assumed or imposed expectations of others in their social environment and the unintentional use of an 'inappropriate' language in these social settings had a negative emotional effect on them. In one case, parents' restrictive language practices were associated with child distress and self-restriction.

5.5. Synthesis and Conclusion

While the thematic analysis in this chapter aimed to present the recurring patterns in the study of children's language preferences and attitudes, it also strived to describe the 'textures' in the data. The findings presented in this chapter addressed the following research question: 'What is the role of language experiences and attitudes in children's bilingual language preferences and attitudes?'. With this research questions in focus, the findings have shown that children's experiences and attitudes of their languages were in fact important for understanding their bilingual language development. The overarching finding that this chapter presents is that children's language behaviors and attitudes change dynamically through/alongside/in relationship to influences in their social environments. The outcomes of these interactions, however, depend on the content and requirements of the environment, as well as the characteristics of the child. While constructive experiences with bilingualism can bolster the value of speaking two languages, negative experiences may lead to refraining from a particular language.

The findings of this chapter were presented in two major themes. The first theme, "Language preferences and attitudes as perceived through the self" captured how children described their language preferences and attitudes, by drawing on their language skills and cultural identity. Within this theme, the section on "Language Competence" focused on the interaction between children's perceived ability to communicate in a language and their actual language preferences. The section on "Cultural Identity" focused on how children made sense of their language preferences in relation to their cultural identity, and how perceived Englishness and Turkishness interacted with their language preferences as they described their language preferences. The findings presented under these sections have shown that experiences of linguistic and cultural hurdles can generate negative opinions about their language practices and lead to language avoidance in children's daily conversations. For some children, positive cultural identity can mediate the interaction between perceived language skills and their language preferences and can contribute to heritage language maintenance at home.

The second theme, "Language preferences and attitudes as perceived through social interactions", described and interpreted the factors in children's social environments that influenced their language preferences and attitudes. The section on "Social Connections and Activities" focused on how children's relationships with their family and friends influenced their language attitudes and behaviours. Lastly, the section on "Socially Assumed or Imposed Language Expectations" focused on children's experiences with stated or assumed social norms and expectations of language use in different social contexts. This section has shown that children were able to perceive such social norms and adjust their language use, responding to the expectations in their social environments. The findings presented under this theme have reinforced the idea that children's social environments provide a basis for them to process the value of their linguistic practices. These findings underline that children are likely to draw on the utility of a language in their social environments in order to explain their language preferences and attitudes. Having an affectionate home environment or Turkish friends have been shown to provide children with a supportive environment

to maintain their heritage language. On the other hand, negative experiences with peers or restrictive language environments at home can have a negative effect on children's perceptions of their language attitudes.

Drawing on the findings of this study, three conclusions can be drawn. First, it is likely to be beneficial in both the home and the school environments to acknowledge the value of both languages of minority children to support their bilingual language development and multicultural identity. Second, minority children might require additional guidance to form a positive perception of their bilingual and multicultural identities, hence, it can be beneficial for minority families to build cultural awareness and provide tools to support their children's dual identity. Lastly, including children in studies on issues regarding their experiences can inform the researchers on the unknown or understudied aspects of a problem.

5.6. Summary

In this chapter, the analytical strategy was presented, and procedures followed in the analysis of the interviews with children. Two major themes were introduced to present and discuss the findings from the analysis drawing on the excerpts from the interviews and interpretations of these conversations. The analysis was supported by the data derived from the observations from the home visits, fieldwork notes, information on family background characteristics provided by the parent questionnaire, and children's language skills assessed for the study. In the last section of the chapter, the themes that emerged from interpretations of the data were drawn together and concluding remarks were made including implications for practice. In Chapter 6, a synopsis of the thesis is given, and ways in which the findings specifically addressed the guiding questions. Concluding remarks give the contributions to knowledge provided by the research and suggestions for future research and policy.

6. DISCUSSION AND CONCLUSION

6.1. Introduction

This thesis presented the results of a study examining the factors that impact the bilingual language skills of Turkish-English speaking children in England. In explaining the role of child-, micro-, and macro-level factors in bilingual language acquisition, the study answered to the following research questions:

> *Research Question 1:* To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children?
>
> *Research Question 2:* To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?
>
> *Research Question 3:* What is the role of language experiences and attitudes in children's bilingual language preferences?

The research questions drew on the PPCT model of the bioecological theory of human development (Bronfenbrenner & Morris, 1998, 2006), addressing the role of ecosystems in bilingual language development. Recent scholarship on the linguistic experiences of children growing up in ethnic minority contexts has shown that children's home language and literacy environments play an important role in bilingual language development. These factors are also crucial for heritage language maintenance in circumstantial bilinguals (Cha & Goldenberg, 2015; Bezcioglu-Goktolga & Yagmur, 2018; Willard et al., 2015; Nesteruk, 2010). Studies have shown that socioeconomic context is a particularly central factor (Dixon & Wu, 2014). Indeed, some studies demonstrate that immigrant parents are less likely to participate in language and literacy practices than non-immigrant parents (e.g., Scheele et al., 2010). However, the many of these studies do not answer the question of why the majority of immigrant families are less likely to contribute to the home learning environment of their children. Evidence from the

literature suggests that migration can negatively affect the socioeconomic resources of individuals and damage their perceived efficacy in parenting (e.g., Costigan & Koryzma, 2011). The bidirectional interactions between migration, parenting, parent-child interactions and language development, however, have not been included in a research model to this date. Furthermore, there is no literature on the migration experiences or the childrearing behaviours of the Turkish community in the UK, although the current evidence suggests that the Turkish community is among the most vulnerable groups for low academic achievement (Strand et al., 2010). Drawing on the literature on immigrant families, this study first demonstrated how external factors such as family socioeconomic background and integration experiences led to variations in Turkish children's home language and literacy environment.

While there is vast scholarship on the role of language exposure in bilingual development, the majority of studies draw on statistical predictions based largely on parents' self-reports on the home language and literacy environment. They do not, however, capture the variations in the parent-child interactions (Dixon & Wu, 2014). The literature therefore provides an incomplete understanding of the factors associated with children's bilingual language development. This limitation leads to a lack of understanding of beneficial parenting practices in immediate parent-child interactions that would only be captured via qualitative research methods. This study confronts this empirical gap by examining the role of language quality in interactions between mothers and children within home language and literacy environments.

What is more, research on bilingual language development has centred largely around the unidirectional effects of the home language and literacy environment. The majority of the studies in the literature focus on how parents shape the language environment at home and how parental behaviours influence their children's language development. This perspective does not capture the reciprocal characteristics of parent-child interactions at home. Very little evidence is available on the role of child agency in bilingual language development and heritage language maintenance. This is especially true for

the literature on early childhood, when children experience a significant change in their language experiences as they start school. A growing number of studies, however, have started to point out this issue in language development research and urged researchers to take child agency into account (see Section 2.4.2. and also, Wilson, 2020). To address this gap in the literature, this study demonstrated how children's language attitudes can influence their language preferences and, thus, their bilingual language acquisition.

This chapter discusses the findings of the study in the context of the current evidence from the literature on bilingual children growing up in ethnic minority contexts. The first section presents an overview and discussion of the findings on how the family background characteristics of Turkish children in England explain their resources in the home language and literacy environment. The second section describes the patterns in the bilingual language skills of children, and then evaluates the factors contributing to children's language skills in Turkish and English. The third section summarises and discusses the findings on the language attitudes of children and how it may influence their bilingual language acquisition and heritage language maintenance. Lastly, the fourth section introduces the PPCT model of bilingual language development as demonstrated by this study. These sections are followed by a summary section that outlines the key findings of the study. Next, the chapter presents the limitations of the study regarding its methodological and analytical pitfalls. Finally, the chapter presents a section on the future directions for research and policy and ends with concluding remarks on the thesis.

6.2. Home Language and Literacy Environment of Turkish Families in England

Research Question 1: To what extent do the family background characteristics explain the resources and proximal processes in the home language and literacy environment of children?

The first goal of this study was to examine the characteristics of Turkish-speaking families in England, and to determine how they may affect children's home language and literacy environments. Drawing on the Family Investment Model (Conger & Donnellan, 2007), this study investigated the relative contribution of socioeconomic research on Turkish families in England. According to the model, the indicators of economic hardship such as low income, work instability, and material deprivation place extra stress on the family well-being, which in turn negatively affect child-rearing practices at home. By contrast, increased levels of education and financial stability provide tangible (e.g., learning/reading materials) and intangible resources (e.g., knowledge, time) for parents to support their child's development.

As demonstrated in the Chapter 4, the findings from the quantitative analysis of family characteristics provided supporting evidence for the Family Investment Model (Conger & Donnellan, 2007). Results from the correlational analyses showed that parents from higher education backgrounds did better financially. Similarly, parents from higher education backgrounds scored higher on social integration. These findings suggest that the educational capital of immigrant families can play a positive role in their social and economic integration. Parents' proficiency in the country's dominant language is a further key factor of integration. As shown by the social integration variable used in this study, the language skills of parents strongly correlated with parents' length of residence. Supporting the evidence from the literature on immigrant populations including Turkish communities, this finding suggests that the time spent in the country was an important component of their linguistic integration (Driessen et al., 2002; Pearson, 2007; Willard et al., 2015; Winsler et al., 2014). Lastly, families' social integration scores demonstrated a strong and positive relationship with family material well-being. As recent studies have

demonstrated (e.g., Zlobina, Basabe, Paez, & Furnham, 2006), social integration is an important aspect of the socio-economic well-being of immigrant families. These findings, then, suggest that understanding the socio-economic experiences of immigrant families requires an empirical consideration of their migration backgrounds and integration experiences. By including these indicators in the analysis of the home environment, research can more dynamically capture/account for the sociodemographic factors related to low parental engagement at home.

Analyses also focused on the relative contribution of family background indicators in explaining the resources available in the home language and literacy environment. First, a hierarchical regression analysis was carried out to predict the language and literacy activities as an outcome variable. The results have shown that the primary caregiver's education background was a significant predictor of their language and literacy activities, whereas material well-being and social integration were nonsignificant in the model. Supporting the Family Investment Model (Conger & Donnellan, 2007), the findings have shown that parents from higher education backgrounds participated more often in learning activities that are beneficial for child development. Although the social integration variable was not significant in predicting language and literacy activities, there was a significant correlation between the two. It is likely that parents' education outweighed the effect of social integration in the model due to its direct and indirect interactions with the aspects of parenting related to social integration such as English competence. Material well-being, on the other hand, was not significant in predicting parental engagement in language and literacy activities, suggesting that economic resources did not necessarily provide an advantage for the language experiences of minority children. By contrast, other social and educational aspects of family background, such as parents' education background did play a role. While the importance of parent's socioeconomic background in early childhood is well-known in existing literature (e.g., Conger & Donnellan, 2007), the role of social integration is still largely under-researched. In the context of migration, it is particularly important to consider the role of social integration for parenting behaviours. As Becker (2011) has shown, social integration can act as a 'scaffold' for ethnic minority children's upbringing, easing their access to

national language education and parental education background can buffer the effects of migration by providing parents the knowledge and skills in supporting their child's development.

The second goal of the first research question was to address how family background characteristics influenced parents' home language preferences. Even without taking the social integration variable into account, socioeconomic factors were significant in predicting at-home language use. Predictions suggested that families with limited financial and educational resources were more likely to use Turkish as the home language. These findings corresponded with literature on the language preferences of Turkish parents in other European countries (Prevoo et al., 2014; Willard et al., 2015; Winsler et al., 2014). However, it is important to note that after adding the social integration variable to the model, the effects of parental education and material well-being became nonsignificant. In the final model, social integration was a significant predictor of language use, suggesting that parents' cultural experiences in the UK played a more profound role in determining the language environment at home. Similar findings have been captured in other studies on immigrant families (e.g., Winsler et al., 2014; Willard et al., 2015). A study on Turkish children in Germany has shown that mother's generational status in the country was a stronger predictor of the home language ($\chi^2 = 1.24$, $p < .001$) than mother's education level ($\chi^2 = .73$, $p < .01$) (Willard et al., 2015). While this finding might look promising for the heritage language maintenance of minority children, it is important to consider that the degree of a given family's social integration will play a significant role in parents' capacities to support their children's English-language development when they start school. This means that children grown up in immigrant households with low social integration may be more likely to lack paternal support in their education experiences. This may, furthermore, lead to an increase in the discrepancy between school and home language and negatively affect pupils' school attainment in the later stages of education. In fact, this has been shown for children growing up in first-generation immigrant households in the United States (e.g., Winsler et al., 2014).

The third goal of the research question was to demonstrate the effects of socio-economic disadvantage on mother-child interactions at home. To study mother-child interaction, the analysis focused on language quality in maternal speech as an outcome variable. The initial model (including parents' education only) was significant in predicting language quality in maternal speech. However, the direction of this interaction was negative. This meant that highly educated parents were less likely to use a diverse vocabulary when engaging with their children. This finding was unexpected given that the evidence from previous research suggested otherwise: Rowe's (2008) study of English-speaking monolingual mother-child dyads, showed that indicators of family socioeconomic background explained 31% of the variance of the language quality in maternal speech, whereas parents' knowledge of child development added another 7% to the explained variance and made parents' education nonsignificant. To interpret the negative interaction between parent's education and language quality in this study, the correlations between the variables were observed. The correlation table has demonstrated a significant interaction between parental education levels and their language use at home, meaning that parents with higher education levels tended to speak English when interacting with their children. This might have led to a lack of language quality in maternal speech given the first-generation status of the parents in the study. In fact, the correlation analysis from this study has demonstrated that parents used a more diverse vocabulary when they spoke in Turkish with their children. The evidence from the literature shows that highly educated parents tend to opt for English in conversations with their child as a result of their educational aspirations for their children (e.g., Bezcioglu-Goktolga & Yagmur, 2018). However, as seen in this study, the attempts to use English in interaction with children restrict parents' vocabulary and negatively interact with the quality of interactions with their children.

Finally, the study demonstrated the significance of different aspects of family background characteristics in explaining the home language and literacy environment of Turkish families in England. The results on the strength of the final model demonstrated that the model explained the highest variance for language use (29%), followed by language and literacy activities (18%), and language quality in

maternal speech (14%). A high proportion of variance explained for the language use was expected as almost all the studies on immigrant families have shown that parent language preferences were predicted strongly by the indicators of socioeconomic status and migration history (Westeren et al., 2018; Willard et al. 2015; Winsler et al., 2014). The Turkish population in England, however, was not studied on this issue. This study becomes the first to contribute to the literature and demonstrates how the socio-economic and demographic characteristics of Turkish families in England explain their language use at home. The model was not as strong in explaining the variance in language and literacy activities and language quality in maternal speech. Possible reasons for this might be, first, the multifaceted nature of learning activities that take place in culturally diverse households, and second, increased awareness on child development across the minority families in England. In fact, fieldwork within Turkish community centres and private homes, revealed that, Turkish parents were highly invested in their children's education regardless of their socioeconomic background. The majority of the parents the researcher met spent their weekends at community centres, often recruiting tutors and finding extra-curricular opportunities to support their children's learning (see also Lytra, 2015). As this study suggests, support within the community paired with parents' observed concern for their child's academic future, might have offset the effects of socioeconomic disadvantage on at-home language and literacy development.

The final model including the family socioeconomic background and social integration characteristics was not significant in explaining the language quality in maternal speech. There are various ways to explain this finding. One of them is similar to what Puglisi et al. (2017) refer as 'genetic influences' in explaining the role of maternal language use in explaining the literacy skills of children and their parents. Rather than focusing on only environmental influences, the authors discuss how parents' genetic predisposition might also play a role in transferring skills in language and literacy. In that case, the parents' socio-economic background might not be the only influence in explaining the language they use with their children. The other explanation, as suggested previously, is the effect of changes in language use. As demonstrated by the correlation analysis (see p.143), mothers with high education levels were more likely

to speak English with their children. Their English-as-a-second-language status, however, might have restricted their use of diverse vocabulary and diminished the advantage of education in language quality.

The findings of this study have shown that family background characteristics were important predictors of the resources in children's home language and literacy environments. However, the strength and significance of the model varied for each aspect of the home environment. Nevertheless, the evidence from this study shows that low education levels and social integration might have a negative effect on parental engagement in at-home language and literacy resources. These may be exacerbated by an increased demand in English competence as children become more proficient in the language. The next section summarises the findings on the predictors of children's bilingual language skills and discusses the findings in the context of the literature.

6.3. Bilingual Language Skills of Turkish-English Speaking Children in England

Research Question 2: To what extent do the resources and proximal processes in the home language and literacy environment explain the bilingual language skills of children and what is the role of child and family background characteristics in this interaction?

The second goal of the study was to identify beneficial parenting practices in the home language and literacy environment and to examine their contribution to children's bilingual language skills. Drawing on the Bio-ecological Model of Human Development (Bronfenbrenner & Morris, 1998, 2006), this study investigated the relative contribution of the resources and proximal processes in children's micro-systems. Although micro-system refers to various settings where children spend the majority of their time, including early childcare and preschool, this study chose to investigate the home environment specifically. This is because the home was identified as one of the most important settings for bilingual language development, especially for the heritage language development of ethnic minority children (e.g., Biedinger, Becker, & Klein, 2015). For that reason, the research question and the main goal of the analysis

focused on the home language and literacy environment. In doing so, the regression analysis took into account other influences in language development such as child and family characteristics. Although the regression model focused on the home language and literacy environment, the steps in the hierarchical regression analysis allowed this study to examine the relative contribution of child and family characteristics in explaining the variations in children's language skills. This section discusses the findings on Turkish and English language outcomes of children, separately drawing on the current evidence on Turkish-speaking bilingual children and the general literature on bilingual language development.

6.3.1. Turkish Language Skills

The regression model capturing the different levels of the bio-ecological model was run separately for children's Turkish vocabulary and Turkish sentence repetition outcomes. The first level of the model showed that age-adjusted scores for children's non-verbal abilities was not significant in predicting the Turkish vocabulary outcomes of children. This was not an unexpected finding. As shown in previous studies comparing monolingual and bilingual children, children's cognitive skills are less likely to interact with their language processing due to language proficiency, which reduces the cognitive load (e.g., Bossman & Jansen, 2017). As aforementioned, the sample in this study was composed of first-generation families with Turkish as a first language. The majority of the parents used Turkish in their daily life, although the amount of exposure children received at home varied (see Section 4.5.2.). During home visits it became evident that the majority of the children were able to hold a fluent Turkish conversation with the researcher, suggesting a level of native level proficiency attainment.

The second level of the model included the family characteristics comprised of parent's education, material well-being, and social integration. None of these indicators was significant in predicting children's Turkish vocabulary outcomes. Comparatively, Westeren et al.'s (2018) study on Turkish-speaking pre-

schoolers in Norway has shown that neither mother's nor father's education level was a significant predictor of children's Turkish vocabulary. In this study, parents' age at the time of migration also had no significant effect on the model predicting children's Turkish vocabulary. By contrast, however, Willard et al's (2015) recent study on Turkish-speaking children in Germany demonstrated that both mother's education level and age at the time of migration had a significant effect on children's Turkish vocabulary, as this factor did impact the degree of Turkish language use at home. Parents who migrated at a later age spoke more Turkish at home, which in turn positively contributed to children's Turkish vocabulary. It has, similarly, been shown that family migration and integration had a negative effect on children's heritage language skills (e.g., Willard et al., 2015). Westeren et al. (2018) discussed this contradictory finding drawing on the characteristics of the study samples, in their case it mostly included first-generation parents. In Westeren et al.'s (2018) study there was less variation in the home language environment of families; whereas, by contrast, Willard et al.'s (2015) study that included parents from both first-generation and second-generation backgrounds demonstrated larger variation in the language environments. These differences in the sample characteristics most likely led to different findings on the effects of migration. As this study finds, family social integration was not significant in predicting children's Turkish vocabulary although the p-value was nearly significant ($p = .062$). This study also had a sample of parents who were first-generation immigrants, which probably led to similar levels of Turkish exposure in the home environments of children.

The third level of the model included the resources available in the home language and literacy environment. These included conversation activities, literacy practices, and language exposure used in these practices. Adding the family's resources in the home language and literacy environment increased the variance explained by the model by 13%. The added variance was also significant. All of these findings suggested that language and literacy resources at home were significant in explaining the variations in children's heritage language skills. The predictors of the model demonstrated that only Turkish use at

home was a significant predictor of children's Turkish vocabulary, whereas language and literacy activities were not a significant predictor. Recent scholarship on the relationship between children's language skills and at-home language and literacy activities has demonstrated similar findings. Duursma et al. (2007) show that language and literacy activities at home had a negative effect on the heritage language vocabulary of children. The authors explained this finding through the increased English use in the language and literacy activities at home. In fact, other studies have shown that the use of heritage languages in these activities was a significant predictor of children's heritage language skills (Quiroz et al., 2010; Willard et al., 2015). To understand if this was the case in this study, the same regression model was run to see the relative effect of language and literacy activities after controlling for the language use in the home environment. This model did not change the significance level of the language and literacy activities (β=-.152, p=.911), suggesting that, even after controlling for the relative exposure of Turkish and English at home, the language and literacy activities did not have a significant effect on children's Turkish vocabulary skills. Some studies discuss the nonsignificant contribution of language and literacy activities to children's language skills by drawing on parental engagement in such activities. For instance, Scheele et al. (2010) refer to a comparative lack of parental engagement in literacy activities among Turkish parents in comparison to Dutch parents in order to account for the nonsignificant interaction between children's language skills and literacy activities. The authors, however, found a significant relationship between storytelling activities and children's Turkish vocabulary. This finding might mean that other language activities that are readily available to families may be more beneficial for children's heritage language skills, especially when parent's access to literacy sources is limited (e.g., Riojas-Cortez, Flores, Smith, & Clark, 2003; Raghavan, Harkness, & Super, 2010). Surprisingly, however, this study found that an initial correlation analysis demonstrated a nonsignificant relationship between storytelling activities and Turkish vocabulary skills (see Appendix 14). This finding, however, should not devalue the importance of alternative language resources in heritage language development, but rather encourage research that captures the variety of learning resources in ethnic minority households.

Through the analysis of language quality in maternal speech, the final level of the model included the characteristics of proximal processes in the home language and literacy environment. After adding the language quality scores in the regression model, the variance explained by the analysis reached its highest level of significance with a 7% increase in the variance explained by the model. This finding suggested that after taking into account all the variables related to child, family, and home characteristics, the characteristics of the language interactions between parents and children had a significant effect on children's repertoire of Turkish vocabulary. The evidence, to date, has not demonstrated the relative significance of the language quality in maternal speech in relation to other micro- or macro-level factors. In fact, the literature on language quality in parental speech is – with a few exceptions – limited to studies on monolingual children. In a study on the relative contribution of language quality in maternal speech for monolingual children's English vocabulary, Rowe (2008) has shown that the language quality in child-directed speech was a significant predictor of children's vocabulary. Although Rowe's study did not demonstrate the significance of language quality in maternal speech in relation to other variables (e.g., related to family and home characteristics), the author argued that controlling for children's prior vocabulary knowledge accounted for the language quality and exposure in the previous years. This suggests that maternal speech continued to have a significant effect on children's language growth over the course of a year. This study, then, adds to the literature by demonstrating a significant effect for the language quality in maternal speech in bilingual first language acquisition.

The analytical trends in the regression model were different for children's standardised sentence repetition scores. In explaining the variance in children's Turkish sentence repetition scores, the first level of the model including children's age-adjusted non-verbal abilities had no significant effect. This finding was in line with the literature and contributed to existing evidence suggesting that the sentence repetition task was a language marker rather than a correlate of children's working memory skills (Devescovi & Caselli, 2007; Klem et al., 2015). The second level of the model including family characteristics also did

not have a significant effect in explaining children's sentence repetition scores. This finding stood in contrast to evidence in existing literature (though there are still only few studies on this subject). A study on monolingual children in Chile, for instance, demonstrated that a family's socioeconomic background had a significant effect on children's sentence repetition performance (Balladares et al., 2016). The sentence repetition scores analysed in this study were standardised according to children's vocabulary scores in Turkish to capture their morpho-syntactic skills and to normalise the distribution of raw scores (see Klem et al., 2015). This analytical decision may have reduced the effect family background characteristics have for predicting children's language outcomes.

When the language characteristics at home (block 3 and 4) were added in the analysis, however, the model approached a level of significance in the variance explained, and the language use at home became the only predictor of children's sentence repetition scores. The language quality was almost significant. This was in line with the evidence from a study on the home environment of English-speaking monolingual and bilingual children (Thordardottir, 2011; Puglisi et al., 2017). As shown by Thordardottir (2011), balanced bilingualism – maintaining the heritage language as the child starts to learn another language – was only possible with similar amounts of exposure in bilingual environments. In this study, the language exposure to Turkish was once more shown to be important for the maintenance of complex language skills. Similarly, the almost significant value of maternal speech language quality suggested that maternal language skills played an important role in children's heritage language maintenance. This finding supported the arguments of the study by Puglisi et al. (2017), which predicted children's language outcomes through a pathway analysis of maternal language skills and the home literacy environment. The findings have shown that maternal language skills were the actual predictor of children's language outcomes and its effect on children's language skills were reinforced by the literacy activities at home and vice versa. The authors explained this effect by referring to the 'genetic influences' of parents' language skills on children's language abilities. Although it would be far-fetched to say genetic influences are the

reason for the significant association between children's language skills and language quality in maternal speech, this finding suggests that verbally stimulating environments may benefit the development of morpho-syntactic skills, which may contribute to children's later bilingual language development.

The findings of this study demonstrate that when child-, macro-, and micro-level factors are considered in the analysis of the heritage language skills of bilingual children, the relative exposure to language, as well as the language quality of maternal speech may become the predictors of children's language skills. This evidence corresponds with the partial evidence on the factors predicting children's language skills in previous studies on monolingual and bilingual children (Demir-Vegter et al., 2014; Puglisi et al., 2017; Willard et al., 2015) and becomes the first study on bilingual children to demonstrate the relative importance of child-, micro-, and macro-level predictors of heritage language maintenance.

6.3.2. English Language Skills

Some of the model levels demonstrated different patterns of prediction in explaining children's English vocabulary in comparison to Turkish vocabulary. The first model including the non-verbal abilities of children, for instance, was significant in explaining children's English vocabulary scores. In comparison to the Turkish vocabulary scores, children's non-verbal abilities explained 7% more variance in English vocabulary. The finding suggested that children with higher non-verbal ability scores retained a larger vocabulary in English. This was a predicted outcome as previous research has shown that children's cognitive abilities play an important role in bilingual second language acquisition, especially during the early stages of language learning when the cognitive load is at the highest level (e.g., Bossman & Jansen, 2017). Studies on bilingual language acquisition and cognitive development have focused on the cognitive differences between bilingual and monolingual samples. In that regard, this study explicitly demonstrates

the importance of cognition for the second language acquisition of circumstantial bilinguals in comparison to their heritage language.

Adding the second level in the regression model including family background characteristics brought a 22% significant increase in the variance explained by the model, whereas the addition of the same factors only contributed to the model explaining the Turkish vocabulary scores with a 6% increase in the variance explained, which was not significant. This finding meant that some of the indicators that captured the family background characteristics in this study had a significant effect on children's English acquisition, whereas it was not the case for the Turkish language skills. Among the indicators of the family background characteristics, only family social integration was a significant predictor of children's English vocabulary scores. This finding, again, was not unexpected. A large body of literature including studies of Turkish families demonstrated that family integration was an important predictor of children's developmental outcomes, including second language skills, cognition, and knowledge of mainstream culture (Becker et al., 2016; Becker, 2011; 2010; Driessen et al., 2002; Westeren et al., 2018; Willard et al., 2015; Winsler et al., 2014; Quiroz et al., 2010). This study adds to the literature by demonstrating that parents' social integration in the country, which can be supported by their language competence and length of residence, is an important aspect of children's second language skills in the early years of education.

Adding the third level in the model including the resources in the home language and literacy environment increased the strength of the model with an addition of 11% of variance explained. The total variance explained with the contribution of the third level became 44%, which was only 23% for the Turkish vocabulary scores. The significance levels of the indicators demonstrated that the relative language exposure in the home language and literacy environment had a significant effect on children's English vocabulary knowledge. Increased English use in language and literacy activities at home predicted a larger

English vocabulary for children. The addition of language use in the model made the social integration variable nonsignificant. The importance of language exposure again has been well documented in previous studies, including samples of Turkish-speaking children (Budde-Spengler et al., 2018; Ertanir et al., 2018; Scheele et al., 2010). These studies have also demonstrated the mediating effect of language exposure on the interaction between parents' migration background and children's language outcomes (e.g., Willard et al., 2015; Winsler et al., 2014). This study, by contrast, shows that language use in the home environment is a more important predictor of children's second language skills than home language and literacy activities. Although the results of the correlation analysis suggest that there is a positive interaction between children's English vocabulary and language and literacy activities, the effect of language and literacy activities predicting English vocabulary becomes nonsignificant in the prediction model. This finding is important for understanding the role of language and literacy activities in bilingual children's second language acquisition and suggests that language and literacy activities at home may be a correlate of children's language skills rather than a predictor.

The final level of the model demonstrated a similar pattern to the findings on Turkish vocabulary. Adding the language quality in maternal speech increased the strength of the model by 6%. The final model explained 50% of the variance in children's English vocabulary and language quality in maternal speech. Relative exposure to English at home, meanwhile, continued to make a significant contribution in the model. Although the correlation analysis demonstrated a nonsignificant relationship between language quality in maternal speech and English vocabulary, the final model has shown that language quality in maternal speech was a significant predictor of children's English skills, particularly when the analysis took into account the relative language exposure at home. This finding is new in the literature and has important implications for research on bilingual children. The model shows that quality language exposure at home has a significant effect on children's language skills even after taking child and family characteristics into account. However, the language exposure at home remains significant after adding the language quality in

maternal speech, suggesting that it may have mediated the contribution made by the language quality in parent-child interactions. The previous research on language acquisition has underlined the importance of language quality in parent-child interactions (Pan et al., 2005; Rowe, 2008; Demir-Vegter et al., 2014). Very few studies demonstrated the relative importance of parents' language skills in comparison to the indicators of the home language and literacy environment (e.g., Puglisi et al., 2017). The majority of these studies focused on English-speaking monolingual samples (Pan et al., 2005; Puglisi et al., 2017; Rowe, 2008). This study, however, demonstrates that quality language exposure is indeed important for children's bilingual second language acquisition. This is true even after accounting for factors that influence children's language experiences, such as socio-demographic factors and home language and literacy environment.

The findings of this study suggest that the child, family, and home characteristics play an important role in the second language acquisition of bilingual children, as would be expected from the bio-ecological model. The significance of these factors may be even more pronounced for the second language skills of children in comparison to heritage language skills. The findings discussed in this section suggest that the variations in family background characteristics and home environment of minority children explain a large extent of children's early English language skills. These findings correspond with evidence from previous research on Turkish-speaking bilingual children across Europe (Budde-Spengler et al., 2018; Ertanir et al., 2018; Scheele et al., 2010) and becomes the first study in England to demonstrate the relative contribution of child-, micro-, and macro-level factors in explaining children's second language skills.

6.4. Children's Language Attitudes Explaining Bilingual Language Development

Research Question3: What is the role of language experiences and attitudes in children's bilingual language preferences?

The third goal of the study was to address how children's language attitudes explain their language preferences, and how these may influence their bilingual language maintenance. One of the main issues in bilingual second language acquisition – especially for ethnic minority populations – is that children start to refrain from using their heritage language skills as they go through a period of immersion in the national language at school (Caldas & Caron-Caldas, 2002; Zhang & Slaughter-Defoe, 2009; Palviainen & Boyd, 2013; Nesteruk, 2010; Park, Tsai, Liu, & Lau, 2012). In many cases, these changes might cause language loss and lead to 'subtractive bilingualism' (as discussed in Chapter 2). Studies on heritage language loss show that the vitality of a heritage language depends on the possibilities for communication and social interaction that contexts provide speakers (e.g., Hsieh et al., 2020; Ubalde et al., 2017). Previous research has shown that cultural settings that acknowledge minority cultures and encourage their presence in the community can facilitate heritage language maintenance by promoting positive attitudes towards the culture (e.g., Ubalde et al., 2017). Research on children's language attitudes and how these interact with their language experiences, however, is still relatively rare. Although studies have shown that children may get involved in the family language policy, the literature on children's views on the language environment around them is still emerging (see Wilson, 2020). In that regard, the interviews carried out with children in this study comes from an exploratory perspective. The findings from children's accounts, however, demonstrate the necessity of such inquisition.

Two main themes emerged from the findings, which built around children's self-perceptions and social interactions. The first theme (see Section 5.3.) highlighted some of the previously addressed issues in the literature on second language learning. As presented in this section, the interviews with children

have demonstrated the importance of language competence and self-efficacy in their language preferences. In a study on ethnic minority children, Jean (2011) underlined the importance of children's language skills in their language confidence. The author argued that children's language skills influenced their language attitudes and attempts to communicate in a language (Jean, 2011). In fact, researchers studying bilingual children's emotional nativity have found that heritage language proficiency played a particularly important role (Dekeyser & Agirdag, 2018). Although this study is not about children's emotional competence in a language, the findings have shown that their perceived skills in the language influenced their feelings about the language. The findings from the interviews suggested that negative feelings about one's language competence led to a sense of disconnectedness with the language itself. For instance, many children expressed negative feelings towards one of the two languages spoken – and in some cases, outright rejection – due to self-perceived linguistic difficulties. This finding mostly applied to children's perceptions of their Turkish skills, which they perceived were weakening as they started to spend more time at school. This was not a new finding in the literature. Studies on heritage language loss in bilingual second language acquisition have demonstrated that language immersion in the school environment led to changes in children's language preferences as a result of weakened skills in the heritage language and accelerated the process of subtractive bilingualism (Hsieh et al., 2020; Nesteruk, 2010; Park et al., 2012).

Children's perceptions of their language preferences were closely tied to their identity formation. Some children interpreted their language preferences drawing on their 'imposed' or 'assumed' Turkish identity (see Pavlenko & Blackledge, 2004). For some, speaking Turkish was a part of their identity as they were born into a Turkish family. For others, speaking Turkish was a means of performing their Turkish identity. In these cases, the perception of the cultural self, then, morphed into the perception of the linguistic self. This was not a new finding, although it was novel given the fact that the children were much younger than the subjects of previous studies. A study on Welsh adolescent girls, for instance, demonstrated that the perceived cultural identity of adolescents depended on 'how much' they spoke

Welsh in their daily life. Similar to the evidence in this study, adolescents saw language as a means through which to affirm or emphasise their Welsh identity. The difference between the two studies, however, lies in the level of awareness in each age group. One could argue that young children are more susceptible to the influences in their environment, adolescents, on the other hand, can react to their environments from an internal motive (e.g., speaking a language regardless of their language difficulties to enhance their perception of a cultural self). Previous studies, for instance, have shown how young adolescents took an active role in the language environment around them (Caldas & Caron-Caldas, 2002; Palviainen & Boyd, 2013). This study, too, demonstrates the agency of young children in their language preferences and preferences and adds to the literature by drawing on the accounts of emerging bilinguals.

The second theme (see Section 5.4.) emerged that language attitudes and behaviours were influenced by children's social environments. The analysis of the interviews suggested that children's positive or negative social experiences in a language affected their perception of the language and led to changes in their language preferences. Good relationships with the mother or other family members, for instance, had a positive effect on their attitudes towards Turkish. Similarly, having friends to share the language with was an important factor in children's perception of the language. Children's language attitudes in turn led to changes in their behaviours such as avoidance or enthusiasm. These findings were in line with the language socialisation theory put forward by Schieffelin and Ochs (1986). Regardless of their competence in the language, children evaluated their linguistic resources by drawing on their function. This is what Schieffelin and Ochs refer to as "socialisation through the use of language", which, in turn encourages their "socialisation to use language" (Schieffelin & Ochs, 1986, p. 161). In that regard, speaking the language was a means of belonging and becoming "a competent member of society" (Vygotsky, 1978, p. 168). Studies on growing up in bi-lingual and bi-cultural contexts have shown that language experiences in different social environments can affect childhood language attitudes and behaviours (Shin, 2010; Michel et al., 2012). As Shin (2010) shows, Chinese individuals' relationship to English grew over biographical time as they grew up in the United States. Similarly, Russian children

growing up in Germany experienced a loss of connection with their heritage language and culture as they started to build social networks in predominantly German speaking communities (Michel et al., 2012). This study has shown that children's language preferences in early childhood were affected by the social connections they formed in English and in Turkish. Thus, having close relationships with speakers of the heritage language played a protective role over their heritage language interest and maintenance (see also Cummins 1986 on empowerment of ethnic minority children).

The findings from the interviews have shown that children's language attitudes and behaviours were influenced by the language expectations prevalent in their social environments. Some children noted that their parents expected them to speak Turkish at home, and that these expectations quickly turned into rules for at-home language use. Recent scholarship on family language policy has shown similar findings. In their study, Bezcioglu-Goktolga and Yagmur (2018) demonstrated how parents' strategies to control and supervise their children's at-home language use became methods to ensure heritage language maintenance in the next generation. Most of the studies on family language policy have focused on how parents shaped the language environment of their children at home (Wilson, 2020). Very few studies have been interested in how children reacted to their parents' expectations and how these affected their language experiences (Caldas & Caron-Caldas, 2002; Park et al., 2012; Palviainen & Boyd, 2013). Evidence from these studies, however, have shown that children were not inactive agents in the home environments complying with the rules and expectations at home. In fact, children affected the language environment around them either through manipulation (e.g., Palviainen & Boyd, 2013) or via their language competence that led to changes in their parents' expectations (e.g., Park et al., 2012). Even when children did not influence their parents' language practices, some rejected the expectations and did not comply with the language use of their parents (e.g., Caldas & Caron-Caldas, 2002). This study added to these findings by demonstrating the extent to which parents' language expectations affected their children's language experiences. Although it did not add an essence to children's language experiences, the experience of one child demonstrated how a parent's controlling attempts to stop her English use led

to feelings of embarrassment, fear, and sadness when the child had to communicate in the language at school or with friends (see pp. 196-198).

Language expectations were not only limited to 'imposed' language restrictions. 'Assumed' language preferences in a social context also played an important role in children's language attitudes and behaviours. For instance, children whose parents struggled with English explained that they switched to Turkish at home to be able to communicate with their parents. Although this finding was new to the literature, the previous research on ethnic minority families have demonstrated the 'maturing' effect of language discrepancies between parents and children with the responsibilities of language brokering brought to children at a young age (see Crafter, Cline, & Prokopiou, 2017). This study demonstrates the early effects of language imbalances at home contributing to children's meta-cognition and control of their languages in different social environments.

Finally, this study shows that young children were vulnerable to the effects of discrimination from a young age, which had potentially harmful effects on the formation of their heritage culture and identity. These experiences, then, had an effect on their language preferences as language became a 'badge' for their differentiation and led them to stick out. Children often felt restricted in their language use at school, where English was the expected norm. Though many of the children the researcher worked with said they had other Turkish-speaking friends at school, they felt obliged to interact with them in English. In one case, this experience led to the concealment of their Turkish identity, although this finding did not converge into a pattern across the other interviews (see p. 195). Previous research has demonstrated the effects of negative experiences with perceived heritage identity. Children, who experienced discrimination or were ridiculed for being 'different' demonstrated a stronger urge to blend in with the others (Shin, 2010).

The findings from the interviews with children indicate the importance of early childhood experiences in bilingual language acquisition and heritage language maintenance for children growing as an ethnic minority. The primary findings of the study suggest that bilingual language acquisition is sensitive to the every day experiences and social interactions of children. While constructive social experiences can bolster the coexistence of children's bilingual identity, negative experiences may impede them from embracing one or the other. Children's interpretation of their experiences and their language identity, however, plays an important role in their language preferences. Children's negative self-perceptions of their linguistic ability can fundamentally affect their relationship to their linguistic repertoires, often leading to avoidance, feelings of embarrassment, fear, and sadness. These experiences can exacerbate a rift in heritage language maintenance, which, importantly, interacts with their language development.

6.5. Understanding the Process-Person-Context-Time (PPCT) Model of Bilingual Language Development

As introduced in Section 2.2.1., this study drew on the PPCT model offered by the Bio-ecological Theory of Human Development (Bronfenbrenner & Ceci, 1995). This model provides researchers an overall holistic theoretical and methodological framework to study the synergistic relations between the ecosystems of child development and their influence on skills and abilities of children. Drawing on this model, this study investigated the factors relating to bilingual language development of Turkish children growing up in first-generation immigrant families in the UK. By doing that, the study first demonstrated how factors from different levels of the eco-system inter-related with each other, e.g., how family socioeconomic background influenced the resources in the home environments of children, then moving down a level in the model, how the most significant and relevant components of children's experiences in the home environment influenced their language skills and preferences. As shown by the evidence from Chapter 4 and 5, the study findings have demonstrated the role of wider societal and proximal family influences in language development, while also underlying the inter-connectedness of these factors in

children's experiences with bilingualism. This section of the chapter reflects on the bio-ecological theory to demonstrate how this study contributed to the application of the Process-Person-Context-Time (PPCT) model in research on bilingual language development and how the findings from this study can support future research on bilingualism using the PPCT model.

Although the bio-ecological theory has been influential in social sciences, the use of the PPCT model as a methodological framework has been underrepresented in research (Xia et al., 2020). As discussed by Xia and her colleagues (2020), research drawing on this theory resulted in a misinterpretation, leading to an over-simplification of the theoretical and methodological features provided by the model as a result of the disproportionate focus on the older versions of the theory. The introduction of the PPCT model, however, came long after the earlier versions of the theory (see Bronfenbrenner and Morris, 2006; Bronfenbrenner, 1979). As discussed in Section 2.2.1, in the last decade, researchers have started to draw attention to the changes that the model underwent and its implications for research (Xia et al., 2020; Tudge et al., 2009; 2016; Velez-Agosto et al., 2017). Drawing on the interpretations of the PPCT model, research was called to pay attention to the synergistic interactions between individuals and the proximal processes in their environments through the comparison of changes in macro- and micro-level influences on the context with close attention to person level characteristics (Xia et al., 2020). The focus on these proximal processes in research was advised to illuminate the 'engines' of development by looking at the ecologically relevant interactions that significantly contribute to the experiences of children. In line with this interpretation of the proximal processes and the evidence demonstrated in the literature (see Section 2.5.3.), this study focused on the characteristics of parental speech as the engine of children's language development with attention to the role of synergistic relations between child, family, and home environment factors.

One of the most important features of the model adopted by this study was its focus on the macro- and micro-level contextual influences that shape the language experiences of children. The bio-ecological theory brings attention to the role of such contextual differences in the transactional interactions between

the environment and individual in understanding the developmental processes in human development (Velez-Agosto et al., 2017). As demonstrated by decades of evidence (see Section 2.5.2.), ecologically valid micro-level influences in language acquisition have been shown to be present in the language and literacy resources in the home environment of children. Drawing on this evidence, this study investigated the contextual influences of the home environment in understanding the language skills of children. The characteristics of the microsystem, however, is receptive to the influences of wider contextual factors. With a focus on the interactions between culture, social class and human development, researchers have argued that the contextualist paradigm that the bio-ecological theory proposes should underline the interactions between these wider influences and their role in the microsystems of human development (Siraj & Mayo, 2014; Velez-Agosto et al., 2017; Kagitcibasi, 2017). Similarly, Bronfenbrenner (1979, p. 3) also underlined these transactional relations between distal and proximal contextual influences by referring to an analogy of inter-nested Russian dolls. Drawing on this evidence and the literature on immigrant populations (see Section 2.6.2.), this study first demonstrated the role of family socioeconomic background and social integration as the distal influences affecting the home environment characteristics of Turkish children. As demonstrated by the statistical evidence in Chapter 4, the findings have shown that the socioeconomic and cultural experiences of first-generation immigrant families explained the variations in the language and literacy environments of ethnic minority children. The regression model, for instance, has shown that children's language environments were affected by distal socioeconomic and cultural factors explained by their family background characteristics. The hierarchical nature of this regression model also demonstrated the relative importance of these distal factors in explaining the characteristics of children's language environments. Parents' integration experiences, for instance, were found to be more important in explaining the language environments of children in comparison to other factors related to family socioeconomic background. These examples have demonstrated the relative significance of distal factors in explaining the interactions between the inter-nested ecosystems of child development. Furthermore, it underlined the shared effects of a global experience, such as migration, on

the home environments of children growing up in immigrant households by demonstrating how socioeconomic and cultural consequences of migration can lead to variations in the learning resources of ethnic minority children. The findings then contributed to the growing body of research showing the effects of migration in human development from a contextually sensitive perspective.

Another important feature of this study in its application of the PPCT model was the attention to person-level characteristics that have the potential to influence the learning experiences of children as well as their language outcomes. This component of the study not only accounted for the individual level of 'resource' characteristics (as introduced in p.32) that are related to language acquisition, but also demonstrated the role of 'force' characteristics (also in p.32) related to children's preferences or attitudes that explain the psychosocial elements of bilingual language acquisition. The qualitative portion of this study allowed this research to capture the social interactions in the home environments of children as well as children's first-hand experiences with their interactions, which provided invaluable information on the role of child characteristics (e.g., language difficulties) and the variations in parents' responses to children's language practices (e.g., language monitoring). This feature of the study not only enhanced the holistic interpretation of the findings but also demonstrated the bidirectional nature of the parent-child interactions and their role in the contextual characteristics of the home environment. The findings from the statistical analyses presented in Chapter 4 have shown that children's non-verbal abilities played a differential role in their first and second language acquisition. This finding demonstrated that the relevance of resource characteristics of children depended on the outcome of interest (e.g., Turkish and English vocabulary). The findings presented in Chapter 5, then, demonstrated the importance of force characteristics in bilingual language acquisition and its interaction with the contextual characteristics of children's learning environments. This component of the study contributed to its methodological application of the PPCT model and demonstrated various examples on how the proximal interactions between parents and children can depend on both the characteristics of the child and their parents. In some cases, the interpretations of findings were supported by the observations of the families and their

home environments, which bore information on the importance of macro-level influences in the home environment (e.g., cultural values, religious views). The findings from this chapter also underlined the multifaceted nature of bilingualism and demonstrated how a transactional framework of child development can contribute to the body of literature on the complexities of bilingual language acquisition.

This study has shown some implications of 'time' in bilingual language development by examining the characteristics of language exposure in the home environment. Although research advises for a longitudinal design to study the role of time, research methods such as questionnaires that inform the past characteristics of children's learning experiences can compensate for the use of cross-sectional designs in research on child development (see Xia et al., 2020). In order to account for the role of time in bilingual language development in this study, the information on relative language exposure and the frequency of language and literacy activities at home has been collected using a questionnaire method. Similarly, the characteristics of language quality in parent-child interactions have been depicted by an observation method to account for the variations in parent-child interactions over time (see Section 2.7.3.3.). By doing that, this study accounted for the importance of relative language exposure over time through different mediums of language and literacy activities. The evidence demonstrated in Chapter 4 has also shown that the relative language exposure was a significant predictor of children's bilingual language skills, which suggested that the more time children spent in a language the better they got. Another method of studying the role of 'time' in human development is focusing on a particular timeframe in human life that has been depicted as a crucial period of growth for the skills of interest (see Xia et al., 2020). To demonstrate the transition period from home-to-school environment and depict the changes that occur in children's language experiences and skills, this study focused on an age group that is in the process of such transition at the time of the fieldwork. By researching a group of children in reception year or year 1, this study has demonstrated the effects of changing language environments and children's exposure to English-speaking only environments. The examples from children's accounts have shown that children struggled with Turkish as they spent more time at school. Similarly, some children shared that their parents started to

converse in English with them as a result of their changing language skills. These findings shed light into the importance of this transitional period in the study of bilingual language development across first-generation immigrant families and its effects on children's home environments.

Lastly, one of the most important features of the PPCT model in this study was its focus on the synergistic relations between the variables studied to understand the variations across an outcome variable of interest. This study accounted for the synergistic interactions between the predictors of children's language skills both directly and indirectly. In Chapter 4, the findings from the statistical analyses have shown the relative importance of child and family characteristics when the proximal processes are considered. In so doing, the results have demonstrated the relative effects of distal and proximal variables in predicting children's language outcomes. For instance, the model has shown that non-verbal abilities of children continued to have a significant effect on their English vocabulary even after the relative language exposure was taken into account, pointing out the collaborative work of child characteristics and contextual factors in bilingual second language acquisition. Similarly, the significant effect of language quality on children's English vocabulary after controlling for the spoken language at home has shown that the effects of proximal processes depended on input characteristics, i.e., language spoken. The findings from Chapter 5 has also provided some suggestions for the possible synergistic relations between child and family characteristics in explaining children's language attitudes and preferences. The accounts of children, for instance, have shown a potentially protective effect of children's force characteristics such as their liking for different languages and cultures on their interactions with different language environments when they receive positive feedback from their friends. Similarly, the changing nature of children's language skills suggested a change in the languages used by parents depending on their cultural values. These findings not only underlined the importance of child characteristics but also demonstrated how their effects can be contingent on the characteristics of children's environments that are beyond the scope of this study (e.g., cultural values and experiences).

Future research using the PPCT model of bilingual language development can take this work further by conducting a longitudinal study of bilingual children's home environments. Examining the changes in the home environments related to children's language and literacy experiences involving proximal interactions between parents and children can inform researchers on the effects of time that underpin the variations in the synergistic relations between child, family and home characteristics and show their relative contribution to children's bilingual language development.

6.6. Key findings

The primary findings of this study are threefold: (1) Children from Turkish immigrant families with limited socioeconomic resources received stimulation at home that may not optimise their development during the early years; (2) Stimulating home environments that provide language enriching experiences to children can facilitate gains in both Turkish and English, which might support them in the early years of school education and buffer the effects of socioeconomic disadvantage; (3) Positive and supportive experiences with bilingualism and multicultural identity can encourage children to continue their use of Turkish, while also turn learning English into a joyful experience.

The first finding suggests that socioeconomic disadvantages experienced by first-generation immigrant parents, especially when they are new to a country, can lead to diminished stimulation in their home environment. Changes that migration bring into the family life can have negative effects on the family resources in child-rearing. These effects may be exacerbated if parents are new to the country or experience problems with social integration, which might result from language barriers and lack of educational resources. These issues may deprive parents from participating in their child's learning through essential learning activities and parenting practices in the early years of life.

The second finding suggests that enriching language environment at home can buffer the effects of socioeconomic disadvantage in bilingual second language acquisition. Relative exposure to Turkish and

English at home is important for children's bilingual language skills. However, quality language exposure in mother-child interactions becomes an important factor in children's language skills after taking the relative language exposure into account. Although, literacy and language activities do not predict the language outcomes of children, they may play an intermediary role by enhancing quality language use and language exposure in proximal processes at home.

The third finding suggests that bilingual language development has social and individual aspects that may or may not encourage children's learning and bilingual language maintenance. Children's self-perception plays an important role in making sense of their bilingual identity and may influence their language preferences that might limit them to one language over the other. Social interactions and environments contribute to children's self-perception and interact with their language decisions. Encouraging experiences and positive connections with the speakers of a language can promote the use of the language and children's liking for it, whereas negative experiences and fear of exclusion might lead to refraining from it.

The findings arise from this research are unique in many ways: (1) the study demonstrates the risk and protective factors in the sociodemographic characteristics of Turkish families in England contributing to the home language and literacy environment of children; (2) it explores the unique contribution of quality language use at home through the characteristics in child-directed maternal speech above and beyond the factors that have been studied in the literature on monolingual and bilingual language acquisition; and (3) it acknowledges the child-agency in bilingual language acquisition and demonstrates the social and individual factors that facilitate children's language learning experiences in a minority context.

6.7. Limitations

This study had some limitations. First, there were some challenges specific to the use of questionnaires that have been experienced in the data collection of the first study phase. One issue that occurred with administering questionnaires to parents was the non-response rate to questions on sensitive information such as monthly income. In order to minimise this limitation, the majority of the interviews were carried out face-to-face by Turkish mothers from the community. However, this issue did not completely solve problems such as false response and, in fact, elucidated it. The researchers, who interviewed people they know from the community, noted that they realised some participants provided incorrect information on questions regarding their marital status or family income, as they were sceptical about the consequences of enclosing information that might affect their social benefits (ISOTIS fieldwork notes, 2018). Another issue that arose with the questionnaire use was the social desirability bias, which might have been exacerbated as a result of the participants' minority background (e.g., Swain, Heyman, & Gillman, 1998). In this study, the majority of the parents reported to participate in language and literacy activities more often than was observed for parents in the previous use of the questionnaire (Melhuish et al., 2001; 2008). In order to mitigate this issue, the data was supported with structured observations of mother-child interactions, which provided information to ratify questionnaire responses such as home language use.

The second phase of the study had some limitations regarding its research methods and assessment materials. The sentence repetition test that assessed children's Turkish language skills was developed by the researcher for the purposes of this study. To minimise the effects of children's vocabulary knowledge the sentences were made by using the corpus data from the Turkish speaking toddlers in Turkey. However, the lexical acquisition path of the Turkish-speaking children in England might be different to those in Turkey due to cultural and linguistic variations in their home environment. In order to minimise this issue, the sentence repetition outcomes were standardised according to children's vocabulary outcomes. Another methodological issue of the second phase of the study may be the validity of the home

observations. Due to limited fieldwork resources, the observations of mother-child interactions were carried out in a semi-experimental setting in a limited time period. This methodological decision might have led to interactions between mothers and children that were not entirely natural. Furthermore, the factors that disrupt the interactions between the dyads (e.g., mothers/children being fatigued or distressed) might have affected the validity of the information drawn from the observations. To minimise the effects of the experimental setting created for the dyads, the researcher ensured that the child was not behaving differently from usual by checking with the mothers. In two cases, the home visits were rearranged and extended to another one due to the behaviours of the participating child. The mothers were also assured with the possibility to reschedule the visit if anything on the day arise that might affect their participation.

Similar methodological issues arise for the final phase of the study with the child interviews. Although the interview structure was developed in line with the research lessons derived from conducting interviews with children and the answers were ratified with following some interview strategies as demonstrated in Chapters 3 and 5, this phase of the study was methodologically challenging for various reasons. First, children were much younger than in previous studies on language attitudes and might have experienced difficulties in understanding the how and why questions directed to them in the interview (Hershkowitz et al., 2012). Although there is evidence for the effective use of how and why questions in evaluative contexts for children (Lamb et al., 2007), and this study also demonstrated some successful outcomes, some children struggled with delivering elaborate answers on their feelings or experiences during the interviews. This might have resulted from a difficulty with the language affecting their comprehension of and responsivity to the questions in the interview. Although children were given the chance to perform the interview in the language of their preference and change it anytime, some children demonstrated difficulties in expressing their thoughts or provided unintelligible answers. When the researcher sensed discomfort on behalf of the child, she asked if the child wanted to stop or preferred to

play a game instead. Similarly, when the child was giving unintelligible answers, the researcher repeated the questions and supported their answers with restating their answers.

The study had some analytical limitations as well. First, a considerable amount of the variance remained unexplained for the components of home language and literacy environment in addressing the first research question in Chapter 4. More information on family background characteristics and their lives in England could have elucidated on the factors relevant to parental engagement in home language and literacy environment. For instance, including factors such as parental wellbeing and self-efficacy could have improved the model (e.g., Baydar et al., 2014). Second, due to limited resources in data collection, the data analysis mostly focused on the information on primary caregivers and mother-child interactions limiting the understanding of the family background characteristics and home environment to the perspectives of mothers. Including information on fathers could have contributed to the analytical strength of the model in predicting the resources and languages provided for children at home and understanding the beneficial parenting practices for both mothers and fathers. Third, the families were relatively advantaged in terms of educational qualifications and material circumstances. Different findings might be found in a more disadvantaged sample. Fourth, the sample was not large, especially for the second and third phases of the study, meaning that the findings need to be replicated with a larger sample or the evidence should be interpreted with caution.

6.8. Policy and Research Implications

The findings of this study suggest that family background characteristics account for a substantial amount of variation in the home language and literacy environment. Being new to a country and facing linguistic barriers can limit parents' language use and access to learning resources at home. This finding is crucial for policymakers and professionals working on the integration of immigrant families. One approach to support bilingual children, therefore, should include providing newly arrived immigrant families with access to training programmes which support their children's language and literacy environment.

Providing English language training to parents can facilitate their integration and have positive effects on parental engagement at home. Parents can also benefit from learning about the value of child-directed speech and language enriching activities at home in participating in their child's bilingual language learning. Another approach should therefore be to improve the inclusive strategies schools take to support the English language learning of children from first-generation immigrant families. Schools and education centres can also guide immigrant parents in their use of heritage language literacy resources at home. These could help them acknowledge and value their cultural heritage and support the bilingual language acquisition of their children.

The future policy research can take these findings further by demonstrating the importance of child-directed speech in children's bilingual language development. In these future studies, it would be informative to see the characteristics of child-directed speech (e.g., language quality, inquisition, joint-attention) that improve or predict children's language skills. This direction in research can further show the protective properties in child-directed speech and parent-child interactions. Similarly, intervention studies can demonstrate the effects of improvements in child-directed speech on children's bilingual language skills.

6.9. Concluding Remarks

The concluding remarks of the study are threefold: (1) Bilingual children from immigrant families with limited cultural and socioeconomic resources may grow up in less stimulating home environments, which may not optimise their bilingual language learning; (2) Parental engagement, especially when it is high quality, can support the bilingual language development of children and buffer the effects of socioeconomic disadvantage; (3) Positive experiences with bilingual identity can support additive bilingualism, whereas negative experiences with the languages and heritage culture can facilitate subtractive bilingualism among ethnic minority children. These remarks also illustrate the original contribution of the study to bilingualism research with evidence from a sample that has not been studied previously in the literature.

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APPENDIX 1. Information letter and consent form for study phase 1

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ISOTIS INCLUSIVE EDUCATION AND SOCIAL SUPPORT TO TACKLE INEQUALITIES IN SOCIETY

1 AIM OF ISOTIS

ISOTIS is a collaborative research project funded by the European Union. The mission of ISOTIS is to help bring about those changes in policy and practice which effectively combat educational inequality. ISOTIS therefore aims to identify mechanisms of education systems and support services that either reproduce inequality or help to create equal opportunities and inclusive societies.

A central part of the ISOTIS project is an interview study with parents from culturally and linguistically diverse families who have at least one child who is 3-6 years or 9-12 years of age. Interviews will be carried out in ten European countries (Czech Republic, England, France, Germany, Greece, Italy, the Netherlands, Norway, Poland, and Portugal). We want to build on the strengths and potentials of families who may be in a disadvantaged situation because of their immigrant, or ethnic minority status, cultural background and/or experience of financial hardship. In the England we are interested specifically in mothers with a Turkish background, and other English families living in the same areas.

For more information about the project please visit visit us at **http://isotis.org/.**

2 WHY HAVE I BEEN INVITED TO TAKE PART?

[School/organization/institute] has given us permission to invite mothers to participate in this interview study. We would like to give a voice to mothers of preschool or school children, by asking them about issues related to bringing up their children – their experiences with educational systems and support services, their hopes and wishes for their children, their resources and support needs. Our aim is to understand the views of mothers in an open-minded and sensitive way.

3 DO I HAVE TO TAKE PART?

No. You can ask questions about the study before deciding whether or not to participate. If you do agree to participate, you can withdraw yourself [and your data] from the study at any time, without giving a reason and without any consequences, by informing the researchers of this decision.

4 WHAT WILL HAPPEN DURING THE INTERVIEW?

If you are happy to take part in the study, a researcher from the University of Oxford will make an appointment with you to administer the interview. The interview will take approximately **45 minutes** and will be conducted at [school, community centre, mother's home etc.][20]. At the end of the interview you will be given the option to be contacted again about participating in a second in-depth interview to elaborate on the topics addressed in the first interview. You are completely free to not participate in this second interview.

5 ARE THERE ANY BENEFITS IN TAKING PART?

The project which will take into account of the views of participating parents whose voices will be heard by local, national and European policymakers to improve educational systems and support services all over Europe. To thank you for your participation, we will offer you a small gift or voucher.

6 WHAT HAPPENS TO THE DATA PROVIDED?

Your individual answers will be anonymized and treated as strictly confidential. Personal identification data will be stored separately and in a protected document. This information will be used only by members of the research team of the University of Oxford and will be deleted at the end of the data collection period.

The results of the study will be presented at scientific meetings and published in scientific journals. The research data will be stored for a period of [10 years after publication or public release of the work of the research. Initially, only the core research team from the ISOTIS project will have access to the research data. At a later stage, data collected in this study will be made available in anonymized form for further analysis by other research studies. The project has been reviewed by the University of Oxford Central University Research Committee.

[20] Where community centre or pre/school offer a quiet space to carry out interviews, mothers will have the option to choose the location of the interview either in the centre, or at home.

7 WHO DO I CONTACT IF I HAVE A CONCERN ABOUT THE STUDY OR WISH TO COMPLAIN?

If you have a concern about any aspect of this study, please speak to the researcher (Dr Katharina Ereky-Stevens - 01865 274181) or Principal Investigator (Professor Edward Melhuish - 01865 611035) who will do her best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how she intends to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the chair of the Departmental Research Committee, Dr Nigel Fancourt, 15 Norham Gardens, Oxford, UK, OX2 6PY, nigel.fancourt@education.ox.ac.uk or the chair of the Research Ethics Committee at the University of Oxford (using the contact details below) who will seek to resolve the matter in a reasonably expeditious manner:

Chair, **Social Sciences & Humanities Inter-Divisional Research Ethics Committee**; Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD.

8 WHAT HAPPENS NEXT?

We will give you a telephone call over the next days to see if you are happy to participate in this research. If yes, we will arrange a time and place for the interview, and ask you to fill in and sign the enclosed consent form and return it to us, using the enclosed stamped and addressed envelope.

9 FURTHER INFORMATION AND CONTACT DETAILS

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact:

Katharina Ereky-Stevens
University of Oxford | Department of Education
15 Norham Gardens
Oxford
OX20 1RU
Telephone number: 01865 274181
Email address: katharina.ereky@education.ox.ac.uk

Do you want more information on the ISOTIS project?

Visit us at **www.isotis.org**, follow us on **Facebook**, or send an e-mail to **isotis@uu.nl**

This project has received funding from the European Union' s Horizon 2020 research and innovation programme under grant agreement No. 727069.

ISOTIS **INCLUSIVE EDUCATION AND SOCIAL SUPPORT TO TACKLE INEQUALITIES IN SOCIETY**

Professor Edward Melhuish
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UNIVERSITY OF OXFORD

PARTICIPANT CONSENT FORM

ISOTIS: Work Package 2, Resources, experiences, aspirations and support needs of families in disadvantaged communities

This research is part of ISOTIS, a collaborative research project on Inclusive Education and Social Support to Tackle Inequalities in Society. The UK part of this research will be conducted by a team of researchers at the Department of Education, University of Oxford. Link to the ISOTIS website: http://www.isotis.org/

1	I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without any adverse consequences or academic penalty.	☐
3	I understand that research data collected during the study may be looked at by designated individuals from the University of Oxford where it is relevant to my taking part in this study. I give permission for these individuals to access my data.	☐
4	I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.	☐
5	I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.	☐
6	I understand how this research will be written up and published.	☐
7	I understand how to raise a concern or make a complaint.	☐
8	I agree to take part in the above study.	☐
9	I agree for research data collected in this study to be given to researchers, including those working outside the EU, to be used in other research studies. I understand that any data that leave the research group will be fully anonymized so that I cannot be identified.	☐

_____	_____	_____
Name of Participant	Date	Signature
_____		
Name of person taking consent		

APPENDIX 2. Invitation to participate in the study phase 2

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ISOTIS

Inclusive Education and Social Support to Tackle Inequality in Society

Families in Europe: experiences relating to children's education

Thank you very much for your participation in our interview study taking place in ten European countries, all part of the ISOTIS project. The study focuses on culturally and linguistically diverse families. We want to make people's voices heard, and ask participants about issues related to bringing up their children – their experiences with educational systems and support services, their hopes and wishes for their children, their resources and support needs.

Your views will inform our project results which will be used by local, national and European policymakers to improve educational systems and support services in Europe. The results of the study will be presented at scientific meetings and published in scientific journals. Individuals will not be identifiable at any stage of the project.
If you would like to keep up-to-date with what happens in our project, or view reports on the study results, please visit us at **http://isotis.org/** or follow us on Facebook **www.facebook.com/isotis.project.**

If you have a concern about the study, or want to ask questions, please contact Edward Melhuish or Katharina Ereky-Stevens (contact details below).

Professor Edward Melhuish
Principal Investigator
Email address: edward.melhuish@education.ox.ac.uk

Katharina Ereky-Stevens
Post-doctoral researcher
University of Oxford | Department of Education
Email address: katharina.ereky@education.ox.ac.uk
Telephone number: 01865 274181

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Invitation to take part in a Language and Literacy Intervention

At the end of the interview you were given the option to be contacted again about participating in a parent intervention programme to support children's language and literacy. Thank you very much for agreeing to be contacted again about this part of the study.

The study will be part of a DPhil project that will take place at the Department of Education/University of Oxford, by one of the ISOITS research assistants, Pınar Kolancalı. This project aims to understand the predictors of language and literacy skills of children, who grow up learning Turkish and English simultaneously. This study will take place in the home environment. Participating children will be visited twice by Pinar to test their language and letter knowledge. Assessments will take 30 minutes on average.

All information collected during this part of the study will be anonymized and treated as strictly confidential, and you and your child will not be identifiable at any stage of the project.

What next?
You will receive an information leaflet from the University of Oxford that goes into more detail about the intervention study. Please note that you do not have to take part in this additional part of the study. You can ask questions about the study before deciding whether or not to participate. If you do agree to participate, you can withdraw yourself [and your data] from the study at any time.
If you have a concern about the study, or want to ask questions, please contact:

Professor Edward Melhuish
DPhil Supervisor
Email address: edward.melhuish@education.ox.ac.uk
Telephone number: 01865 274039

Pınar Kolancalı
DPhil student
Email address: pinar.kolancali@wolfson.ox.ac.uk
University of Oxford | Department of Education

APPENDIX 3. Phone call for study phase 2

Hi, I am calling from the Department of Education at the University of Oxford. My name is Pinar and I work on the ISOTIS Project. I am also a doctoral student and I am working on this study under the supervision of Prof. Edward Melhuish, who is a Professor of Human Development.
During our initial meeting you expressed your interest in the study. As I mentioned at the community centre/school, my research focus on bilingual language development of Turkish-English speaking children. I am calling to give you further information, would you be able to spare a few minutes?
We are investigating the home resources available to children that support their language development in order to identify factors that may support bilingual children in the first years of school. Would you be interested in participating in this study?
Thank you for showing interest. In this study, I aim to carry out two visits to meet each participating family. I will meet them on two occasions - either at home or at a community centre. Each visit will take up to half an hour. In the first visit, I will provide a letter with the information that I am giving you over the phone and then I will ask you to sign a consent form. This is a usual procedure required by the university. Before signing the consent form, I will be happy to answer any questions you may have.

I would like to inform you that even if you sign the consent form, you and your child are free to withdraw from the study at any time. Once you give your written permission, I will start with the Turkish language tests of your child. I will carry out vocabulary and sentence repetition tests, which will take up to 20 minutes. For the sentence repetition test, I will ask your child to simply repeat a sentence back to me. For that reason, it is important to have a quiet environment to get the best of your child's performance. I will need you to help me to ensure this is possible during our visit. Then, I will have a short task for you. In this task, I will ask you to watch a short cartoon video and narrate the story in this video to your child. I will need to audio record this task to analyse the use of language.

In the second visit, I will test your child for English vocabulary and general abilities. This will also take up to 20 minutes. If your child is older than five, I will interview your child on their feelings towards speaking Turkish and English in different contexts. I will direct simple questions to your child on her/his language preferences and attitudes towards speaking Turkish and English by using emotion cards and pictures of children at home, school and playground. I will be voice-recording our interactions during this interview. The interview will take place after the completion of your child's language and skills assessment on the second visit and will take up to half an hour. Between these tasks I will be giving breaks with your child and provide her/him fun toys and games to make my visit entertaining for her/him.

During my time with your child, I will ask you to complete a short questionnaire on your family background and home learning environment. This questionnaire will only take 15 minutes. We hope to complete everything in two visits. However, depending on the circumstances such as your child being fatigued or distracted or due to unexpected noise in the home/centre environment on the day, with your permission, I may need to plan a third or a forth visit.

If you have any questions, I would be more than happy to clarify them for you.

APPENDIX 4: Information letter and consent form for study phase 2

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Dear Parents,

Thank you for accepting to meet me for our first visit! My name is Pinar Kolancali and I am a DPhil student at the University of Oxford, I am working on this study with my thesis supervisor Professor Edward Melhuish. This letter is prepared to provide the information given on phone in paper form.

This study is on bilingual language development of Turkish-English speaking children. We are investigating the home resources available to children that support their language development in order to identify factors that may support bilingual children in the first years of school.

For this study, I will measure your child's language skills and your use of language in communication with your child. I aim to carry out two visits in total either at home or at a community centre. Each visit will take up to an hour or two depending on your child. Before I start working with your child I will ask you to sign a consent form. This is a usual procedure required by the university. Before signing the consent form, I will answer your questions for you. I would like to inform you that even if you sign the form, you and your child are free to withdraw from the study at any time.

Once you give your written permission, I will start with the Turkish language tests of your child. I will carry out vocabulary and sentence repetition tests, which will take up to 30 minutes. For the sentence repetition test, I will ask your child to simply repeat a sentence back to me. For that reason, it is important to have a quiet environment to get the best of your child's performance. Then, I will have a short task for you. In this task, I will ask you to watch a short cartoon video and narrate the story in this video to your child. I will need to audio record this task to analyze the use of language.

In the second visit, I will test your child for English vocabulary and general abilities. This will also take up to 30 minutes. Depending on your child language skills, I will interview your child on their feelings towards speaking Turkish and English in different environments. I will direct simple questions to your child on her/his language preferences and attitudes towards speaking Turkish and English by using emotion cards and pictures of children at home, school and playground. I will be voice-recording our interactions during the interview. The interview will take place after the completion of your child's language and skills assessment on the second visit and will take up to half an hour. Between the tasks I will be giving breaks with your child and provide her/him fun toys and games to make my visit entertaining for her/him. During my time with your child, I will ask you to complete a short questionnaire on your family background and home learning environment. This questionnaire will only take 15 minutes. We hope to complete these tests in two visits. However, depending on the circumstances such as child being fatigued or distracted or unexpected noise in the home/centre environment on the day, this can extend to a third visit. If you have any questions to address, I would be more than happy to clarify them for you.

Yours truly,
Pinar Kolancali

PARTICIPANT CONSENT FORM

Home Language and Literacy Environment and Bilingual Language Development

This research is part of a doctoral education at the department of education, University of Oxford.

1	I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without any adverse consequences or academic penalty.	☐
3	I understand that research data collected during the study may be looked at by designated individuals from the University of Oxford where it is relevant to my taking part in this study. I give permission for these individuals to access my data.	☐
4	I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.	☐
5	I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.	☐
6	I understand how this research will be written up and published.	☐
7	I understand how to raise a concern or make a complaint.	☐
8	I consent to be audio-recorded for this study.	☐
9	I agree to take part in the above study	☐

Name of Participant	Date	Signature
_____	_____	_____

APPENDIX 5: Information letter and consent form for study phase 3



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Dear Parent,

Your child has been selected for an interview on their experiences of growing up as a bilingual child. For this interview, I will ask questions to child on their feelings towards speaking Turkish and English in different environments. I will direct simple questions to your child on her/his language preferences and attitudes towards speaking Turkish and English by using emotion cards and pictures of children at home, school and playground. I will be voice-recording our interactions during the interview. The interview will take place after the completion of your child's language and skills assessment on the second visit and will take up to half an hour. Between the tasks I will be giving breaks with your child and provide her/him fun toys and games to make my visit entertaining for her/him. I hope to complete this interview within 15 minutes, however depending on the circumstances such as child being fatigued or distracted or unexpected noise in the home/centre environment on the day, this can extend to a third visit. If you have any questions to address, I would be more than happy to clarify them for you.
Yours truly,
Pinar Kolancali

I agree for my child to take part in this section of the study ☐

_____	_____	_____
Name of Participant	Date	Signature

APPENDIX 6: Parent Questionnaire

First of all, we would like to ask you some general information on your background and the people living in your household, especially [^Target child's name]

1. Month and year of birth Target Child (TC):

? Always fill out the 15th day (15) of the month. We cannot record actual birth dates, so we will fill out the mid-point for all children.
? If you don't know yet, ask for the name of the Target Child so you can use this in follow-up questions

2. Gender TC
- o Female
- o Male

3. Country of birth TC:
- o Algeria
- o Chezch Republic
- o England
- o Germany
- o Greece
- o France
- o Republic of Ireland
- o Italy
- o Netherlands
- o Northern Ireland
- o Norway
- o Morocco
- o Poland
- o Portugal
- o Scotland
- o Slovenia
- o Tunisia
- o Turkey
- o Wales
- o Other…

If not born in [national country],
What year did your child move to [national country]? (e.g., 2007)

General - Participant

1. Age in years (parent):

2. Gender (parent):
- o Female
- o Male

3. Country of birth:
- o Algeria
- o Chezch Republic
- o England

- Germany
- Greece
- France
- Republic of Ireland
- Italy
- Netherlands
- Northern Ireland
- Norway
- Morocco
- Poland
- Portugal
- Scotland
- Slovenia
- Tunisia
- Turkey
- Wales
- Other…

If not born in [national country],

4. What year did you move to [national country]? (e.g., 2007)

Family

Are you currently living with a partner? ☐ Yes ☐ No *If yes, ask the questions below.* What is your partner's gender? ☐ Female ☐ Male Is your partner the biological father/mother of [^Target child's name] ☐ Yes ☐ No Are you married? ☐ Yes ☐ No	*If you are not living with a partner* Are/have you: ☐ Divorced/separated ☐ Widow(er) ☐ Always lived single ☐ Partner lives somewhere else in the country ☐ Partner lives in another country ☐ Other

General – Partner

If you are currently living with a partner:

What's your partner's country of birth?	What is your partner's mother's country of birth?	What is your partner's father's country of birth?
○ Algeria ○ Czech Republic ○ England ○ Germany ○ Greece ○ France ○ Republic of Ireland ○ Italy ○ Netherlands ○ Northern Ireland ○ Norway ○ Morocco ○ Poland ○ Portugal ○ Scotland ○ Slovenia ○ Tunisia ○ Turkey ○ Wales ○ Other…	○ Algeria ○ Czech Republic ○ England ○ Germany ○ Greece ○ France ○ Republic of Ireland ○ Italy ○ Netherlands ○ Northern Ireland ○ Norway ○ Morocco ○ Poland ○ Portugal ○ Scotland ○ Slovenia ○ Tunisia ○ Turkey ○ Wales ○ Other…	○ Algeria ○ Czech Republic ○ England ○ Germany ○ Greece ○ France ○ Republic of Ireland ○ Italy ○ Netherlands ○ Northern Ireland ○ Norway ○ Morocco ○ Poland ○ Portugal ○ Scotland ○ Slovenia ○ Tunisia ○ Turkey ○ Wales ○ Other…
If not born in [national country], What year did your partner move to [national country]? (e.g., 2007) [ ]		

Language background and skills of parent

When reading newspapers, do you have difficulty to understand the English language?

- Never
- Rarely
- Sometimes
- Often
- Always
- I cannot read English

When listening to the British news on the television or the radio, do you have difficulty to understand the English language?

- Never
- Rarely
- Sometimes
- Often
- Always
- I cannot understand English

When you are talking with your child's teacher or the (family) doctor in English do you have difficulty with the use of English language?

- Never
- Rarely
- Sometimes
- Often
- Always
- I cannot speak English

Activities in the home

The next section is about activities that adults from the home (including you, your husband/partner or other adult family members) may carry out with [^Target child's name]. We are interested in the various kinds of activities that children do with their families. Please think about [^Target child's name]'s usual and current pattern of activities that adults in the home do with him/her.

How often does an adult in the home..

Talk with [^Target child's name] about your own or his/her every day experiences?

- Every day
- Several times a week
- Once or twice a week
- Less often

Talk with [^Target child's name] about past events (such as a holiday, birthday)

- Every day
- Several times a week
- Once or twice a week
- Less often

Talk about topics of general interest (such as history, dinosaurs, space…) with [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

When having conversations with [^Target child's name], which language do adults use?

(Please choose only one of the following:)

- Only English
- Mostly English sometimes Turkish
- Equal use of English and Turkish
- Mostly Turkish sometimes English
- Only Turkish

Read or narrate a picture book to [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

Read a story book to [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

Read a book on a topic of interest (such as history, dinosaurs, space…) to [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

During shared reading activities with [^Target child's name], which language do adults use?

Please choose only one of the following:

- Only English
- Mostly English sometimes Turkish
- Equal use of English and Turkish
- Mostly Turkish sometimes English
- Only Turkish

How often does an adult in the home..

tell made-up stories to [^Target child's name

- Every day
- Several times a week
- Once or twice a week
- Less often

tell stories of the family's country of origin to [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

tell stories with moral or religious content to [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

practice counting and simple math problems with [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

measure and compare length, weight, and the size of objects with [^Target child's name]

- Every day
- Several times a week
- Once or twice a week

- Less often

play with construction toys (like blocks) or board games, or do jigsaw puzzles with [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

draw, paint or make creative things with [^Target child's name]

- Every day
- Several times a week
- Once or twice a week
- Less often

teach [^Target child's name] how to play an instrument

- Every day
- Several times a week
- Once or twice a week
- Less often

demonstrate to [^Target child's name] practical skills, like how to cook, sew, repair things or do carpentry

- Every day
- Several times a week
- Once or twice a week
- Less often

Educational background and employment status – participant

If the parent still has the computer, mention that we are now going to switch back for the final questions.

At what age did you leave school? (Enter age in years) ☐ ? If the respondent doesn't know, fill out 99. **At which grade/year was this?** ☐ **Did you receive a secondary school certification?** ☐ Yes ☐ No **If yes, which level?** ☐ O-Level ☐ GCSE Level ☐ A-Level ☐ Other:……	**Do you have a vocational education?** ☐ Yes ☐ No *If yes*: **How many years did you study at a vocational school?** ☐ (Only numbers may be entered in this field.) ? If the respondent doesn't know, fill out 99. If yes: **Do you have a vocational qualification?** ☐ Yes ☐ No	**Do you have a college or university education?** ☐ Yes ☐ No *If yes:* **How many years did you study at a college or university?** ☐ (Only numbers may be entered in this field.) ? If the respondent doesn't know, fill out 99. *If yes:* **What is your highest achieved qualification?** ☐ None ☐ Bachelor ☐ Master ☐ PhD ☐ Other ☐

Economic capital / economic risks

Using this card, could you please tell me which letter describes your household's total monthly income, after tax and compulsory deductions, from all sources? If you don't know the exact figure, please give an estimate (in British Pounds).

J	< 900	= 1
R	900 - 1210	= 2
C	1210 - 1510	= 3
M	1510 - 1810	= 4
F	1810 - 2170	= 5
S	2170 - 2560	= 6
K	2560 - 3060	= 7
P	3060 - 3730	= 8
D	3730 - 4880	= 9
H	> 4880 or more	= 10

88 = Don't want to tell

99 = Don't know

Material Deprivation

The next questions are about the material resources that are available to you. Some questions might sound odd, though they are often used in European studies, as they are more easily comparable than questions about income. You can answer the questions with yes; no, cannot afford it; and, no, other reason.

1. **Most weeks, do you spend a small amount of money on yourself, for your own pleasure (buying/doing something for yourself)?**
   - Yes
   - No, cannot afford it
   - No, other reason

? Examples for small amount spendings: buying snacks (such as ice-cream), magazines, going to a hairdresser, watching a film at a theatre.

2. **Do you regularly participate in a leisure activity (that costs money)?**
   - Yes
   - No, cannot afford it
   - No, other reason

? Regularly means a few times over the course of a year.
? Leisure activities mean the activites that take place outisde the household such as doing sports, going to cinema or concerts.

3. **Do you get together with friends/family (relatives) for a drink/meal at least once a month?**
   - Yes
   - No, cannot afford it
   - No, other reason

? This could be a restaurant or a cafe. The important part about it is the expenses are made for the participant.

4. **Could you tell me if you can replace worn-out clothes by some new (not second-hand) ones?**

- Yes
- No, cannot afford it
- No, other reason

? This literally means worn-out clothes, not outdated

5. **Do you have two pairs of shoes in a good condition that are suitable for daily activities?**
   - Yes
   - No, cannot afford it
   - No, other reason

? For instance shoes that are suitable for British weather (boots) for work or school

6. **Could you tell me if your household replaces furniture (bed, sofa/ dresser, cupboard) when worn out or damaged?**
   - Yes
   - No, cannot afford it
   - No, other reason

? Replacements with second-hand furniture also applies

7. **Does your household have a car/van for private use?**
   - Yes
   - No, cannot afford it
   - No, other reason

? Possessing the item does not necessarily imply ownership: the item may be rented, leased, provided on loan, or shared with other households.
? If the item is shared between households, the answer is YES if there is adequate/easy access (i.e. household can use the durable whenever it wants) and NO otherwise.

8. **Do you have an Internet connection for personal use when needed?**
   - Yes
   - No, cannot afford it
   - No, other reason

*? The **internet access** can be via Smartphone (e.g. BlackBerry/iPhone), other wireless handheld device (tablet, etc …), video games console, laptop, desktop computer, TV etc.*

The following questions can be answered with 'yes' and 'no'

9. **Can your household afford a meal with meat or fish (or a vegetarian equivalent) at least every second day?**
   - Yes
   - No

? The variable records whether, according to the household respondent, the household can afford a meal with meat, chicken or fish (or equivalent vegetarian) every second day, regardless if the household wants it.
? If the household manages to pay through borrowing (from bank, relatives or friends) it is considered in the same way as if the household manages to pay through its own resources

10. **Can your household afford an unexpected required expense (£800) and pay with your own resources?**
    - Yes
    - No

*? **'Own resources' means:** Your household does not ask for financial help from anybody; Your account has to be debited within the required period; Your situation regarding potential debts is not deteriorated.*

You do not pay through own resources if you pay in instalments (or by taking a loan) expenses that you previously used to pay in cash.

? Required expenses: *A required expense could be different across countries but examples are surgery, a funeral, major repairs in the house, replacement of durables like washing machine, car.*

11. **Can your entire household afford to go for a week's annual holiday, away from home, including stays in a second dwelling or with friends/relatives?**
    - Yes
    - No

? This question focuses mainly on the affordability of some aspects of living standards. The wording of the question refers to the affordability and to the actual meaning 'ability to pay' i.e. 'the household has the resources to afford…' regardless of whether the household wants it.

12. **Can your household afford to keep your home adequately warm?**
    - Yes
    - No

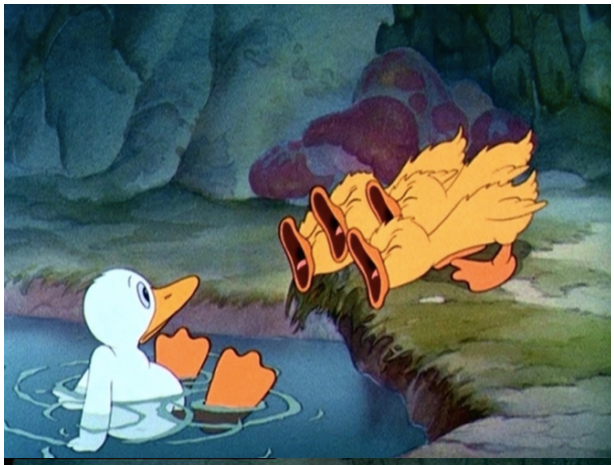
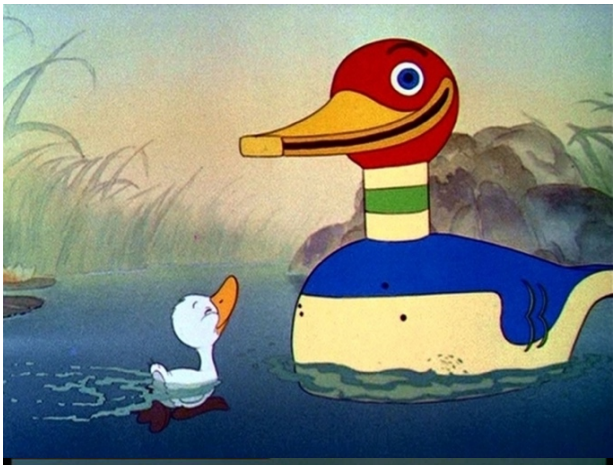
? This question is about affordability (ability to pay) to keep the home adequately warm, regardless of whether the household actually needs to keep it adequately warm.

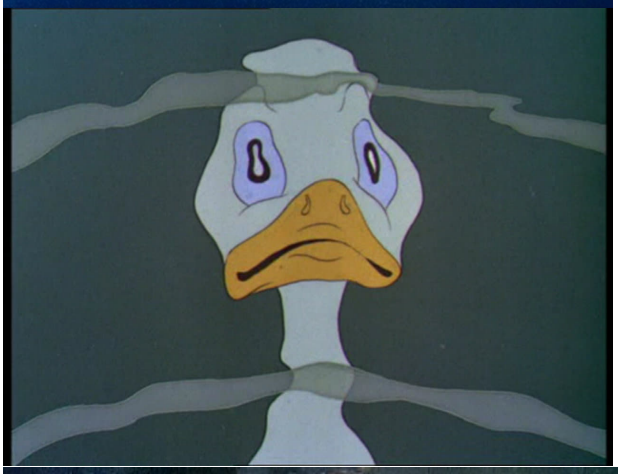
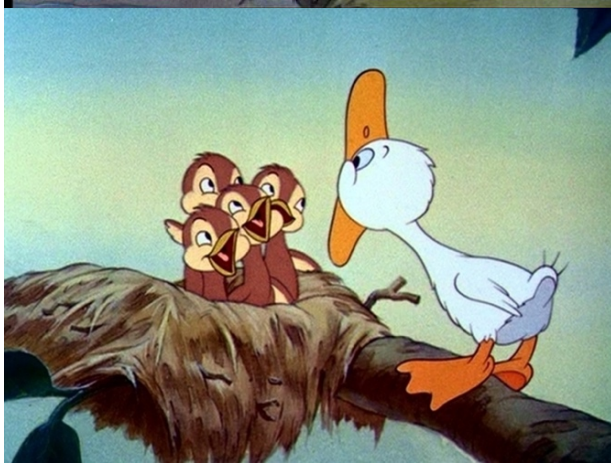
13. **In the past twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties for rent or mortgage repayment for the main dwelling?**
    - Yes, once
    - Yes, once or twice
    - No

? If the household manages to pay through borrowing (from bank, relatives or friends) it is considered in the same way as if the household had managed to pay using its own resources.

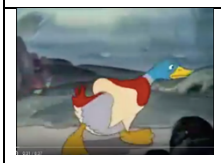
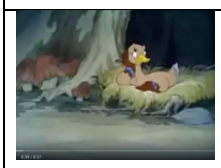
APPENDIX 7: Video prompts




APPENDIX 8: Observation protocol

Participant ID: Date: Time:	Mother						Child					
Scenes between 0.00 – 4:20	Pointing			Verbalisation			Pointing			Verbalisation		
Example: P - pointing, N = naming, Pr = predicting, O = other	1 P: egg	2	3	1 N: duckling	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
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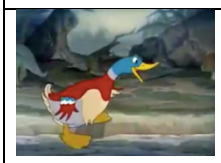	1	2	3	1	2	3	1	2	3	1	2	3
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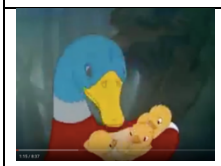	1	2	3	1	2	3	1	2	3	1	2	3

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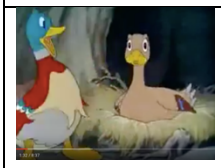
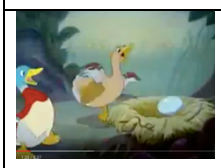
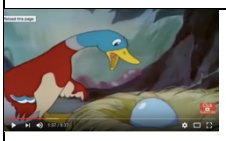
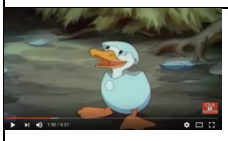
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
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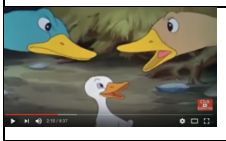	1	2	3	1	2	3	1	2	3	1	2	3
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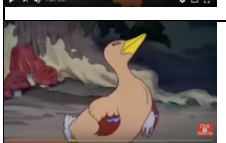
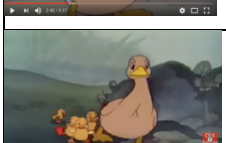
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
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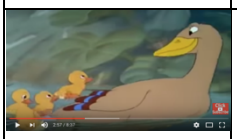
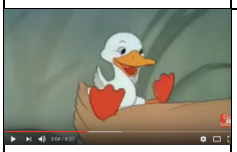
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
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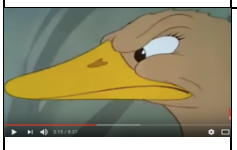	1	2	3	1	2	3	1	2	3	1	2	3
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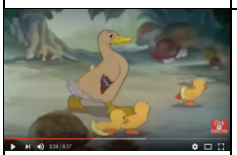
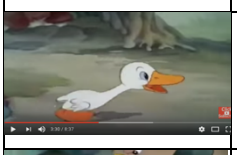
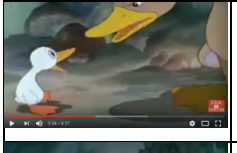
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
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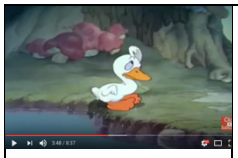
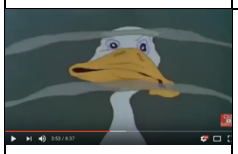
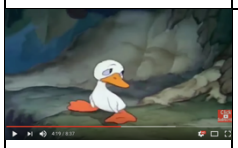
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3
Additional notes on the observation day:												

APPENDIX 9. Sentence repetition test protocol

TEST A

Participant ID		Time	
Date		*! Stop after 8 consecutive errors in repetition*	

A	Arkadaşım bize geldi
B	Evde oyun oynadım
1	Öğretmen masal anlattı
2	Babamla okula gittik
3	Dilara arabada bekledi
4	Kardeşim ağlayınca üzüldüm
5	Annem evde çoraplarını aradı
6	Çocuklar bahçede koşunca yoruldu
7	Oyuncak kırmızı bir dolaptan çıktı
8	Annem evde kalan şapkasını buldu
9	Okuldaki çocukların çoğu yarıştı
10	Kitaplarımı unutunca eve döndük
11	Çocuk masanın arkasında oyuncak buldu

12	Tabaktaki yemeklerin hepsini o yedi
13	Kadın ağlayan çocuğu kucağına aldı
14	Ahmet'in merdivenlerden düştüğünü gördük

APPENDIX 10: Morpho-syntax of sentence repetition test items

10 Syllables 3 Words

1. Simple: Dilara arabada bekledi : 2 Inflections

Translation: Dilara waited in the car
Gloss: Dilara Car-**Locative Case** Wait-**Tense Marker(TM)**

2. Simple: Çocuklar bahçede oynadılar : 4 Inflections

Translation: Children played in the garden
Gloss: Child-**Plural Suffix** Garden-**Locative Case** Play-**TM**-**Subject Marker(SM)**

3. Complex: Kardeşim ağlayınca üzüldüm: 4 Inflections

Translation: I got upset when my sibling cried
Gloss: Sister- **Possessive Suffix(PS)** Cry-**Subordinating Suffix (SS)** Get Upset-**TM**-**SM**

4. Complex: Annemleri görünce söyledim : 6 Inflections

Translation: I told (it) when I saw my mother (and others)
Gloss: Mother- **PS-Plural Suffix-Accusative Case** See-**SS** Tell-**TM-SM**

12 Syllables 4 Words

5. Simple: Pınar öğretmeni bahçede bekledi : 3 Inflections

Translation: Pınar waited for the teacher in the garden
Gloss: Pinar Teacher-**Accusative Case** Garden-**Dative Case** Wait-**TM**

6. Simple: Annem evde çoraplarını aradı : 6 Inflections

Translation: My mother looked for her socks at home
Gloss: Mother-**PS** Home-**Dative Case** Sock-**Plural Suffix**-**PS**-**Accusative Case** Search-**TM**

7. Complex: Çocuklar bahçede koşunca yoruldu : 4 Inflections

Translation: The children got tired as they ran in the garden
Gloss: Child-**Plural Suffix** Garden-**Locative Case** Run-**SS** Get Tired-**TM**

8. Complex: Köpeğiyle yürüyen adamı gördüm : 6 Inflections

Translation: I saw the man who walks with his dog
Gloss: Dog-**PS**-**Instrumental Suffix** Walk-**SS** Man-**Accusative Case** See-**TM**-**SM**

12 Syllables 5 Words

9. Simple: Oyuncak kırmızı bir dolaptan çıktı : 2 Inflections

Translation: The toy came out of a red cupboard
Gloss: Toy Red A Cupboard-**Ablative Case** Come Out-**TM**

10. Simple: Ali'nin çantasından bir kalem aldım : 4 Inflections

Translation: I got a pencil from the Ali's bag
Gloss: Ali-**Genitive Suffix** Bag-**PS**-**Ablative Case** A Pencil Take-**TM**-**SM**

11. Complex: Ayşe eve giderken dondurma aldı : 3 Inflections

Translation: Ayse got icecream when going to school
Gloss: Ayse Home-**Dative Case** Go-**SS** Icecream Get-**TM**

12. Complex: Annem evde kalan şapkasını buldu : 6 Inflections

Translation: My mother found her hat, which is left at home
Gloss: Mother-**PS** Home-**Locative Case** Stay-**SS** Hat-**PS**-**Accusative Case** Find-**TM**

13 Syllables 4 words

13. Simple: Arkadaşım telefonda oyun oynadı : 4 Inflections

Translation: My friend played a game on the phone
Gloss: Friend-**PS** Phone-**Locative Case** Game Play-**TM**

14. Simple Okuldaki çocukların çoğu yarıştı : 6 Inflections

Translation: Most of the children at the school competed

Gloss: School-**Locative Case**-**Stressable Suffix** Child-**Plural Suffix**-**Genitive Suffix** most-**PS** compete-**TM**

15. Complex: Pınar oyuncağı kırılınca üzüldü : 3 Inflections

Translation: Pınar got upset when her toy broke

Gloss: Pinar Toy-**PS** Break-**SS** Get Upset-**TM**

16. Complex: Kitaplarımı unutunca eve döndük : 7 Inflections

Translation: We got back home as I forgot my books

Gloss: Book-**Plural Suffix**-**PS**-**Acusative Case** Forget-**SS** Home-**Dative Case** Return-**TM-SM**

14 Syllables 5 Words

17. Simple: Çocuk masanın arkasında oyuncak buldu : 4 Inflections

Translation: The child found a ball behind the table

Gloss: Child Table-**Genitive Case** Behind-**PS**-**Locative Case** Toy Find-**TM**

18. Simple: Biz çocuklara marketten çikolata aldık : 5 Inflections

Translation: We got chocolate for children from the market

Gloss: We Child-**Plural Suffix**-**Dative Case** Market-**Ablative Case** Chocolate Buy-**TM-SM**

19. Simple: Tabaktaki yemeklerin hepsini o yedi : 6 Inflections

Translation: He ate all the food on the plate

Gloss: Plate-**Locative Case**-**Stressable Suffix** Food-**Plural Suffix**-**Genitive Suffix** All-**Accusative Case** He/She/It Eat-**TM**

20. Simple: Babamın işten arkadaşları bize geldi :7 Inflections

Translation: My dad's friends from work came to ours

Gloss: Father-**PS**-**Genitive Suffix** Work-**Ablative Case** Friend-**Plural Suffix-PS** Us-**Dative Case** Come-**TM**

21. Complex: Ayşe toprakla oynayınca öğretmen kızdı : 3 Inflections

Translation: The teacher got angry as Ayse played with soil

Gloss: Ayse Soil-**Instrumental Suffix** Play-**SS** Teacher Get Angry-**TM**

22. Complex: Kadın ağlayan çocuğu kucağına aldı : 5 Inflections

Translation: The woman took the crying child in her lap

Gloss: Woman Cry-**SS** Child-**Accusative Case** Lap-**PS**-**Dative Case** Take-**TM**

23. Complex: Annesiyle gelen öğrenci evine gitti : 6 Inflections

Translation: The student who came with his mother returned to his home

Gloss: Mother-**PS**-**Instrumental Suffix** Come-**SS** Student Home-**PS**-**Dative Case** Go-**TM**

24. Complex: Ahmet'in merdivenlerden düştüğünü gördük : 7 Inflections

Translation: We saw Ahmet falling down the stairs

Gloss: Child-**Genitive Suffix** Stair-**Plural Suffix**-**Ablative Case** Fall Down-**SS** See-**TM-SM**

APPENDIX 11. Ethics application

WHAT THIS CHECKLIST IS DESIGNED FOR
This **CUREC 1A checklist** is designed largely for research that falls within the Divisions of Social Sciences and Humanities where ethical issues are relatively few and straightforward. Interviews, field work and oral history are also included in the CUREC process. The **full CUREC 2 application** is only required where certain project characteristics (e.g. type of participants, or procedures) result in a more complex set of ethical issues. It is expected that only in a limited number of cases will it be necessary for researchers to complete a CUREC 2 application. The checklist below will direct you to a CUREC 2 application if needed.

WHAT THIS CHECKLIST WILL NOT ASSESS
This checklist does not cover research governance, satisfactory methodology, or compliance with the requirements of publishers when administering their tests or questionnaires. As principal researcher, it is your responsibility to ensure that requirements in these areas are met. CUREC does not review studies classed as **audit** (see Glossary and Decision Flowchart for CUREC on our website). If your study involves **NHS patients, NHS staff / data / facilities, or human tissue**, please check the Decision Flowchart for NHS approval and contact the Clinical Trials and Research Governance (CTRG) team in the first instance. Further information on the University's research ethics procedures is available from the CUREC website: www.admin.ox.ac.uk/curec.

SECTION A: Filter for CUREC2 application

This section determines whether your study raises more complex issues which require the completion of a full application for ethical review, known as the CUREC 2 application.

(Please mark 'X' in the Yes/No column as appropriate to indicate your response.)

1.	Are research participants classed as **people whose ability to give free and informed consent is in question**? (This may include those under 18 (though see "competent youths" in **FAQ C12**), prisoners, or adults "at risk".) Your attention is drawn to the University's **Safeguarding Code of Practice** and its implications for researchers involving children or adults at risk, including the need for the work to be risk assessed and for researchers to undertake related training. (**Note**: If any of your participants are aged 16 or under, please answer 'Yes' here **and** also answer question 5 below.)	Yes **X**	No
2.	By taking part in the research, will participants be at serious risk of criminal prosecution (e.g. by providing information on drug abuse or child abuse)?	Yes	No **X**
3.	Does the research involve the **deception** of participants?	Yes	No **X**
4.	Does your research raise issues relevant to the **Counter-Terrorism and Security Act (the Prevent duty)**, which seeks to prevent people from being drawn into terrorism? Please see advice on this on our **Best Practice Guidance web page**.	Yes	No **X**

If you have answered 'No' to all of the questions above please go to **Section B**. If you have answered 'Yes' to any question above continue to question 5 below.		
5. Is your project covered by a CUREC **approved procedure** (formerly known as "CUREC Protocols")?	Yes X	No
If yes, please give research procedure number(s): Procedure 15		
If you answered '**Yes'** to **ANY** of questions **1-4**, **and** answered '**No'** to question **5**, **please stop completing this checklist and do not submit it for ethical review**. Instead, please complete the CUREC 2 application form from the CUREC website. Then submit the CUREC 2 form for ethical review. If you answered 'Yes' to ANY of questions 1-3, **and** answered 'Yes' to question 5, please go on to **Section B**.		

SECTION B: Contact details and project description (NB: must be typed not handwritten)	
Contact details:	
1. **Principal researcher**/supervisor (title and name) (if student research):	Professor Edward Melhuish
2. Name of student (if student research):	Pinar Kolancali
3. Degree programme, e.g. DPhil, BA, MPhil, BSc, MSc (if student research):	DPhil
4. Department or Institute name:	Department of Education
5. Address for correspondence (if different from above):	15 Norham Gardens, Oxford OX2 6PY
6. University e-mail (**not** private email) and telephone:	pinar.kolancali@education.ox.ac.uk 07943611027
7. Name and status of others taking part in the project, e.g. third year undergraduate; postdoctoral research assistant:	

SECTION B continued	
Project description:	
8. Title of research project:	The interactions between language attitudes of bilingual children and their vocabulary skills: Evidence from Turkish-English speaking children in the UK
9. List of location(s) where project will be conducted:	Greater London, UK
10. If your research involves overseas travel or fieldwork, by the time the research starts, will you have completed and returned a travel risk assessment form? (This has to be approved by your department before you travel. If you are travelling overseas, you are strongly advised to take out University travel insurance.)	Yes X No N/A
11. Anticipated duration of research project overall:	9 months
12. Anticipated start and end dates of the research project involving human participants:	From: (15/01/2019) To: (15/10/2019)

	Please note that you will need ethics approval **before** you start your research. CUREC1As may take up to 30 days to process.

13. External organisation funding the research (if applicable): Not applicable

14. Title and very brief and simple lay description of **research** (about 150 words), plus description (about 200 words) of the nature of participants.

a) Title, brief lay description of research (150 words). When describing the research, please include your methodology, how you are applying professional guidelines, and the use to which results/data will be put. **Please also declare any conflicts of interest here.**

Description of Research

This study is part of on an ongoing DPhil project that received ethics approval in March 2018 (see Appendix 1 and 2) and built on a project titled Inclusive Education and Social Support to Tackle Inequalities in Society (ISOTIS) (see Appendix 3).

The correlational study investigates the interactions between five to six-year-old Turkish-English speaking children's language attitudes and skills assessed through (1) semi-structured interviews and (2) observational and skills assessments on oral language skills. The data collection will be carried out as part of the home visits made for the initially proposed DPhil project. The children will be interviewed for their language attitudes after the completion of their language and non-verbal abilities assessments at the second home visit.

The ethics clearance is given for the following parts of the study:
The researcher will visit children twice at home for obtaining observational and skills assessment data on their bilingual language skills. During the first home visit, the children will be assessed for Turkish vocabulary and sentence repetition. After the completion of skills assessment, the observational data will be collected for mother-child interaction. During the second home visit, the children will be assessed for their English vocabulary and non-verbal abilities. Each visit will take up to an hour excluding the proposed child interview.

The following parts of the study seeks ethics clearance:

After the completion of the skills assessment on the day of the second home visit, the child will be given some free time (~ half an hour). During this time the child will be given a chance to play with the researcher (e.g. puzzle), paint with the materials provided by the researcher or do anything else they prefer. Following the break, the child will be introduced to the new task. The interview will be on children's preferences and emotional attributions over their languages in different contexts (school, home, playground) with different actors (scenario 1: home – mother, scenario 2: school – teacher, scenario 3: playground – (1) Turkish and (2) English peer). The interview questions will be asked by using pictures depicting a child in these scenarios and a facial expression card (see Appendix 4). The interview will last half an hour and child will be given a chance to have a break in between questions on each context.

The study will apply the BERA and BPS guidelines and the findings will be reported in a written work for the transfer of studies in DPhil.

SECTION B continued

b) Description of participants and **obtaining informed consent** (200 words). When describing participants, please include

- criteria for inclusion/exclusion
- method of recruitment
- processes for consent to participate

Please ensure you attach as separate documents (if applicable, in English translation):

- your recruitment and advertisement material e.g. a poster or brief invitation letter/ email
- information for participants to read (or hear) before they agree to take part e.g. written information sheets or (only if applicable) oral information scripts.
- a document to record informed consent. Templates for written consent forms and/or oral consent scripts (in case of an oral consent process) are available from the CUREC website
- a guide to interview questions (this may be a list of questions to be asked, or a preliminary scope of questions), or a sample of other instruments (such as a sample questionnaire)
- (if relevant) debriefing document after participants have taken part

Participants

For the initially proposed DPhil study, the families who have four- to six-year old children are recruited by using purposive and snowball sampling strategies in community centres, supplementary schools, community events, and online networks for Turkish-speaking people. After the contact information is collected, the parents receive an initial phone call from the researcher to set up the home visits for data collection. The ethics approval has given permission to this recruitment.

For the additional study, the families with 5- to 6-year-old children who are recruited for the initial DPhil study will be asked during the initial phone call if they are interested in an interview study as part of the home visits made for the language and skills assessment of their children (Appendix 5). The parents who express interest in the initial phone call will receive an information letter and a consent form during the first home visit that includes information on the interview study (See Appendix 6). The parents will be asked if they have any questions on the interview or the information letter before they give their written consent. The researcher will answer their questions and make clarifications should it be needed. Once the written consent is taken, the researcher will start the assessment day. The parents and the children will have a right to withdraw from the study at any point of the study.

As mentioned before, the assessments will be carried out in two visits. The first visit will take an hour and the second visit will be maximum two hours long depending on the child. However, depending on the circumstances such as child being fatigued or distracted or unexpected noise in the home/centre environment on the assessment day, this can extend to a third or a forth visit.

15. What are the ethical issues connected with your research and what steps have you taken to address them? Please do not answer 'none'. The committee needs to see evidence that you have identified potential ethical issues with respect to your research and have taken steps to address them. These issues could relate to:

- your own physical and psychological safety as a researcher (please see the University's and Social Science Division's Safety in Fieldwork guidance
- participant burdens and/or risks, and
- data protection/ confidentiality.

For more guidance on ethical issues, please see www.admin.ox.ac.uk/curec/resources/.

- For my safety: I will be carrying out home visits for this study, however as the parents come from the sample of the ISOTIS survey and their connections, they have been visited at home or community centres by the project researchers or known to the Turkish-community in London. Any unexpected situation or incidents, which take place during the survey, has been documented in the project folders. As an ISOTIS researcher, I have full access to these folders and I will use this information to ensure my safety. I will alert a fellow student at my college on each trip and I will keep her/him updated with my departures from/arrivals to Oxford. I will also alert my supervisor on a weekly basis with the list of visits including information on people and their contact information, dates/times and locations of these visits.
- For the participants' rights: the parents will receive information on the project twice: (1) a phone call will be given after the ethics clearance, (2) a written letter will be provided in the beginning of the first visit before they sign the consent form. The participants will be free to withdraw from the study at any time.
- The data collection will be conducted by renaming the participants with identification numbers to protect the information confidentiality. The data will be kept on the University server.

Section B continued

16. Will you obtain informed consent according to CUREC guidelines and good practice in your discipline before participation?	Yes X	No

If you have marked '**No**', please give a brief explanation and justification for this decision here:

17. Will your research involve discussing sensitive issues? This could be information relating to race or ethnic origin, political opinions, religious beliefs, physical/mental health, trade union membership, sexual life or criminal activities.	Yes	No X

If you have marked '**Yes**', please make sure that you have included some **supporting information** (as directed in question 14 of this section) showing the range of questions covering these issues.

18. Will you ensure that **personal data** collected directly from participants or via a **third party** is held and processed in accordance with the provisions of the Data Protection Act?	Yes X	No

19. How will you ensure that any personal and/or sensitive data are captured, transferred and stored securely?

In particular if data are to be captured electronically, please consult with the University's research data team (**researchdata@ox.ac.uk**) and your local IT department and, with respect to University IT security policies, please comment on how you will capture such data in the first instance, how you will transfer them over networks or via portable media and how, where and how long data will be stored. For more information please see the University's web pages on research data management:

http://researchdata.ox.ac.uk/university-of-oxford-policy-on-the-management-of-research-data-and-records/

The parent and child information will be highly confidential as it is mandatory for the ethics requirement of both the DPhil study and the ISOTIS project. The parents and their children will be identified with participation numbers and these numbers will be kept separately from the results of the study. The data will be collected and kept in the university server, which is password protected. Information will not be transferred over networks but will be transferred via a password-protected memory stick to my supervisor or the members of the ISOTIS team.

SECTION C: Methods and procedures to be used

Method used: Please ensure you have addressed any potential ethical issues related to these methods in Section 14 and in your Participant Information Sheet	**Please mark 'X'**
1. Analysis of existing records	
2. Snowball sampling (recruiting through contacts of existing participants)	X
3. Use of casual or local workers	
4. Participant observation	
5. Covert observation	
6. Observation of specific organisational practices	
7. Participant completes questionnaire in hard copy	X
8. Participant completes online questionnaire or other online task	X
9. Using social media	
10. Participant performs paper and pencil task	
11. Participant performs verbal or aural task (e.g. for linguistic study)	X
12. Focus group	
13. Interview	
14. Audio recording of participant (you will generally need specific consent from participants for this)	X
15. Video recording of participant (you will generally need specific consent from participants for this)	
16. Photography of participant (you will generally need specific consent from participants for this)	
17. Others (please specify):	

SECTION D: Professional guidelines and training		
In this section, please mark 'X' against at least one of the following professional guidelines you aim to adhere to. You should use the principles listed in your chosen guideline(s) in conducting your own research. **Note**: this is not an exhaustive list.		**Please mark 'X'**
Research specialism/ methodology	**Association and guidance document**	
Anthropology	Association of Social Anthropologists of the UK and Commonwealth	
Criminology	British Society of Criminology: Code of Ethics for Researchers in the Field of Criminology	
Education	British Educational Research Association Ethical Guidelines for Educational Research	X
Geography	Association of American Geographers Statement on Professional Ethics Royal Geographical Society: Research Ethics and Code of Practice	
History	Oral History Society of the UK Ethical Guidelines	
Internet-based Research	British Psychological Society: Conducting Research on the Internet Association of Internet Researchers Ethics Guide Also see our Best Practice Guidance on internet-based research	
Law (Socio-Legal)	Socio-Legal Studies Association: Statement of Principles of Ethical Research	
Management	Academy of Management's Professional Code of Ethics	
Political Science	American Political Science Association (APSA) Guide to Professional Ethics in Political Science	
Politics	Political Studies Association. Guidelines for Good Professional Conduct	
Psychology	British Psychological Society Code of Ethics and Conduct British Psychological Society: Conducting Research on the Internet Also see "Internet-based Research" guidance above	X
Social Research	Social Research Association: Ethical Guidelines	
Sociology	The British Sociological Association: Statement of Ethical Practice	
Visual Research	ESRC National Centre for Research Methods Review Paper: Visual Ethics: Ethical Issues in Visual Research	
Other professional guidelines. Please specify the other guidelines used here:		
Please indicate what training in research ethics the researchers involved with this study have received, e.g. the title of the course and date completed (online training available at www.admin.ox.ac.uk/curec/training). If no formal training has been undertaken, please indicate any discussions of research methodology between researchers and supervisors here.		
Foundations of Educational Research for Michaelmas and Hilary Term at the University of Oxford – Department of Education Research Methods in Psychology course in 2014 – 2015 at Bogazici University as part of BSc degree in Psychology		

SECTION E: Signatures

- 'Electronic signatures' sent as email confirmations from a University of Oxford email address can be accepted. Separate emails should come from each of the relevant signatories as outlined below, indicating acceptance of the relevant responsibilities.
- If you have obtained handwritten (wet-ink) signatures, please scan them and the rest of the checklist pages to create a single PDF document and email through.

Please ensure this checklist is signed by:

For staff research:	**For student research**:
1. Principal researcher	1. Principal researcher **EDWARD MELHUISH**
2. **Head of Department (or nominee)**	2. **Head of Department (or nominee)**
	3. **Student researcher PINAR KOLANCALI**

1. **Principal researcher signature/supervisor signature (if student research)**

I understand my responsibilities as **principal researcher** as outlined in the CUREC glossary and guidance on the CUREC website.

I declare that the answers above accurately describe the research as presently designed, and that a new checklist will be submitted should the research design change in a way which would alter any of the above responses so as to require completion of CUREC 2 (involving full scrutiny by an IDREC). I will inform the relevant IDREC if I cease to be the principal researcher on this project and supply the name and contact details of my successor if appropriate.

Signature: ……EDWARD MELHUISH……

Print name (block capitals): ……EDWARD MELHUISH…… **Date**: 17/12/18……..

2. **Departmental endorsement signature**

I have read the research project application named above. On the basis of the information available to me, I:

(i) consider the principal researcher to be aware of her/his ethical responsibilities in regard to this research;
(ii) consider that any ethical issues raised have been satisfactorily resolved or are covered by relevant professional guidelines and/or CUREC approved procedures, and that it is appropriate for the research to proceed (noting the principal researcher's obligation to report should the design of the research change in a way which would alter any of the above responses so as to require completion of a CUREC 2 full application);
(iii) am satisfied that: the proposed project design and scientific methodology is sound; the project has been/will be subject to appropriate **peer review**; and is likely to contribute to existing knowledge and/or to the education and training of the researcher(s) and that it is in the **public interest**.

Signed by Head of Department or nominee *(example nominees for student research include the Director of Graduate Studies/ Director of Undergraduate Studies)*:

Signature:
……

Print name (block capitals): **Date**:
…… ……

3. **Student signature (if student research)**

I understand the questions and answers that have been entered above describing the research, and I will ensure that my practice in this research complies with these answers, subject to any modifications made by the principal researcher properly authorised by the CUREC system.

Signed by student: ……PINAR KOLANCALI……

Print name (block capitals)……PINAR KOLANCALI…… **Date**: …17/12/18……..

APPENDIX 12. Ethics Approval

Re: CUREC: ISOTIS CHILD STUDY

Nicola Warren-Lee <nicola.warren-lee@education.ox.ac.uk> 18 Ocak 2019 17:23
Alıcı: Education Research Office <research.office@education.ox.ac.uk>, Edward Melhuish <edward.melhuish@education.ox.ac.uk>, Pinar Kolancali <pinar.kolancali@wolfson.ox.ac.uk>

Dear Pinar

Title: The interactions between language attitudes of bilingual children and their vocabulary skills: Evidence from Turkish English speaking children in the UK

Ref ED-CIA-19-085

The above application has been considered on behalf of the Departmental Research Ethics Committee (DREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to DREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly, approval has been granted.

If your research involves participants whose ability to give free and informed consent is in question (this includes those under 18 and vulnerable adults), then it is advisable to read the following NSPCC professional reporting requirements for cases of suspected abuse

http://www.nspcc.org.uk/globalassets/documents/information-service/factsheet-child-abuse-reporting-requirements-professionals.pdf

Should there be any subsequent changes to the project which raise ethical issues not covered in the original application you should submit details to research.office@education.ox.ac.uk for consideration.

Good luck with your research study.

Best wishes
Nicola

Dr Nicola Warren-Lee
Geography PGCE Curriculum Tutor

APPENDIX 13: Education data recategorization syntax

Please recode our variable Q16p1p4 into Q16p1p4EN:
IF (Q16p1p4 = 1) Q16p1p4EN=2.
IF (Q16p1p4 = 2) Q16p1p4EN=3.
IF (Q16p1p4 = 3) Q16p1p4EN=5.
IF (Q16p1p4 = missing) Q16p1p4EN=missing.
ADD VALUE LABELS Q16p1p4EN 1 'middle school' 2 'O-levels' 3 'GCSE' 4 'high school' 5 'A-levels'.
EXECUTE.

ISCED-levels (2011)		England	*[Country]*
0 - Less than primary education **1 - Primary education** **2 - Lower secondary education**	low	Q16p1p3 = 2 & Q16p1p5 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = no & Do you have vocational education = no & Do you have a college or university education = no
		Q16p1p3 = 2 & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = no & Do you have vocational education = yes & Do you have a vocational qualification = no & Do you have a college or university education = no
		Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = missing & Do you have vocational education = no & Do you have a college or university education = no
		Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = missing & Do you have vocational education = yes & Do you have a vocational qualification = no & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 1 (middle school) & Q16p1p5 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = middle school & Do you have vocational education = no & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 1 (middleschool) & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = middle school & Do you have vocational education = yes & Do you have a vocational qualification? = no & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 2 (O-level) & Q16p1p5 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = O-level & Do you have vocational education = no & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 2 (O-level) & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = O-level & Do you have vocational education = yes & Do you have a vocational qualification? = no & Do you have a college or university education = no

		Q16p1p3 = 1 & Q16p1p4EN = 3 (GCSE) & Q16p1p5 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = GCSE & Do you have vocational education = no & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 3 (GCSE) & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = GCSE & Do you have vocational education = yes & Do you have a vocational qualification? = no & Do you have a college or university education = no
3 - Upper secondary education **4 - Post-secondary non-tertiary education** **5 - Short-cycle tertiary education**	Medium	Q16p1p3 = 1 & Q16p1p4EN = 4 (highschool) & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = high school & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 4 (highschool) & Q16p1p10 = 1 & Q16p1p12 = 1	Did you receive a secondary school certification? = yes & Which level? = high school & Do you have a college or university education = yes & What is your highest achieved qualification? = none
		Q16p1p3 = 1 & Q16p1p4EN = 4 (highschool) & Q16p1p10 = 1 & MISSING(Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = high school & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 1 & & Q16p1p4EN = 5 (A-level) & Q16p1p10 = 2	Did you receive a secondary school certification? = yes & Which level? = A-level & Do you have a college or university education = no
		Q16p1p3 = 1 & & Q16p1p4EN = 5 (A-level) & Q16p1p10 = 1 & Q16p1p12 = 1	Did you receive a secondary school certification? = yes & Which level? = A-level & Do you have a college or university education = yes & What is your highest achieved qualification? = none
		Q16p1p3 = 1 & & Q16p1p4EN = 5 (A-level) & Q16p1p10 = 1 & MISSING (Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = A-level & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 1 & Q16p1p4EN = 1 (Middle school) & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = Middle School & Do you have vocational education = yes & Do you have a vocational qualification? = yes & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 1 (Middle School) & Q16p1p10 = 1	Did you receive a secondary school certification? = yes & Which level? = Middle School & Do you have a college or university education = yes &

		& Q16p1p12 = 1	What is your highest achieved qualification? = none
		Q16p1p3 = 1 & Q16p1p4EN = 1 (Middle School) & Q16p1p10 = 1 & MISSING(Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = Middle School & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 1 & Q16p1p4EN = 2 (O-level) & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = O-level & Do you have vocational education = yes & Do you have a vocational qualification? = yes & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 2 (O-level) & Q16p1p10 = 1 & Q16p1p12 = 1	Did you receive a secondary school certification? = yes & Which level? = O-level & Do you have a college or university education = yes & What is your highest achieved qualification? = none
		Q16p1p3 = 1 & Q16p1p4EN = 2 (O-level) & Q16p1p10 = 1 & MISSING(Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = O-level & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 1 & Q16p1p4EN = 3 (GCSE) & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = GCSE & Do you have vocational education = yes & Do you have a vocational qualification? = yes & Do you have a college or university education = no
		Q16p1p3 = 1 & Q16p1p4EN = 3 (GCSE) & Q16p1p10 = 1 & Q16p1p12 = 1	Did you receive a secondary school certification? = yes & Which level? = GCSE & Do you have a college or university education = yes & What is your highest achieved qualification? = none
		Q16p1p3 = 1 & Q16p1p4EN = 3 (GCSE) & Q16p1p10 = 1 & MISSING(Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = GCSE & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2	Did you receive a secondary school certification? = yes & Which level? = missing & Do you have vocational education = yes & & Do you have a vocational qualification = yes & Do you have a college or university education = no
		Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p10 = 1 &	Did you receive a secondary school certification? = yes & Which level? = missing & Do you have a college or university education = yes & What is

		Q16p1p12 = 1	your highest achieved qualification? = none
		Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p10 = 1 & MISSING(Q16p1p12)	Did you receive a secondary school certification? = yes & Which level? = missing & Do you have a college or university education = yes & What is your highest achieved qualification? = missing
		Q16p1p3 = 2 & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2	Did you receive a secondary school certification? = no & Do you have vocational education = yes & Do you have a vocational qualification = yes & Do you have a college or university education = no
6 - Bachelor or equivalent level **7 - Master or equivalent level**	High	Q16p1p10 = 1 & Q16p1p12 = 2	Do you have a college or university education? = yes & What is your highest achieved qualification? = Bachelor(or equivalent graduate/postgraduate certificate/diploma, or vocational qualification/NVQ level 6)
		Q16p1p10 = 1 & Q16p1p12 = 3	Do you have a college or university education? = yes & What is your highest achieved qualification? = Masters (or equivalent graduate/postgraduate certificate/diploma, or vocational qualification/NVQ level 7)
		Q16p1p10 = 1 & Q16p1p12 = 4	Do you have a college or university education? = yes & What is your highest achieved qualification? = PhD (or equivalent graduate/postgraduate certificate/diploma, or vocational qualification/NVQ level 8)

Syntax:

```
IF (Q16p1p3 = 2 & Q16p1p5 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 2 & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 1 & Q16p1p5 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 1 & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 2 & Q16p1p5 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 2 & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 3 & Q16p1p5 = 2 & Q16p1p10= 2) Educ=1.
IF (Q16p1p3 = 1 & Q16p1p4EN = 3 & Q16p1p5 = 1 & Q16p1p7 = 2 & Q16p1p10= 2) Educ=1.

IF (Q16p1p3 = 1 & Q16p1p4EN = 4 & Q16p1p10= 2) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 4 & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 4 & Q16p1p10 = 1 & MISSING(Q16p1p12)) Educ=2.
IF (Q16p1p3 = 1 & & Q16p1p4EN = 5 & Q16p1p10 = 2) Educ=2.
IF (Q16p1p3 = 1 & & Q16p1p4EN = 5 & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
IF (Q16p1p3 = 1 & & Q16p1p4EN = 5 & Q16p1p10 = 1 & MISSING (Q16p1p12)) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 1 & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 1 & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
```

```
IF (Q16p1p3 = 1 & Q16p1p4EN = 1 & Q16p1p10 = 1 & MISSING(Q16p1p12)) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 2 & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 2 & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 2 & Q16p1p10 = 1 & MISSING(Q16p1p12)) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 3 & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 3 & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
IF (Q16p1p3 = 1 & Q16p1p4EN = 3 & Q16p1p10 = 1 & MISSING(Q16p1p12)) Educ=2.
IF (Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2) Educ=2.
IF (Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p10 = 1 & Q16p1p12 = 1) Educ=2.
IF (Q16p1p3 = 1 & MISSING(Q16p1p4EN) & Q16p1p10 = 1 & MISSING(Q16p1p12)) Educ=2.
IF (Q16p1p3 = 2 & Q16p1p5 = 1 & Q16p1p7 = 1 & Q16p1p10= 2) Educ=2.

IF (Q16p1p10 = 1 & Q16p1p12 = 2) Educ=3.
IF (Q16p1p10 = 1 & Q16p1p12 = 3) Educ=4.
IF (Q16p1p10 = 1 & Q16p1p12 = 4) Educ=5.

EXECUTE.
```

APPENDIX 14. Correlations between language outcomes and language and literacy activities

Correlations

		Raw Scores for Turkish Vocabulary	Raw Scores for English Vocabulary	Conversation : Daily experiences	Conversation : Past experienes	Conversation : General Interest	Literacy: Picture book	Literacy: Story book	Literacy: Interest book	Storytelling: Made-up stories	Storytelling: Cultural stories	Storytelling: Religious stories
Raw Scores for Turkish Vocabulary	Pearson Correlation	1	.112	-.116	.083	-.031	-.100	.109	.183	.048	.047	.145
	Sig. (2-tailed)		.366	.349	.505	.802	.422	.381	.139	.713	.724	.272
	N	67	67	67	67	67	67	67	67	60	60	59
Raw Scores for English Vocabulary	Pearson Correlation	.112	1	.327**	.094	.250*	.324**	.086	-.037	-.144	-.056	-.064
	Sig. (2-tailed)	.366		.007	.449	.042	.008	.489	.767	.271	.670	.630
	N	67	67	67	67	67	67	67	67	60	60	59
Conversation: Daily experiences	Pearson Correlation	-.116	.327**	1	.325**	.170	.201	.103	.146	-.023	.053	-.035
	Sig. (2-tailed)	.349	.007		.007	.169	.103	.409	.238	.861	.687	.795
	N	67	67	67	67	67	67	67	67	60	60	59
Conversation: Past experienes	Pearson Correlation	.083	.094	.325**	1	.380**	.152	.309*	.226	.096	.051	-.028
	Sig. (2-tailed)	.505	.449	.007		.002	.220	.011	.066	.464	.697	.832
	N	67	67	67	67	67	67	67	67	60	60	59
Conversation: General Interest	Pearson Correlation	-.031	.250*	.170	.380**	1	.121	.200	.375**	.085	.003	-.060
	Sig. (2-tailed)	.802	.042	.169	.002		.328	.104	.002	.520	.980	.654
	N	67	67	67	67	67	67	67	67	60	60	59
Literacy: Picture book	Pearson Correlation	-.100	.324**	.201	.152	.121	1	.503**	.293*	.055	.218	.018
	Sig. (2-tailed)	.422	.008	.103	.220	.328		.000	.016	.679	.095	.894
	N	67	67	67	67	67	67	67	67	60	60	59
Literacy: Story book	Pearson Correlation	.109	.086	.103	.309*	.200	.503**	1	.380**	.098	.189	.140
	Sig. (2-tailed)	.381	.489	.409	.011	.104	.000		.001	.457	.149	.291
	N	67	67	67	67	67	67	67	67	60	60	59
Literacy: Interest book	Pearson Correlation	.183	-.037	.146	.226	.375**	.293*	.380**	1	.270*	.189	.141
	Sig. (2-tailed)	.139	.767	.238	.066	.002	.016	.001		.037	.148	.287
	N	67	67	67	67	67	67	67	67	60	60	59
Storytelling: Made-up stories	Pearson Correlation	.048	-.144	-.023	.096	.085	.055	.098	.270*	1	.503**	.114
	Sig. (2-tailed)	.713	.271	.861	.464	.520	.679	.457	.037		.000	.392
	N	60	60	60	60	60	60	60	60	60	60	59
Storytelling: Cultural stories	Pearson Correlation	.047	-.056	.053	.051	.003	.218	.189	.189	.503**	1	.294*
	Sig. (2-tailed)	.724	.670	.687	.697	.980	.095	.149	.148	.000		.024
	N	60	60	60	60	60	60	60	60	60	60	59
Storytelling: Religious stories	Pearson Correlation	.145	-.064	-.035	-.028	-.060	.018	.140	.141	.114	.294*	1
	Sig. (2-tailed)	.272	.630	.795	.832	.654	.894	.291	.287	.392	.024	
	N	59	59	59	59	59	59	59	59	59	59	59

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

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX 15. Alternative variable for home language and literacy activities

As an alternative method the data was categorized into three categories of low-, medium-, and high-LLA groupings to give an indication of the language and literacy stimulation that children received at home. The three categories were generated based on the distribution of scores across the sample. The lower category of LLA was <=15.00 points, medium LLA was 16.00-17.00 points and higher FWB was 18.00 points. The mean comparisons of the raw scores of HLLE Activities was not significant between the groups ($t(166) = -1.82$, $p = .070$), hence, the same categorisation was applied to the sample of Phase 2. Table below illustrates the breakdown of the groupings for the total sample.

Table. Descriptive Statistics of the Home Language and Literacy Activities the LLA Groups

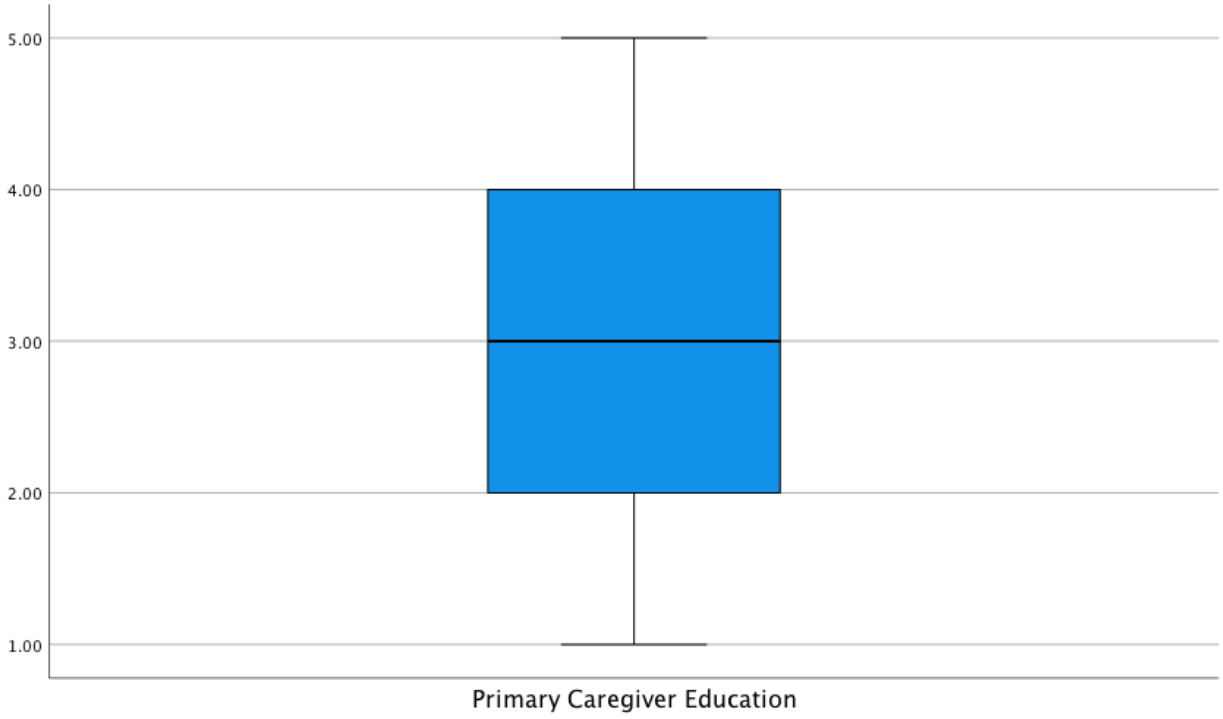
Level	**Range**	**Phase 1** **N (%)**	**Phase 1** **N (%)**
Low	LLA <=15.00	52 (31%)	16 (24%)
Medium	16-17	62 (37%)	31 (46%)
High	18	54 (32%)	20 (30%)

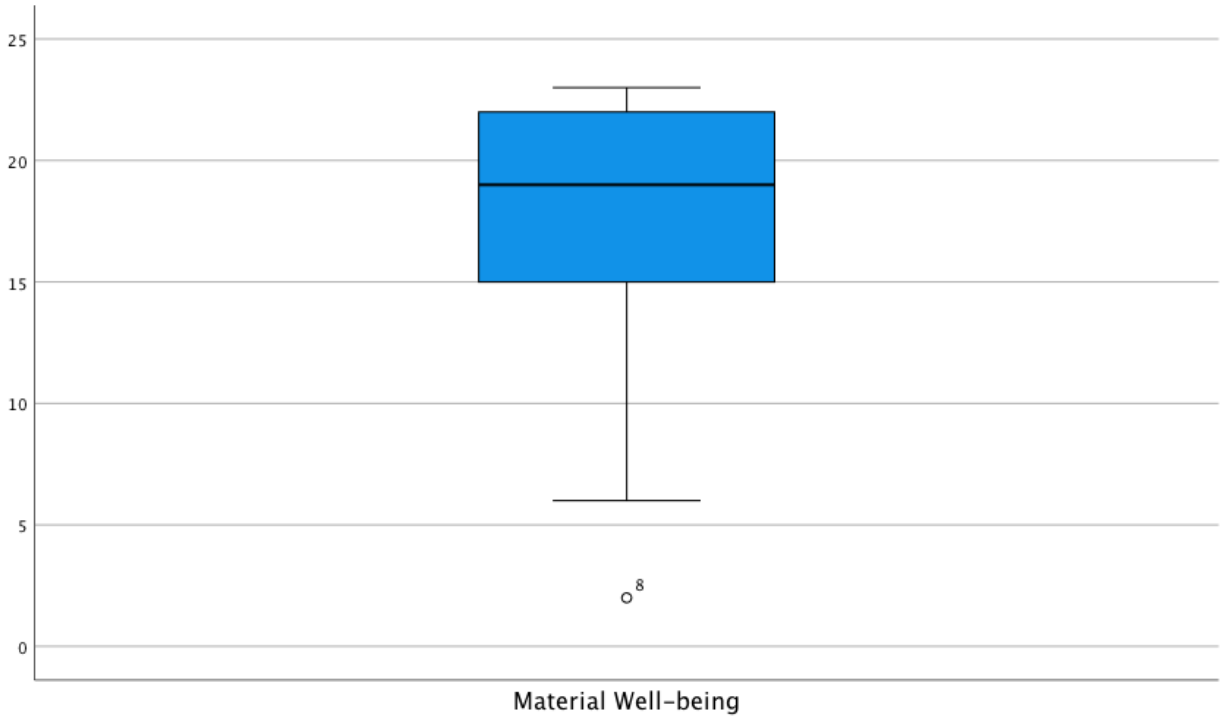
APPENDIX 16. Example use of quanteda package in R

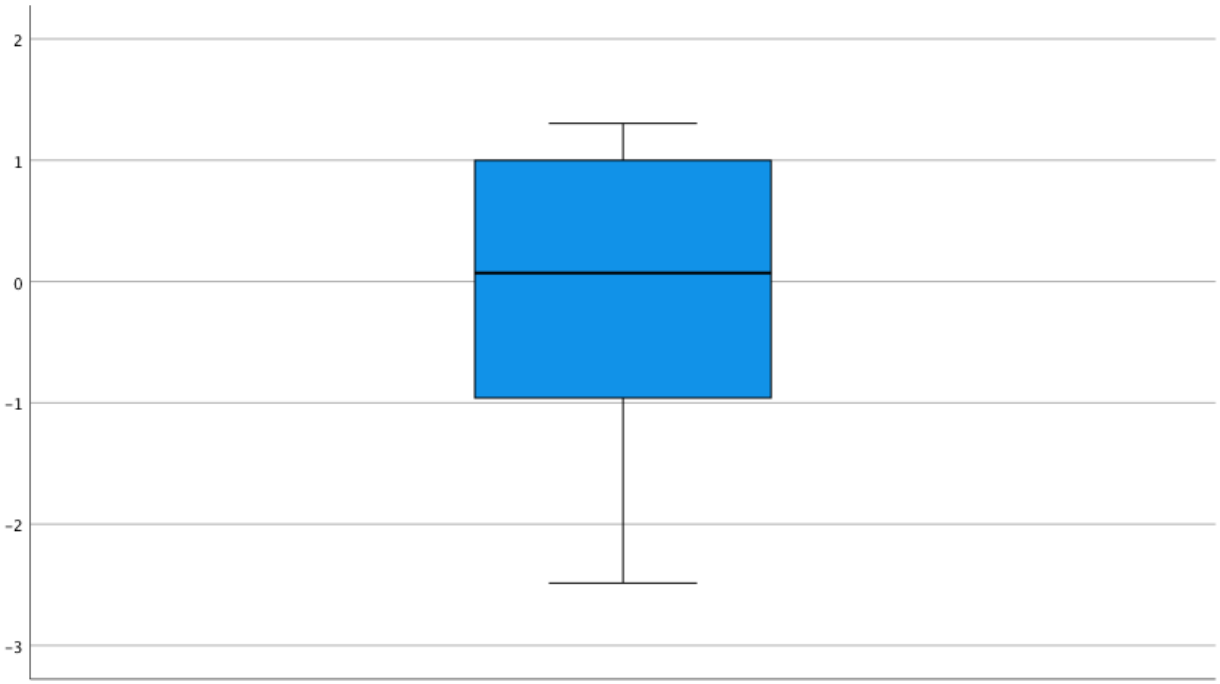
```
> txt <- c("Hazır, tabii.Bu değiş bir çizgi film galiba, hiç daha önce izle sen.
+ Üz dur
+ Bir ol Ne ol
+ Bak anne.
+ Duckling. Ördek yavru
+ benze haklı ördek yavru gibi.
+ Çok güzel
+ Biz kitap var, evet. Oku bu İsim hatırla
+ Ne ol
+ sadece kendi
+ üz
+ Gerçek o? Oyuncak
+ Oyuncak gibi dur
+ Ne yap
+ Ağla!
+ Ad ne bu sen
+ Ne ol bak
+ Üz gerek yok asıl. Gör Bak aynı o benze.  Bak çok güzel bu
+ Ağla Anla
+ Son kuğu
+ Bal kafa, minik kuş. Bak! Bu böyle sar. Sar? Yes. Yaşa bak bul gerçek, o gibi ol swan, kuğu. o swan değil asıl. O
duck, sonra o swan? Ördek kuğu.
+ Yaşa Bul birbiri. Çak. Mutlu ol.
+ Sen niye üz
+ Az önce ne üz tat
+ konuş
+ neden üz
+ bil tamam
+ Burun ak, tamam peçete ver
+ Bir tane daha al iste
+ Hepsi aynı.
+ bura ne yap
+ bu ne
+ Duckling, baby duck
+ Bu ne?
+ Egg! it same egg? Aynı yumurta bu?
+ Fark gör.
+ Ne ol yumurta bura?
+ Hatch, it hatch evet. Yumurta çatla. İç ne çık
+ Bu gibi gör It baby swan I think. Bebek swan bu
+ Şaş galiba. Hiç benze bu ördek yavru bu?
+ Bak çok tat gör. Galiba yumurta karış.
+ Bura ördek arka git. asıl o ördek değil. Bil daha ördek ol. Daha öğren.
+ Bura ne yap
+ yap. Evet bağır o ses değiş gel.
+ Bura ne yap hatırla Su bak, değiş bir şekil böyle su dalga. Değiş gör. Bu bu fark Bengi?
+ Bu kuş yavru. Bu ne? Gerçek? Oyuncak. oyuncak ol düşün galiba
```

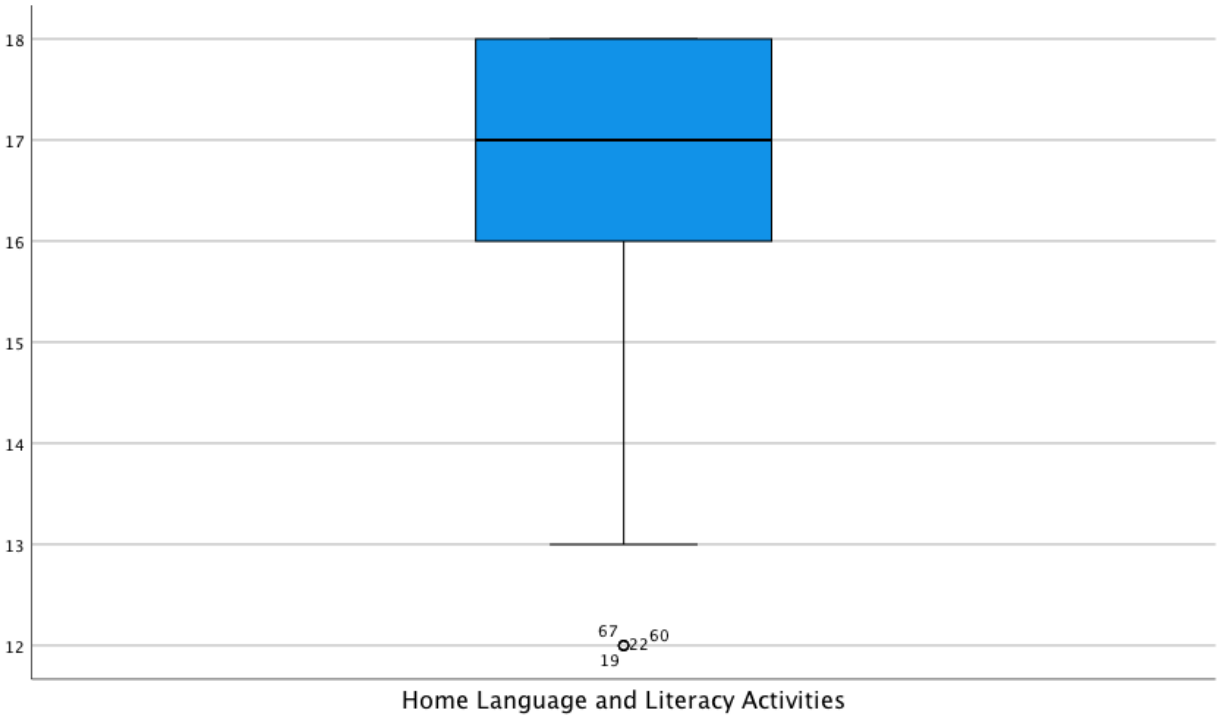
```
+ Bak su bak komik gör, göz bak. Çok komik dur
+ Ağız komik dur evet.
+ ağla sonra, üz. sonra gerçek o benze gel Ne bu ad
+ Swan. Türkçe ne?
+ Kuğu.
+ Evet. Bak, gör tam kavuş artık. Sar birbiri Sen üz bu gör, mutlu ol
+ Ağla üz Sar o zaman?
+ Ne ol tat kuzu sonra bul bebek.
+ beraber mutlu yaşa sonra.
+ sen mutlu ol Mutlu ol
+ Efendi başka peçete.")
>
>
>
>
> ntoken(txt)
text1
  392
> ntype(txt)
text1
  159
>
>
>
>
> tokens(txt) %>%
+ textstat_lexdiv(measure = c("TTR"))
  document       TTR
      1     text1 0.3797468
```

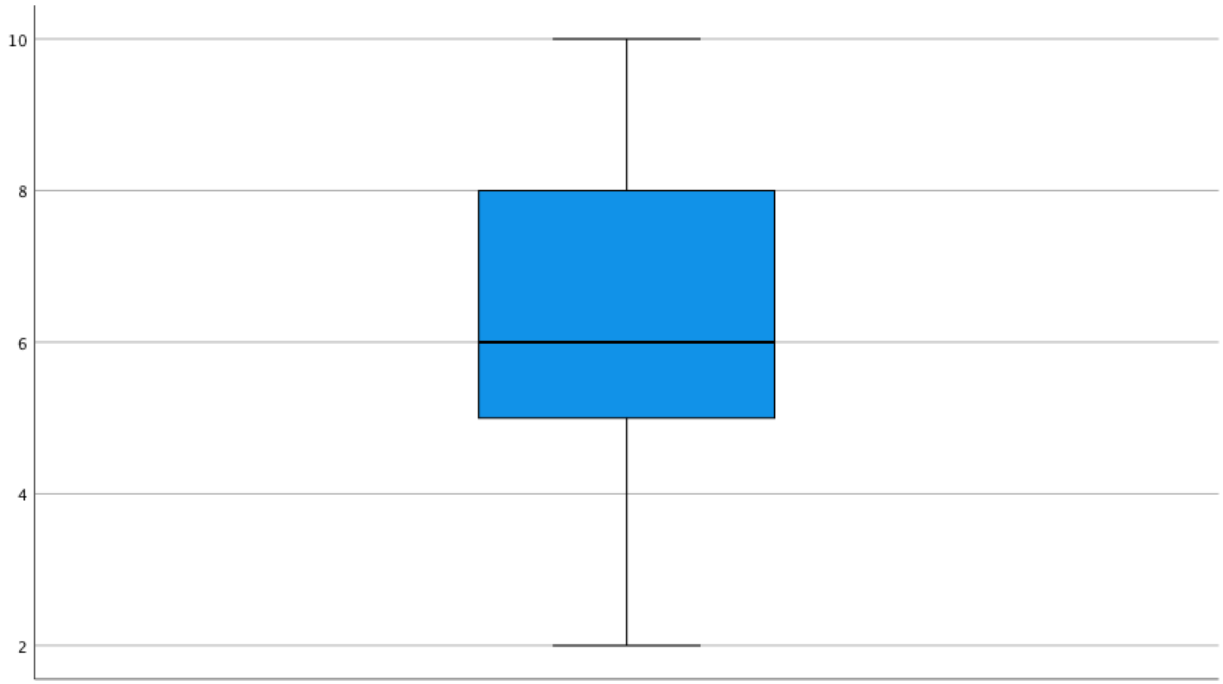
APPENDIX 17. Boxplots and outliers

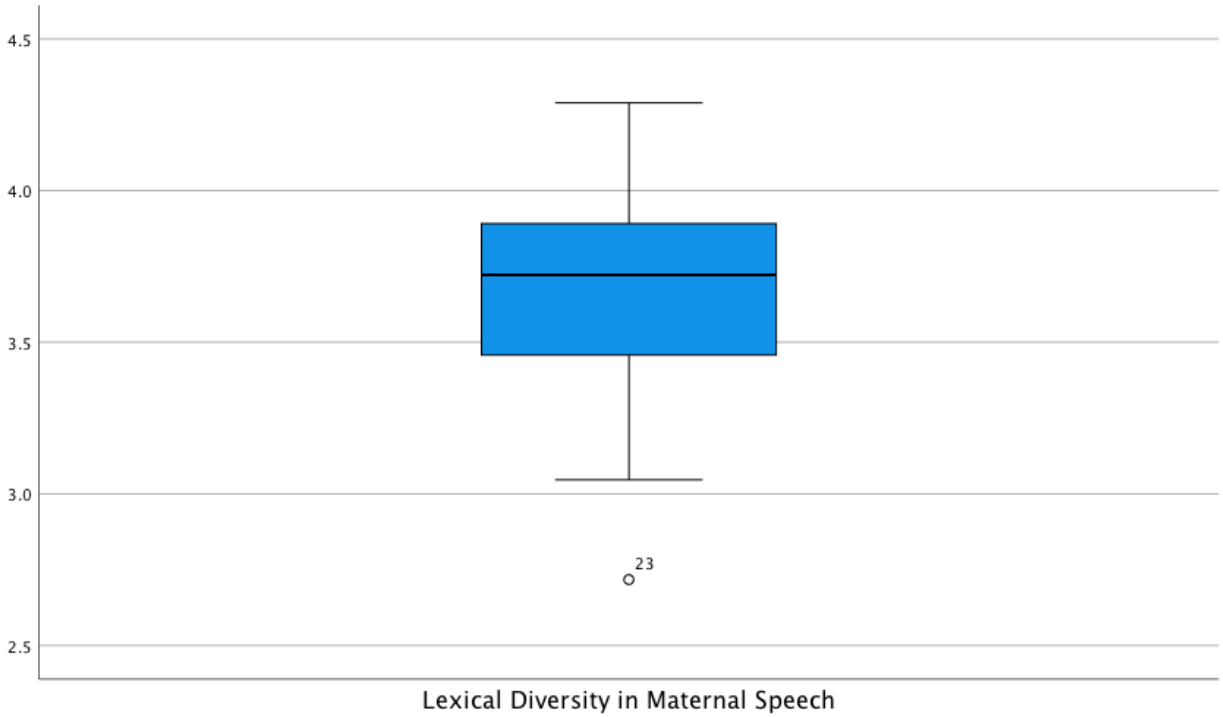


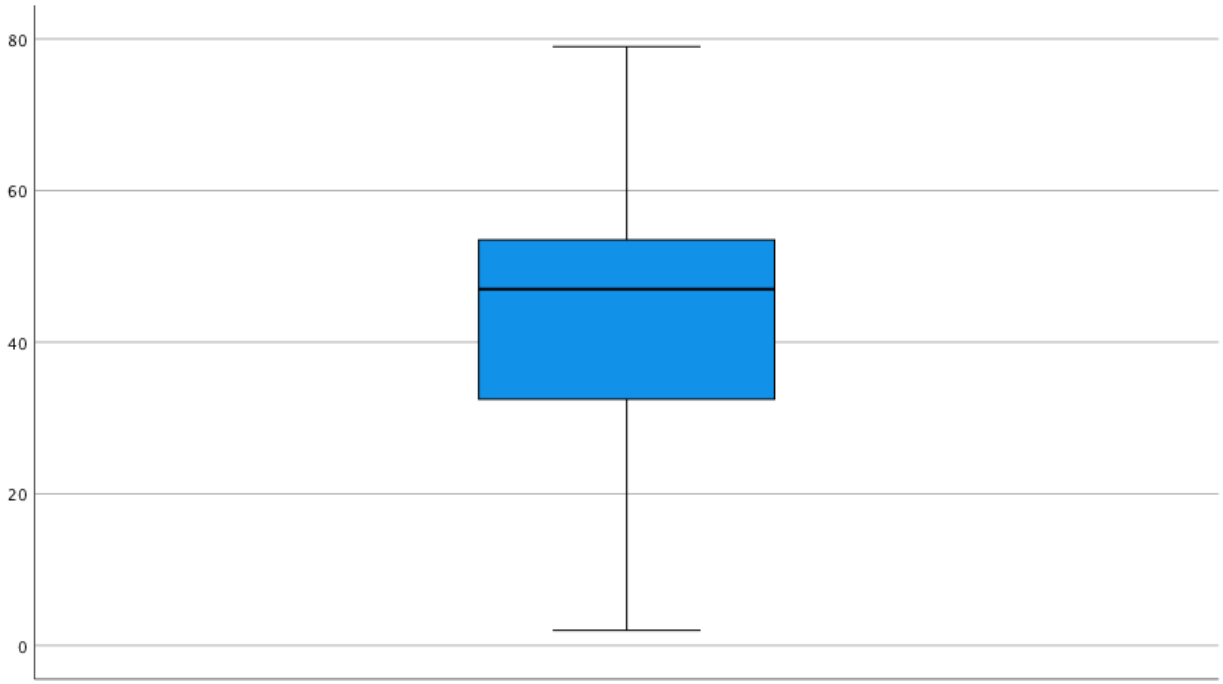



2
1
0
-1
-2
-3
Social Integration

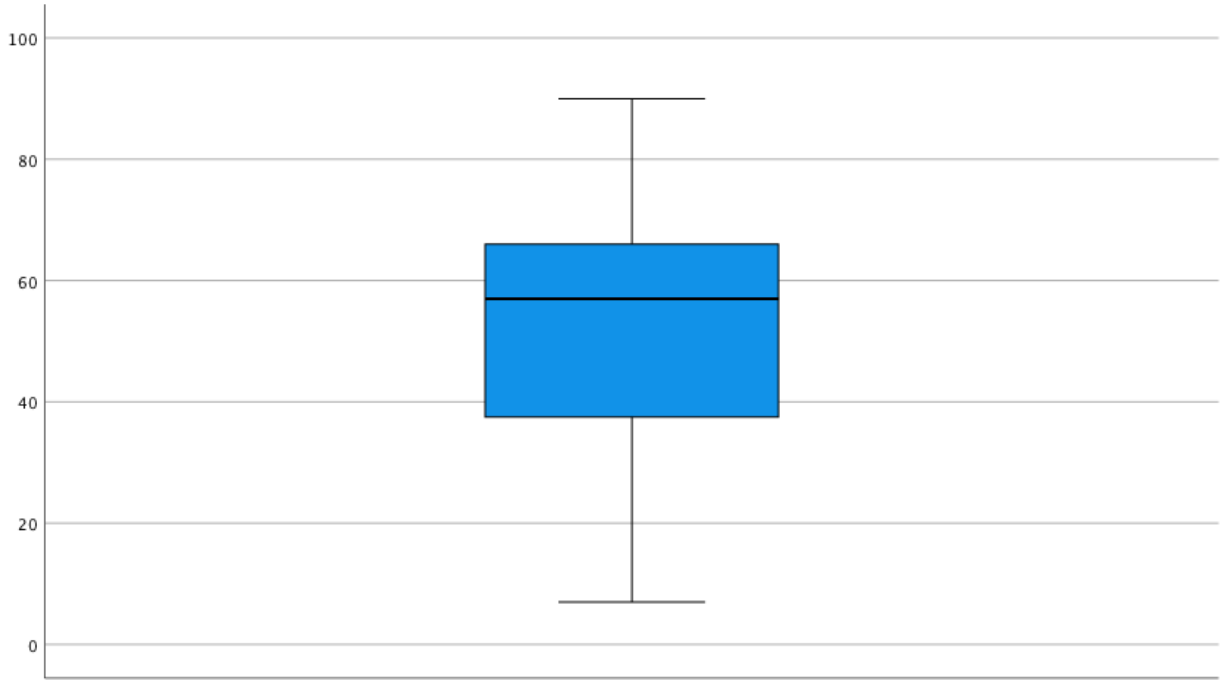

18
17
16
15
14
13
12
67
22
60
19
Home Language and Literacy Activities


10
8
6
4
2
Home Language Use

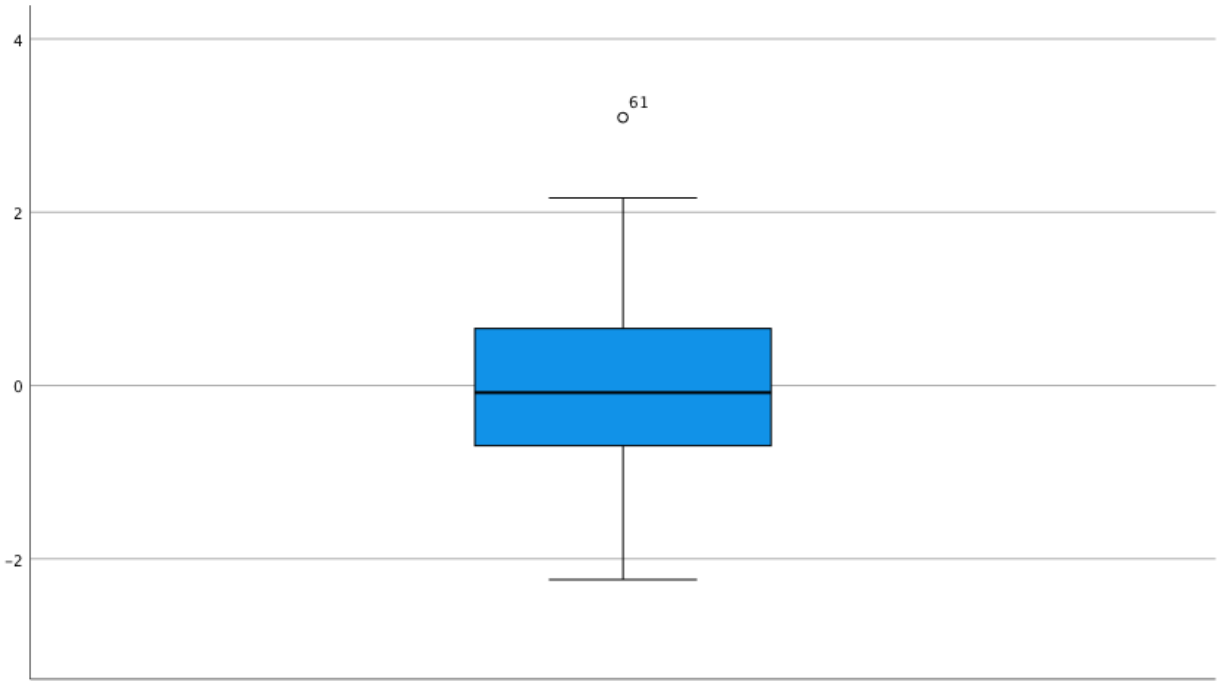

4.5
4.0
3.5
3.0
2.5
23
Lexical Diversity in Maternal Speech



Raw Scores for Turkish Vocabulary



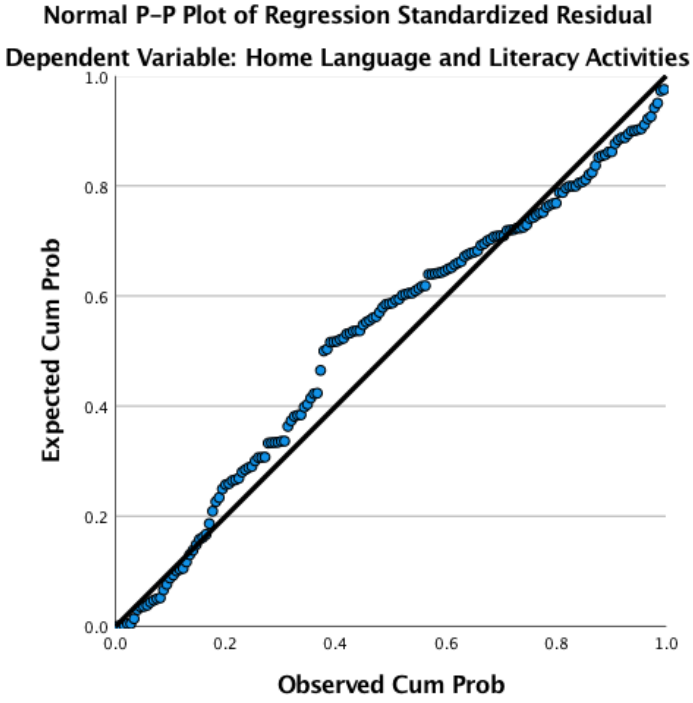
Raw Scores for English Vocabulary

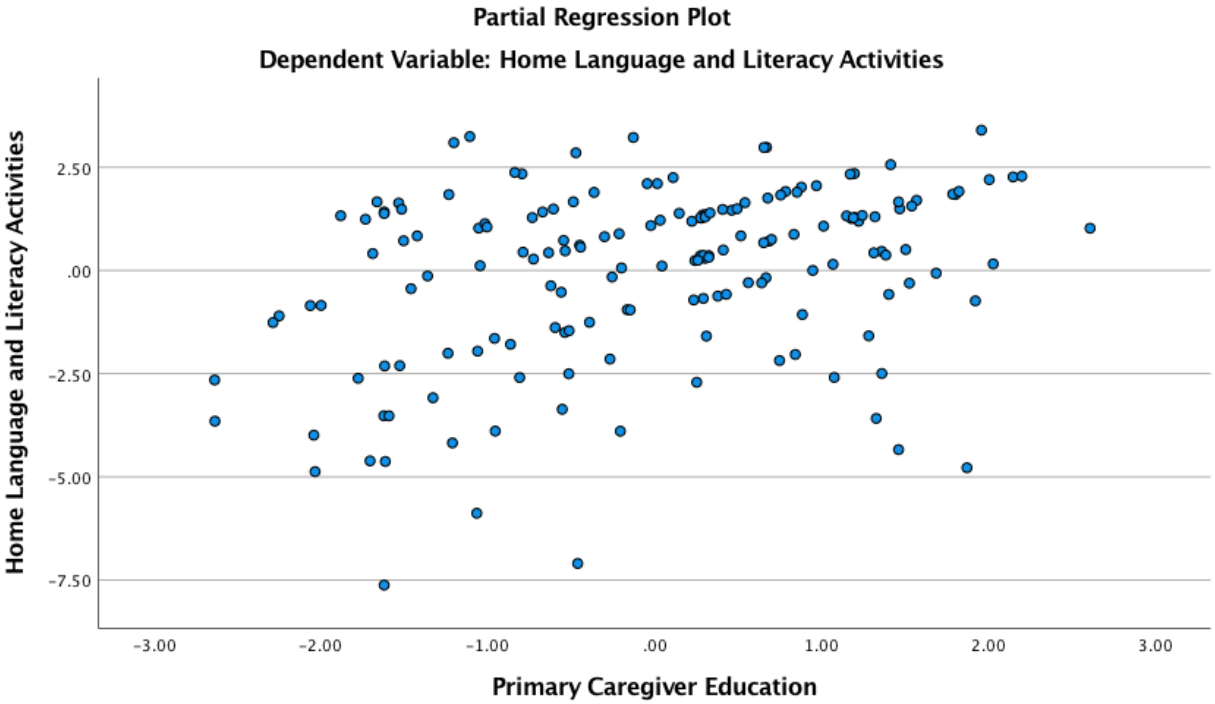


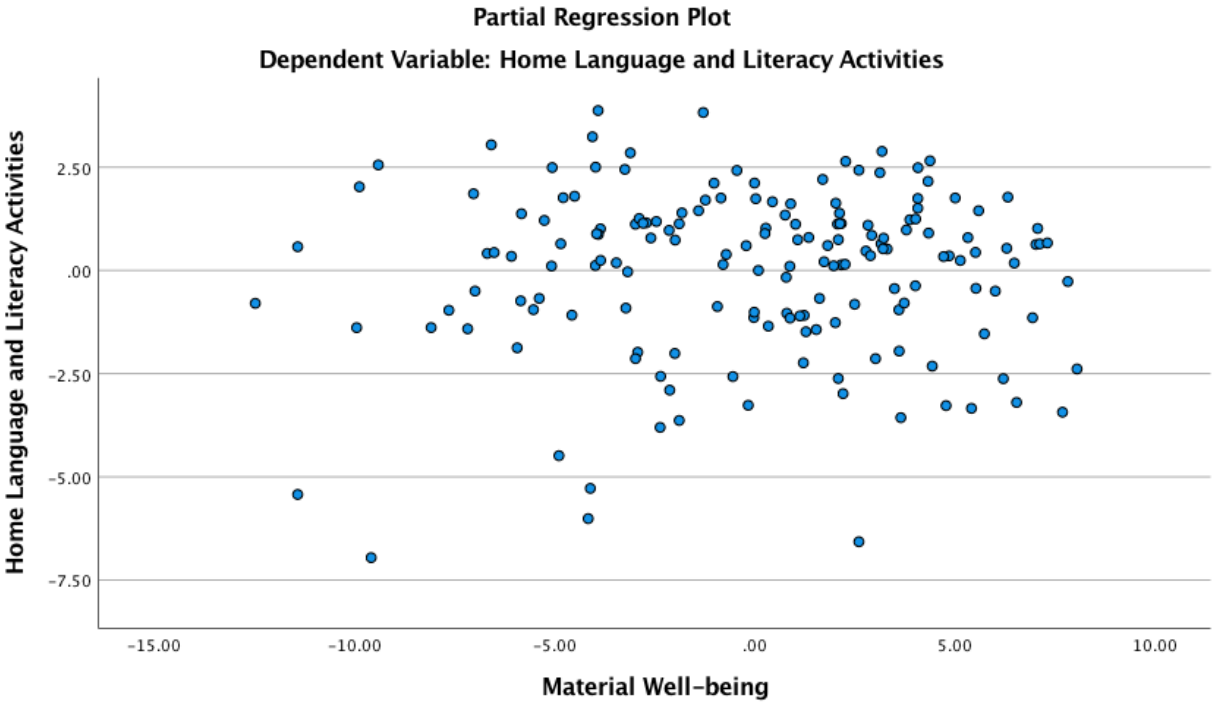
Vocabulary-controlled Turkish Sentence Repetition

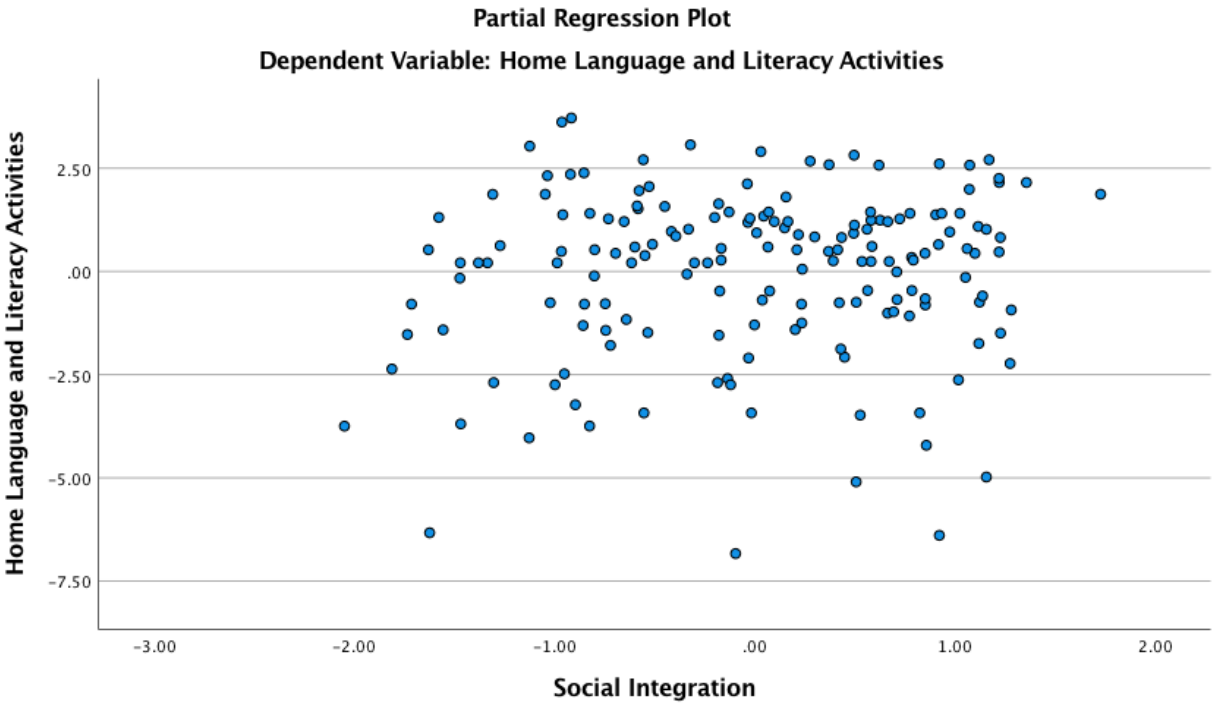
APPENDIX 18. Normal probability plots and residual scatterplots

Appendix 18.1. Regression plots for language and literacy activities

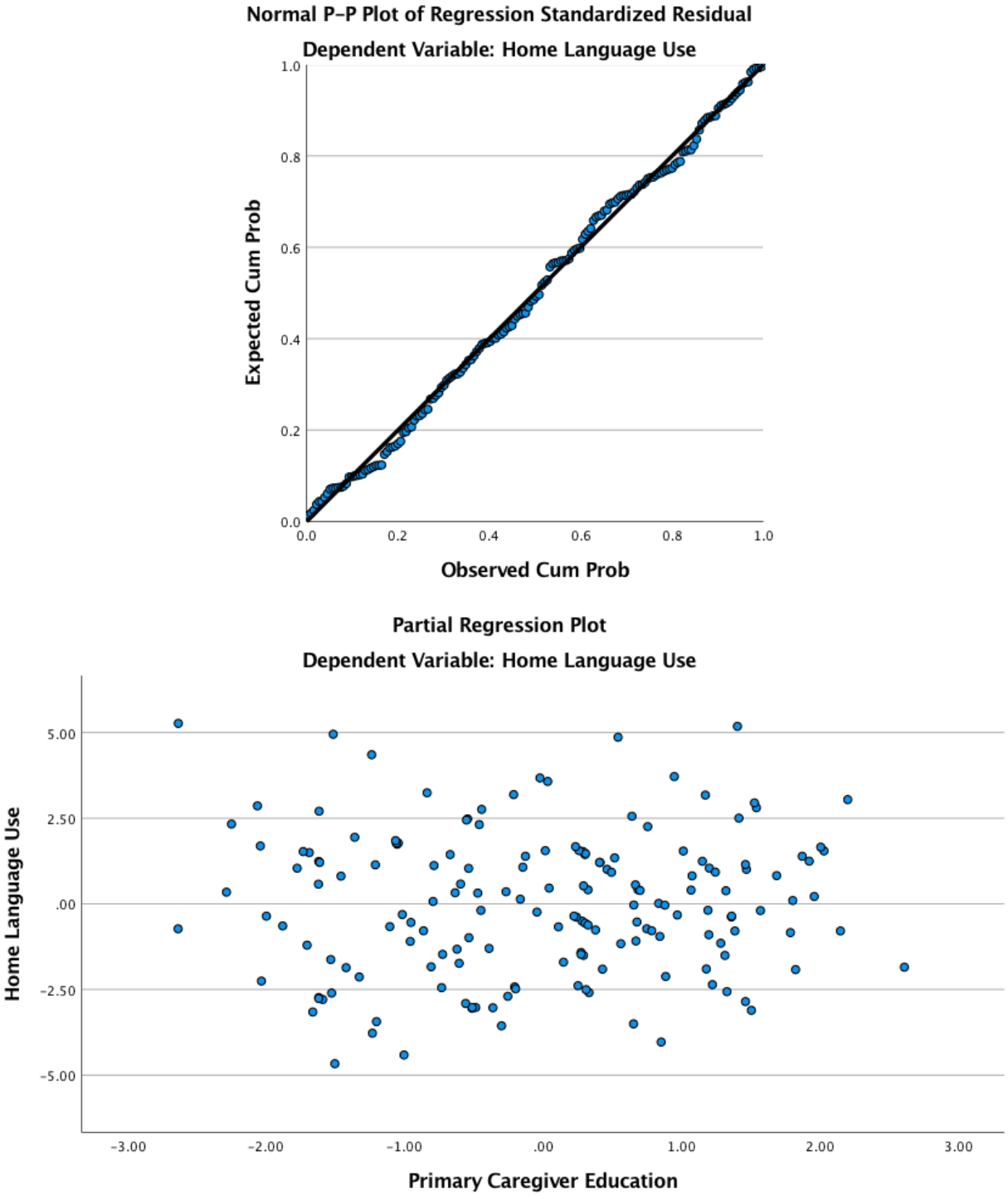


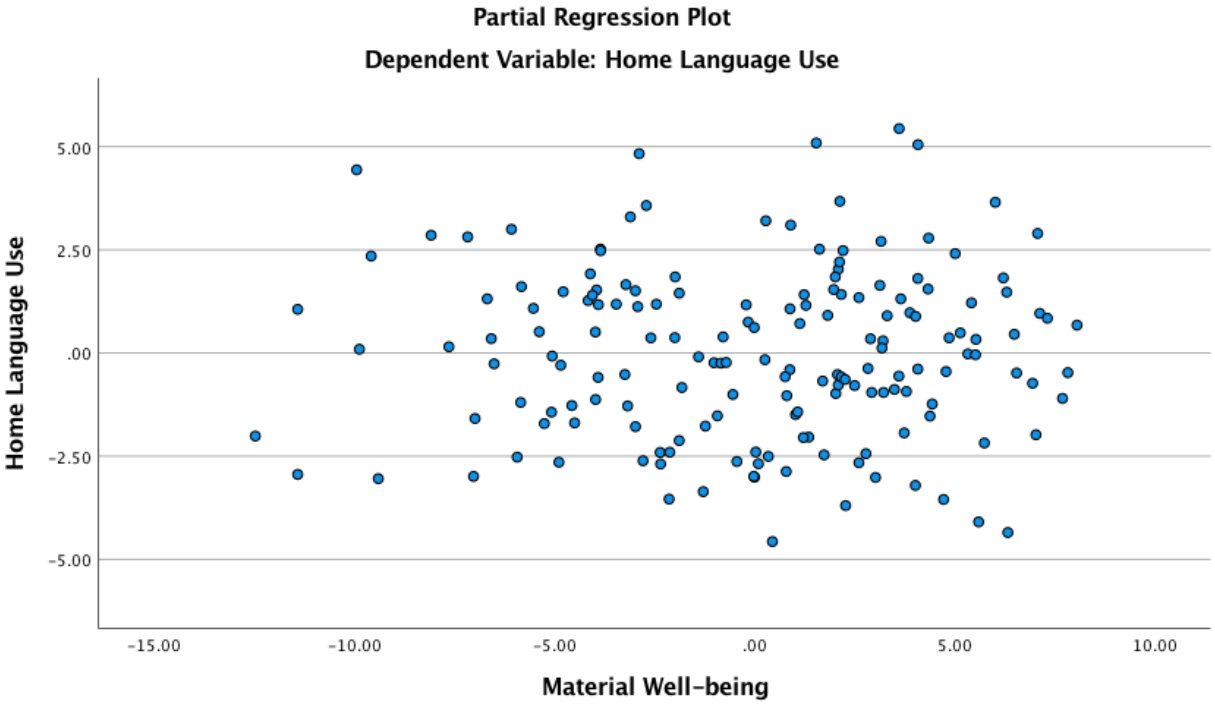


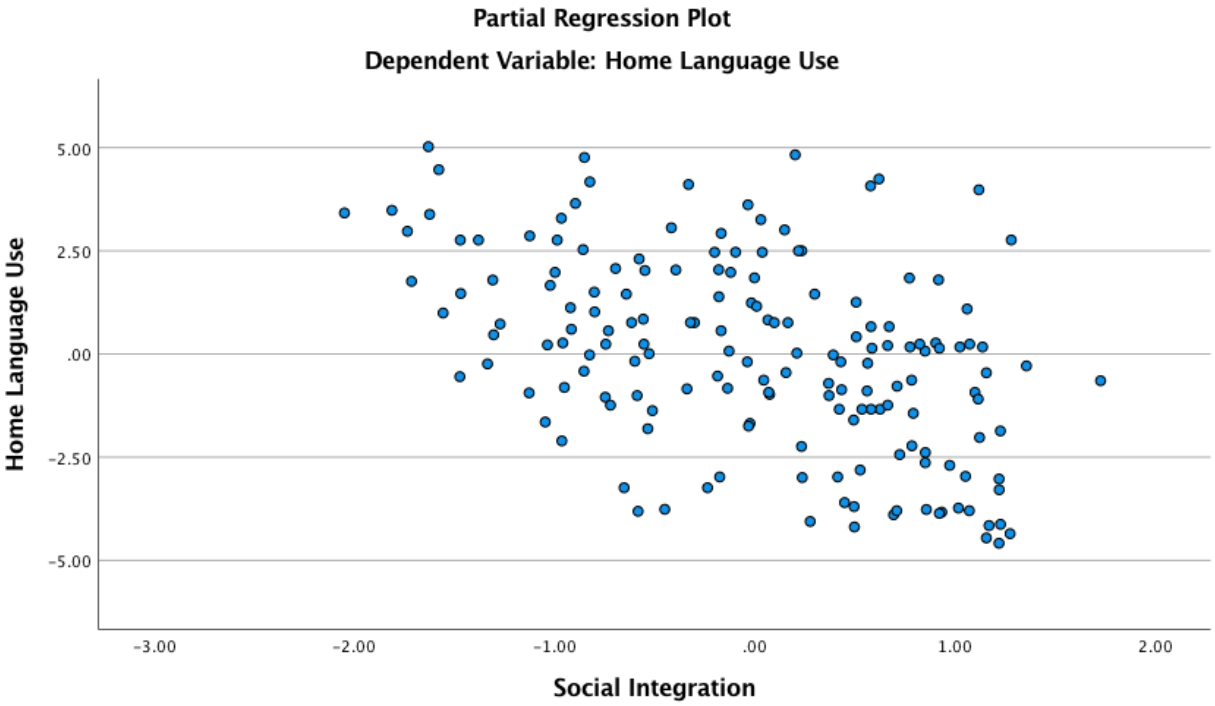

Partial Regression Plot
Dependent Variable: Home Language and Literacy Activities
Home Language and Literacy Activities
2.50
.00
-2.50
-5.00
-7.50
-15.00
-10.00
-5.00
.00
5.00
10.00
Material Well-being


Partial Regression Plot
Dependent Variable: Home Language and Literacy Activities
Home Language and Literacy Activities
2.50
.00
-2.50
-5.00
-7.50
-3.00
-2.00
-1.00
.00
1.00
2.00
Social Integration

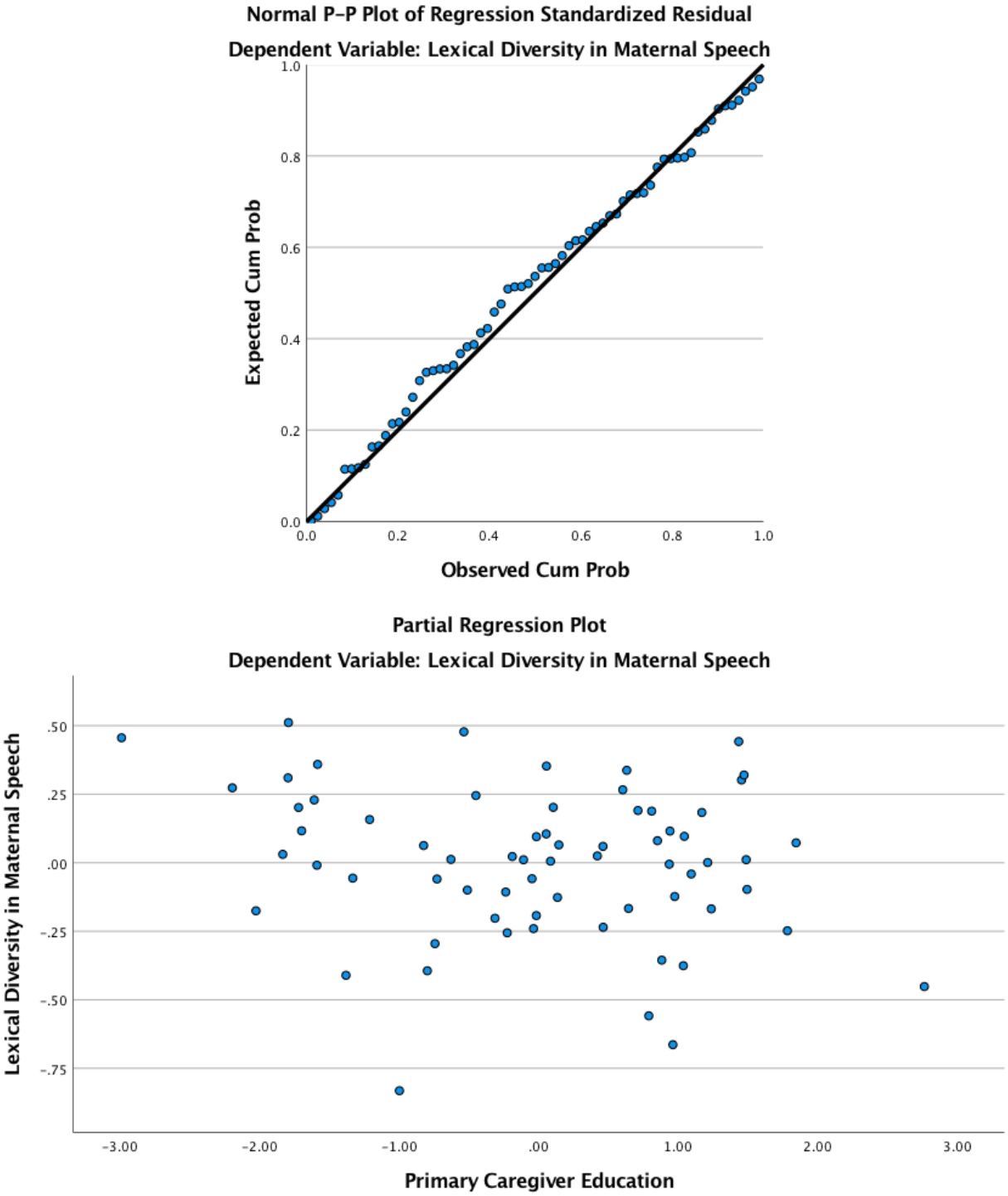
Appendix 18.2. Regression plots for home language use

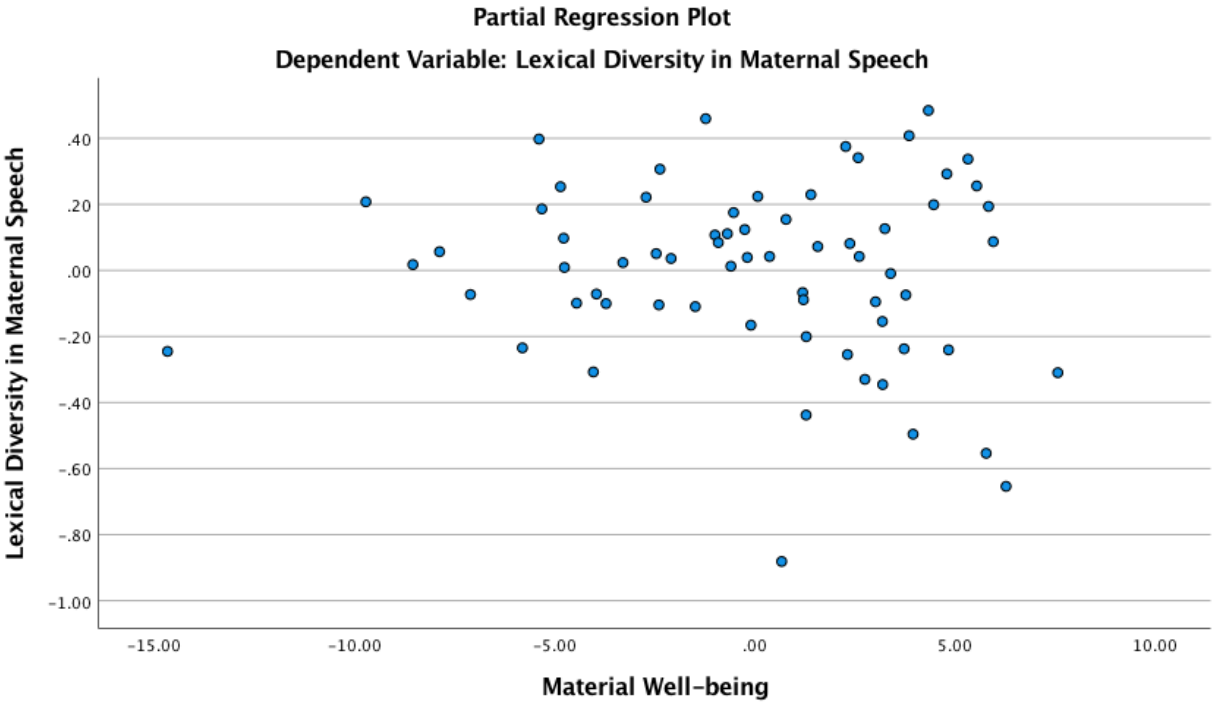



Partial Regression Plot
Dependent Variable: Home Language Use
Home Language Use
5.00
2.50
.00
-2.50
-5.00
-15.00
-10.00
-5.00
.00
5.00
10.00
Material Well-being


Partial Regression Plot
Dependent Variable: Home Language Use
Home Language Use
5.00
2.50
.00
-2.50
-5.00
-3.00
-2.00
-1.00
.00
1.00
2.00
Social Integration

Appendix 18.3. Regression plots for lexical diversity in maternal speech




Partial Regression Plot
Dependent Variable: Lexical Diversity in Maternal Speech
Lexical Diversity in Maternal Speech
.40
.20
.00
-.20
-.40
-.60
-.80
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-15.00
-10.00
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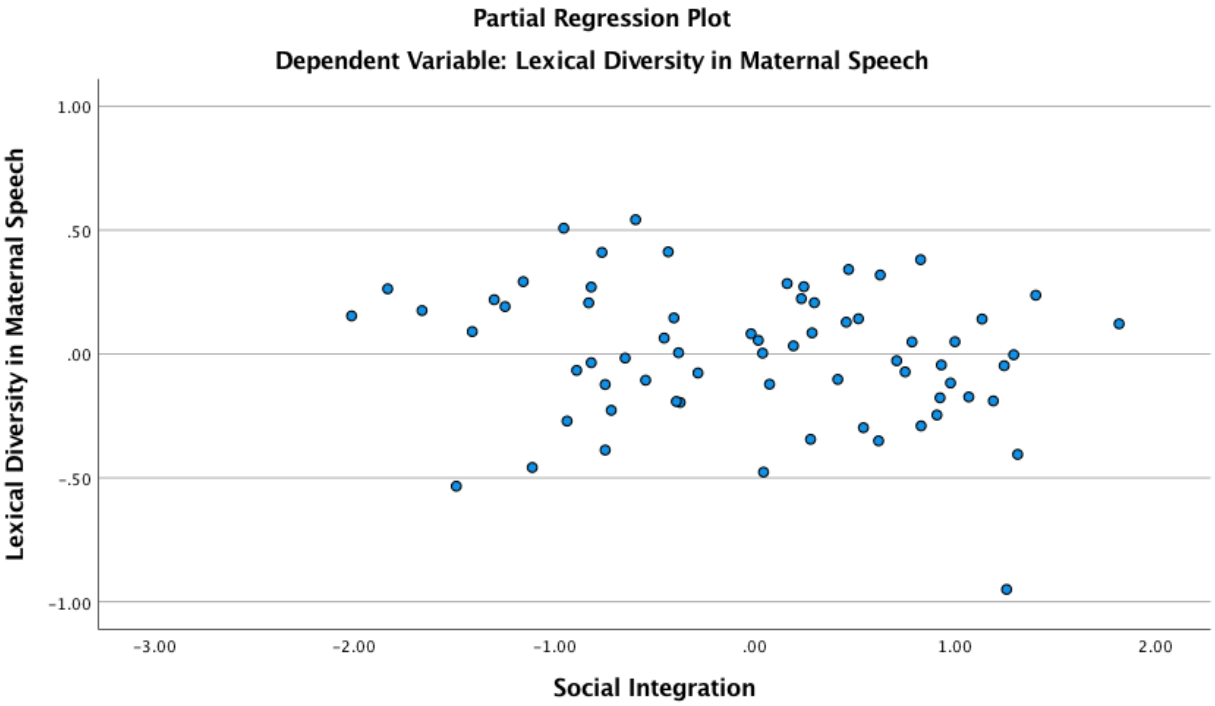
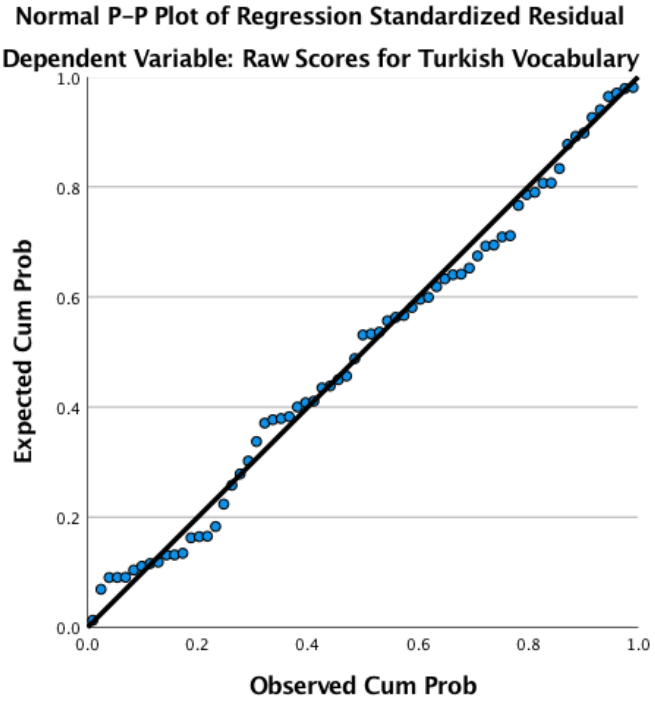
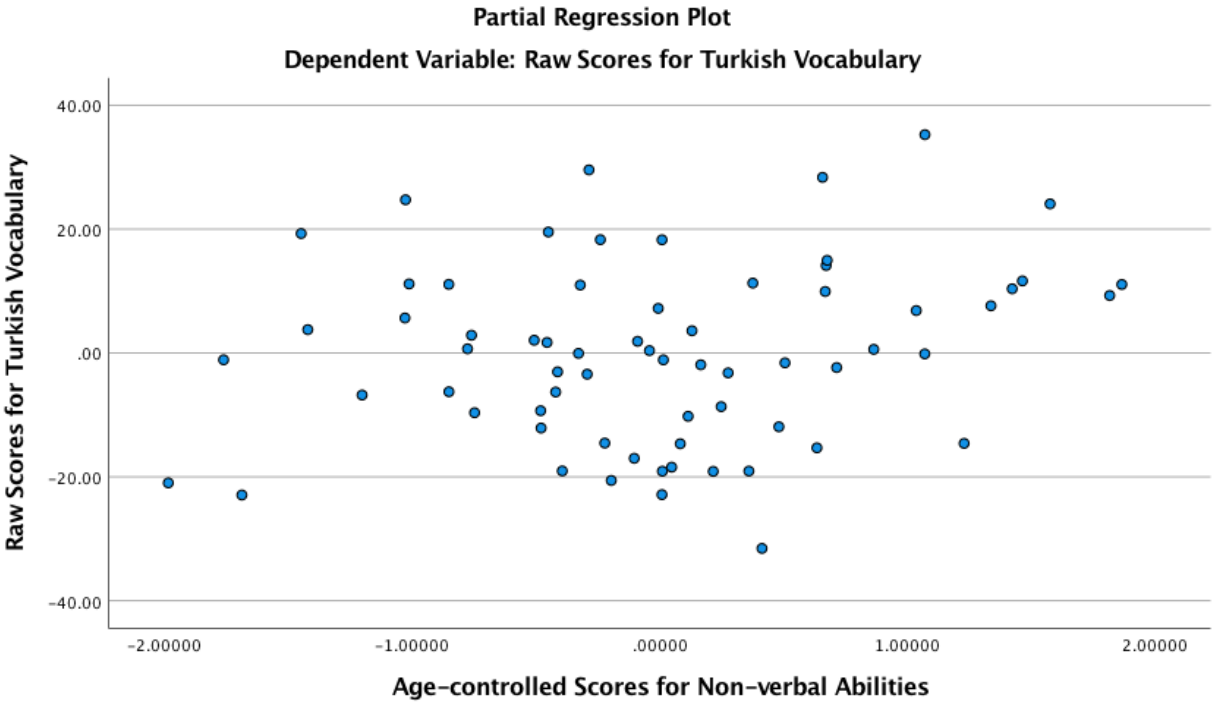
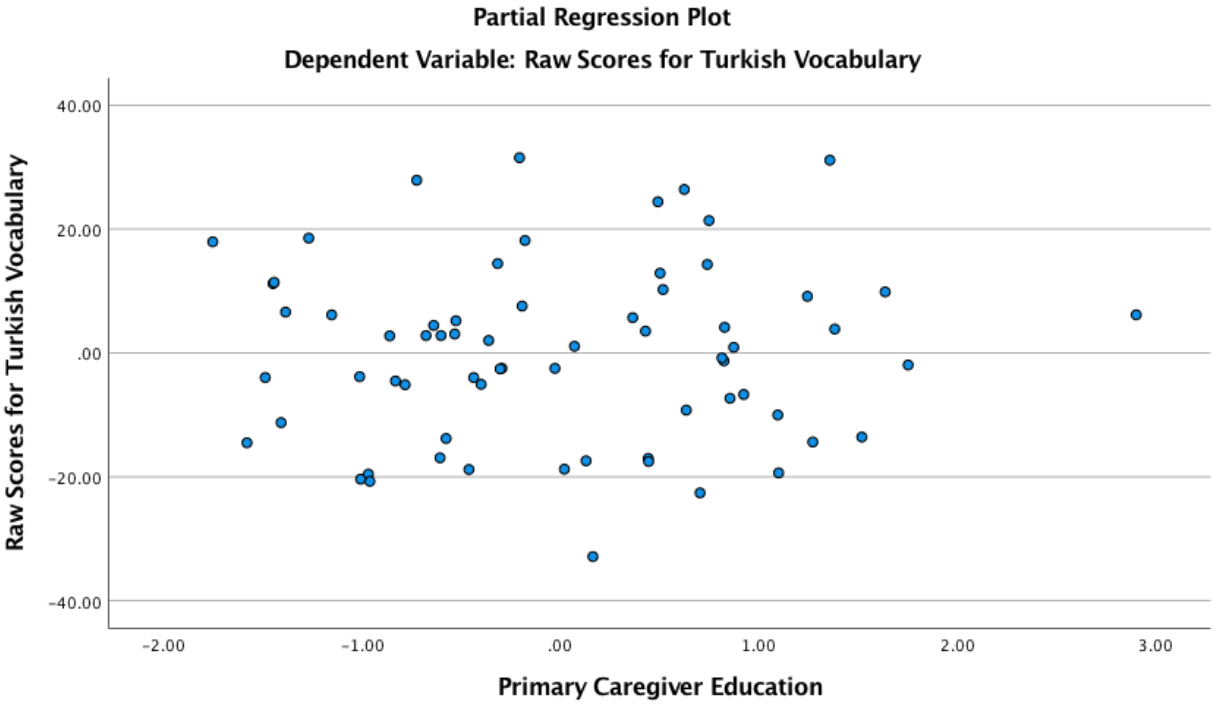
5.00
10.00
Material Well-being


Partial Regression Plot
Dependent Variable: Lexical Diversity in Maternal Speech
Lexical Diversity in Maternal Speech
1.00
.50
.00
-.50
-1.00
-3.00
-2.00
-1.00
.00
1.00
2.00
Social Integration

Appendix 18.4. Regression plots for Turkish Vocabulary



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Dependent Variable: Raw Scores for Turkish Vocabulary
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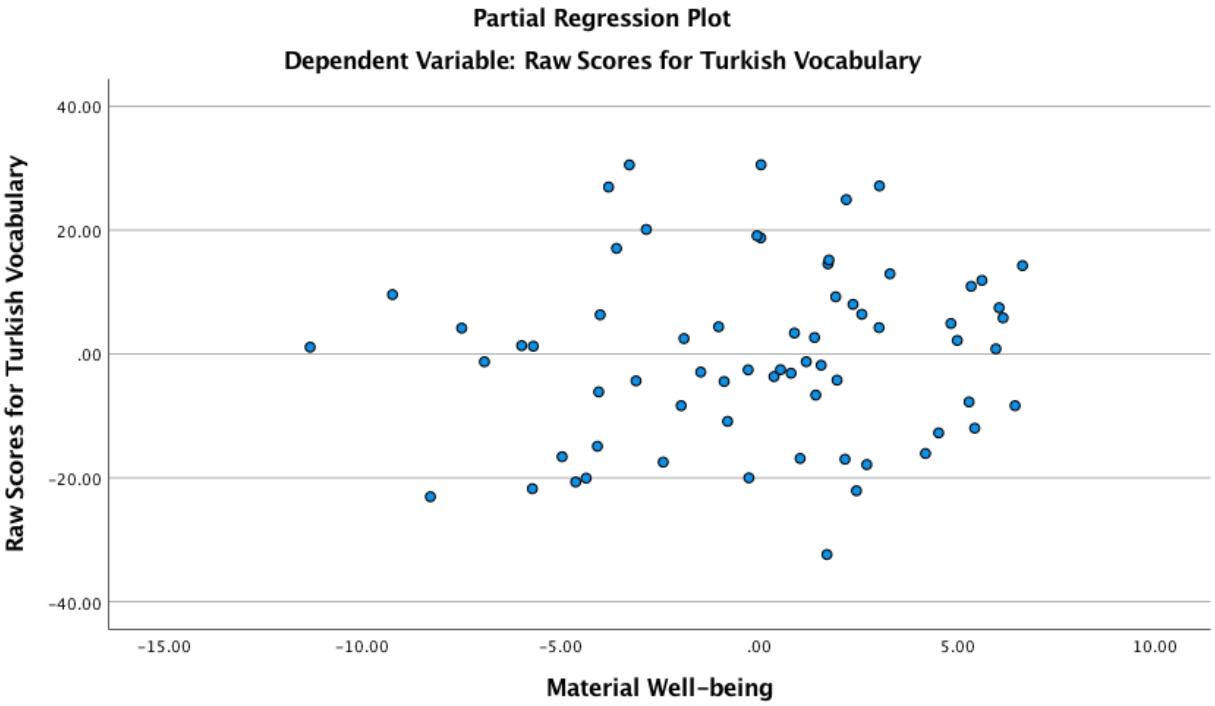
3.00
Primary Caregiver Education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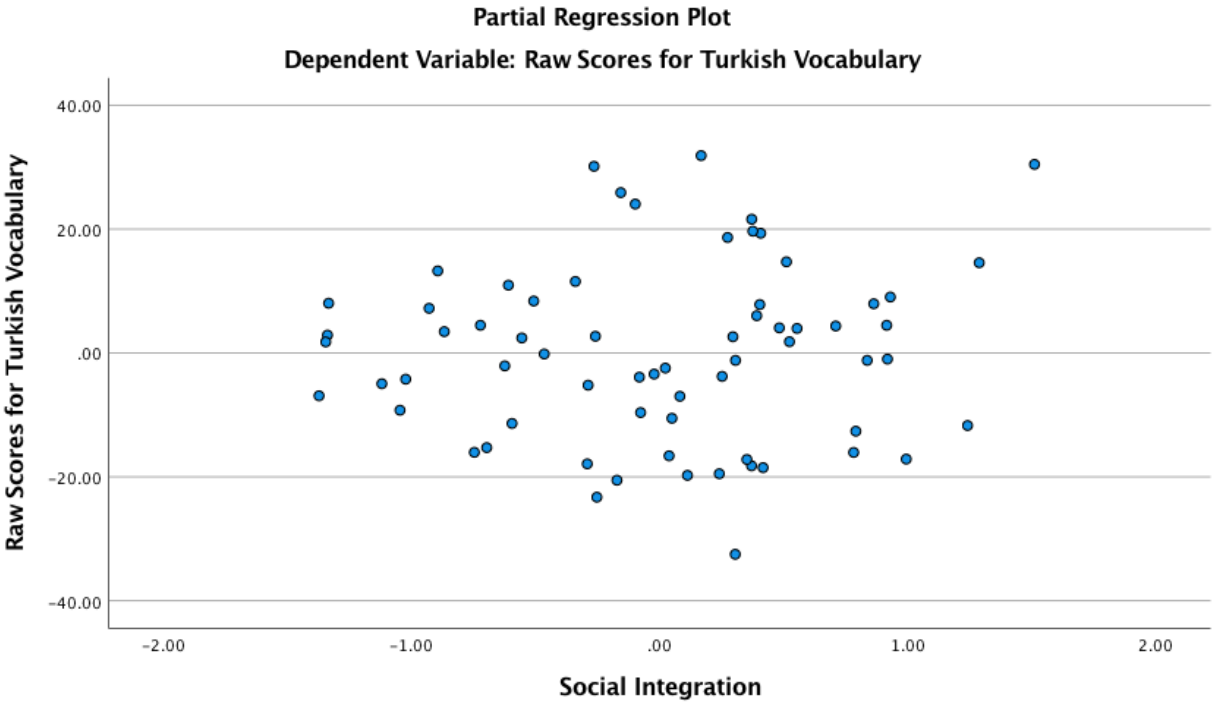
10.00
Material Well-being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Raw Scores for Turkish Vocabulary
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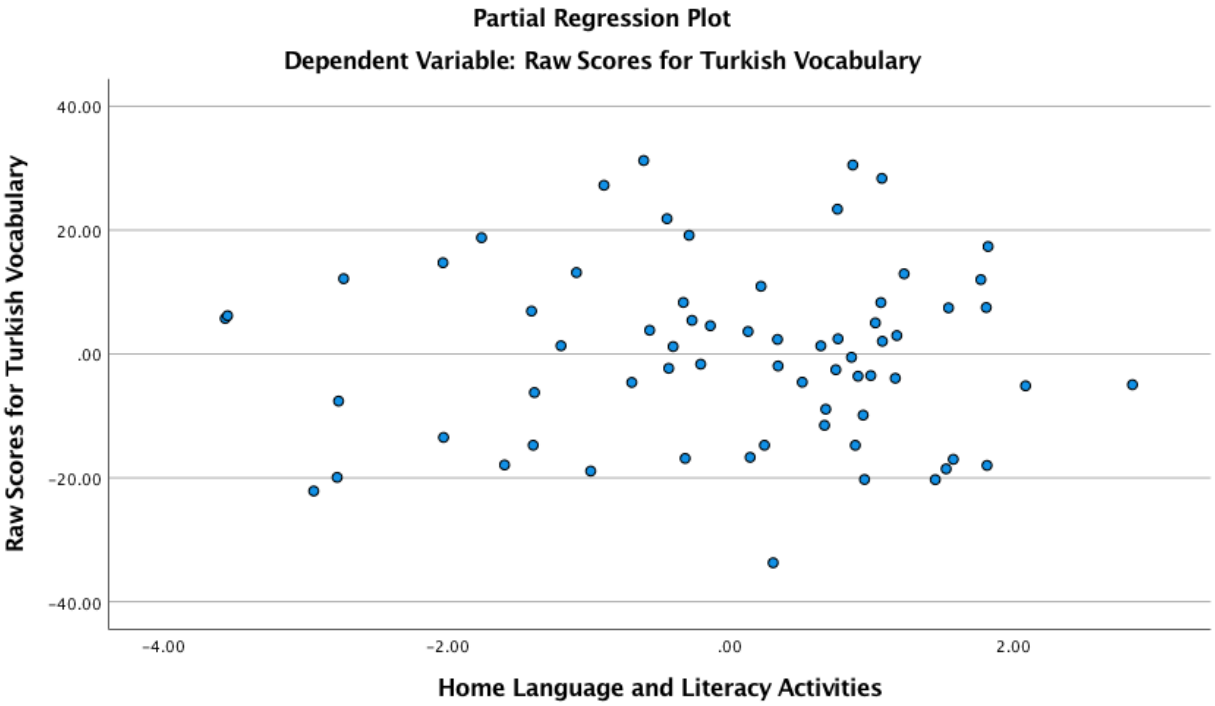
2.00
Social Integration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Dependent Variable: Raw Scores for Turkish Vocabulary
Raw Scores for Turkish Vocabulary
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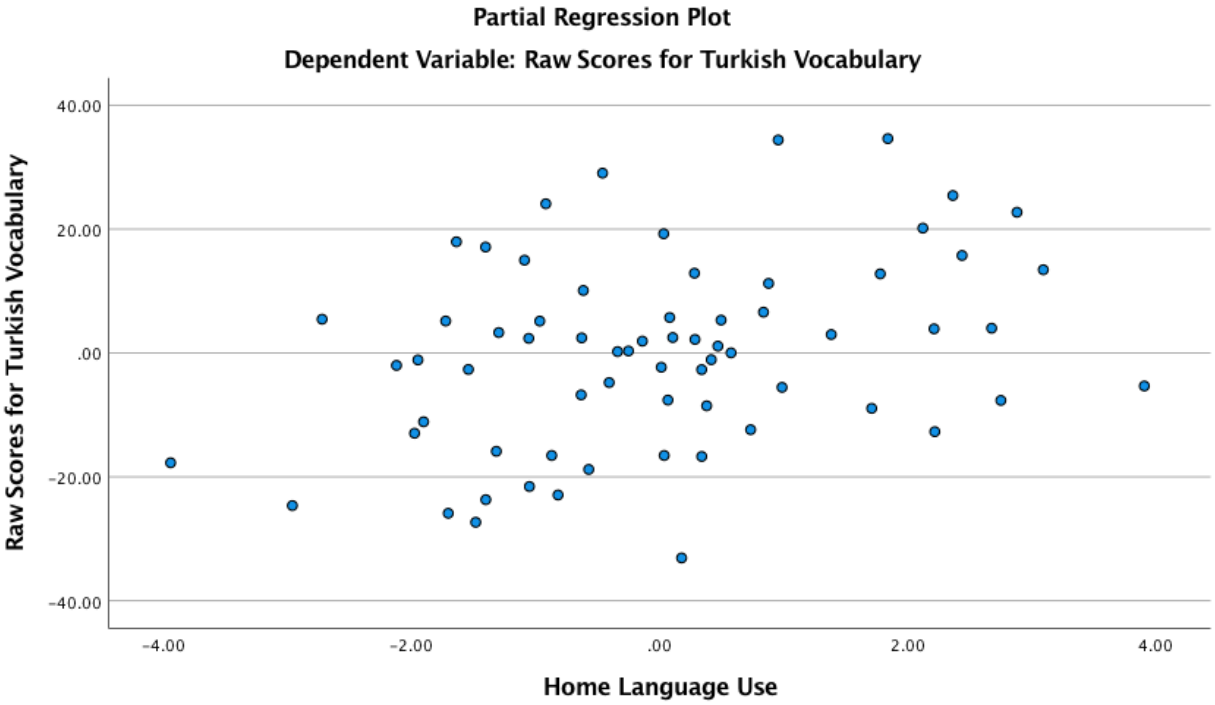
2.00
Home Language and Literacy Activities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Raw Scores for Turkish Vocabulary
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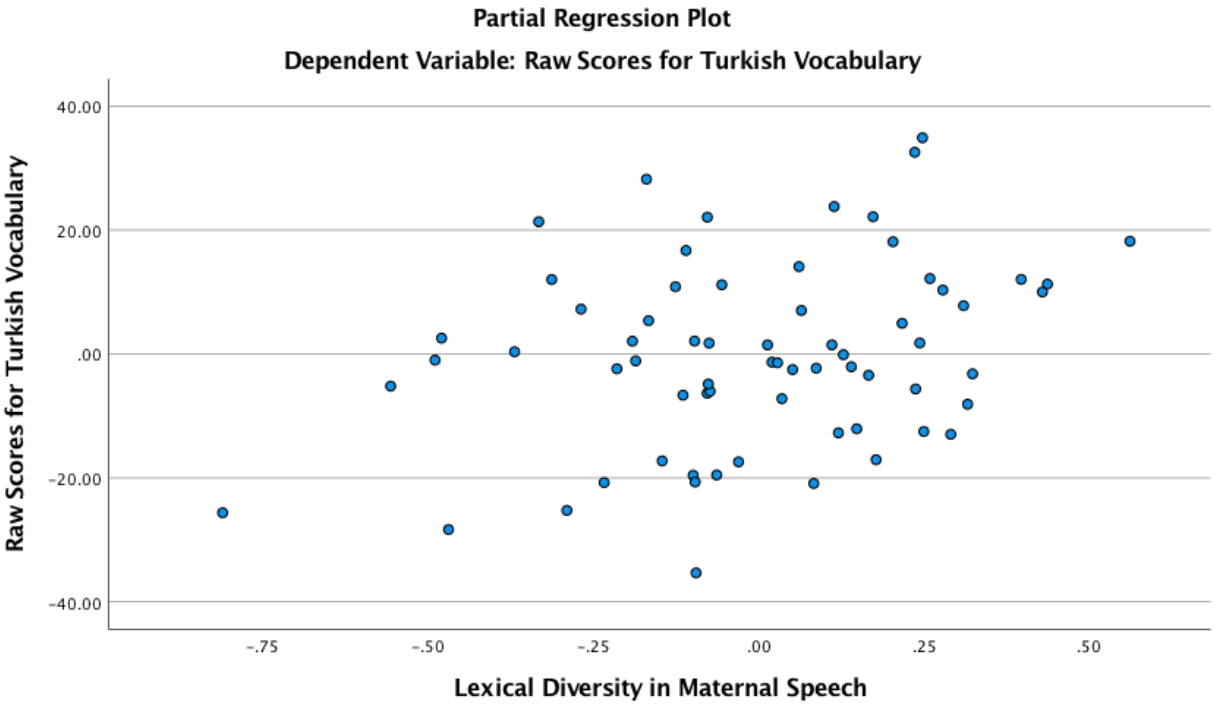
4.00
Home Language Use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Dependent Variable: Raw Scores for Turkish Vocabulary
Raw Scores for Turkish Vocabulary
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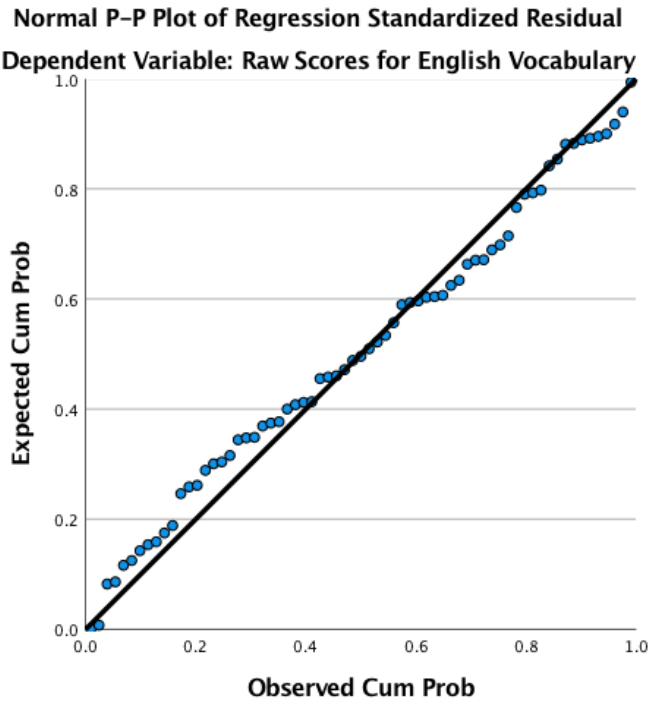
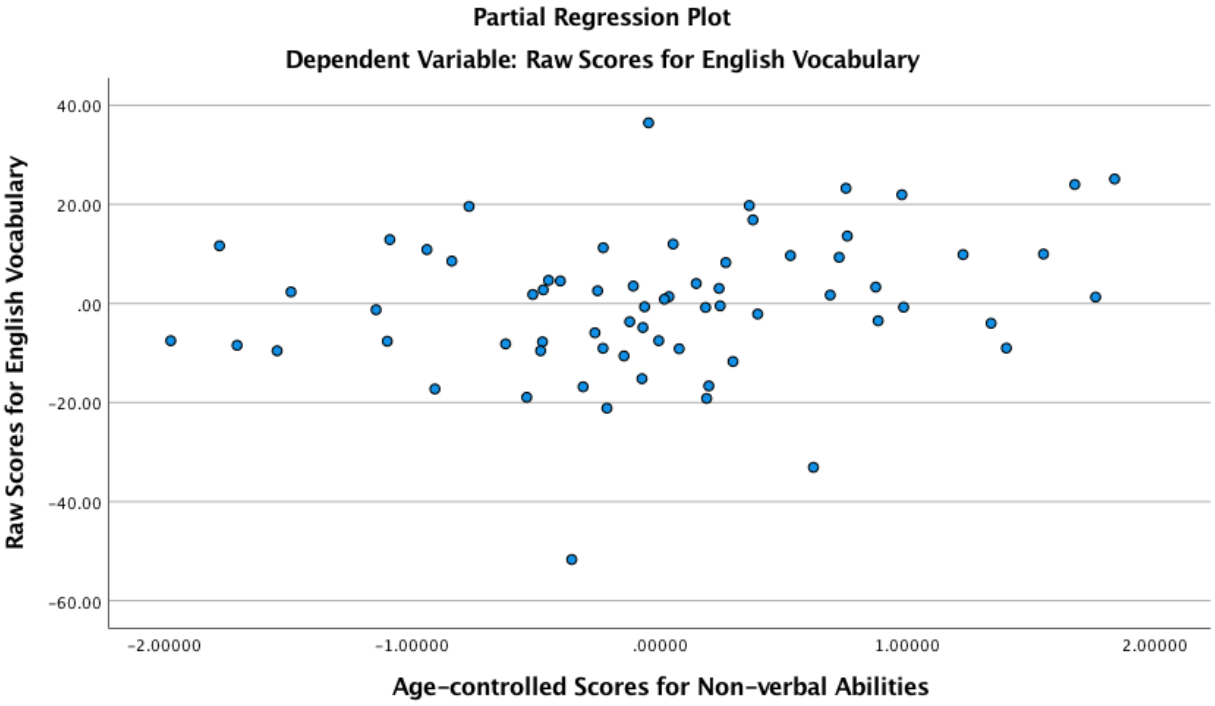
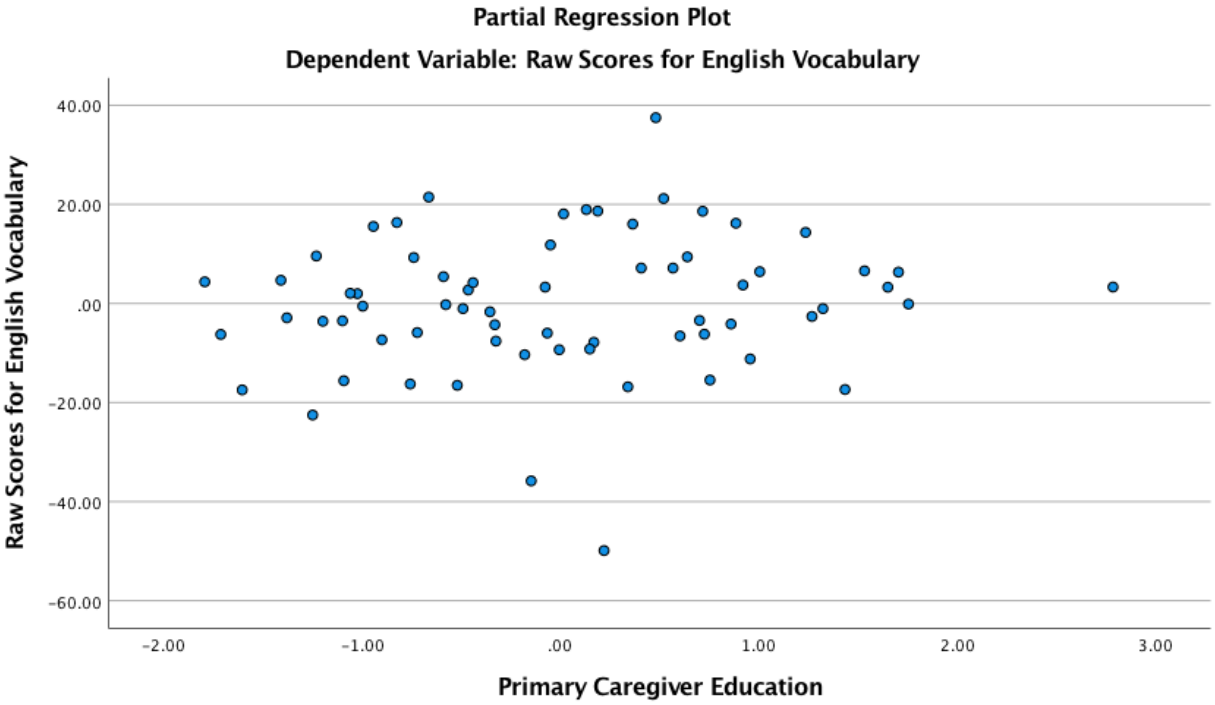
-.25
.00
.25
.50
Lexical Diversity in Maternal Speech

Appendix 18.5. Regression plots for English Vocabulary



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Raw Scores for English Vocabulary
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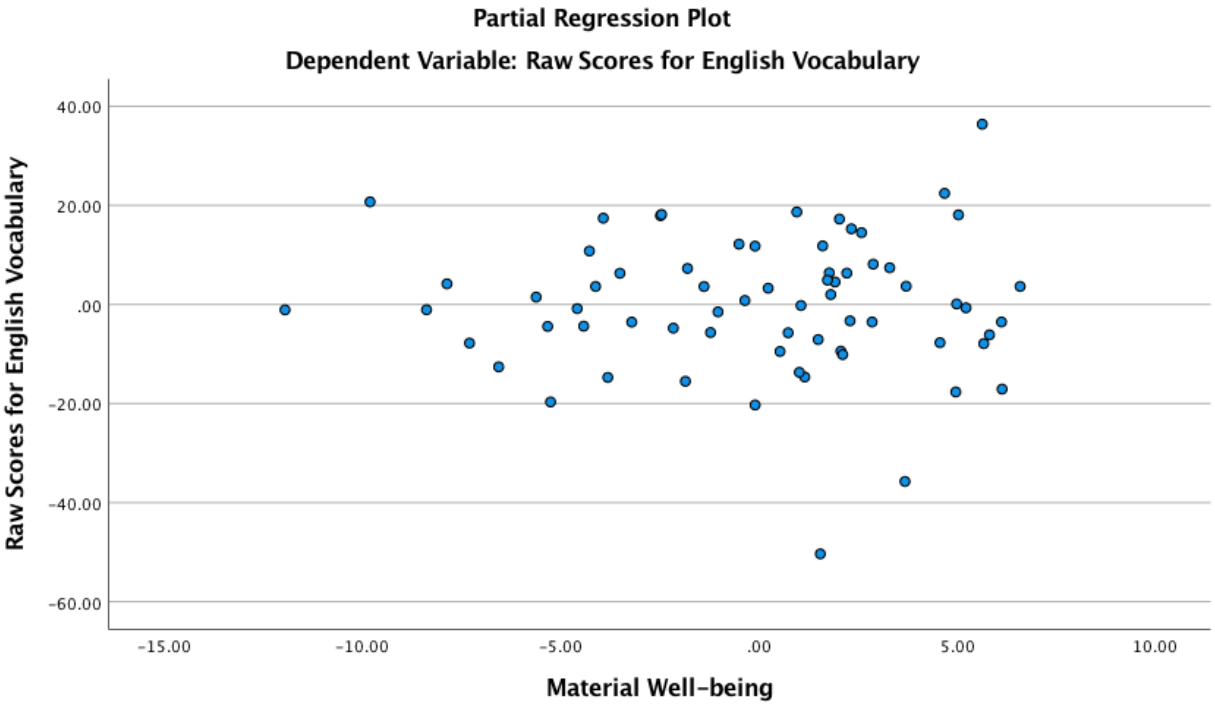
1.00
2.00
3.00
Primary Caregiver Education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Dependent Variable: Raw Scores for English Vocabulary
Raw Scores for English Vocabulary
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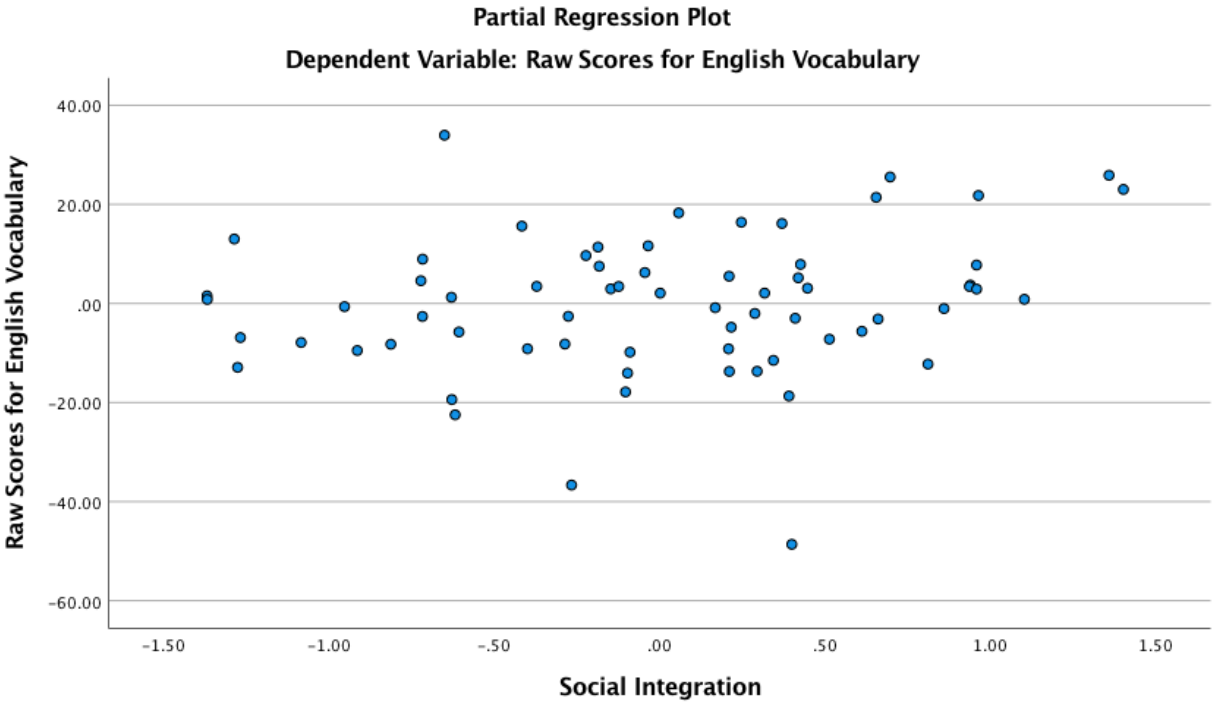
5.00
10.00
Material Well-being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Dependent Variable: Raw Scores for English Vocabulary
Raw Scores for English Vocabulary
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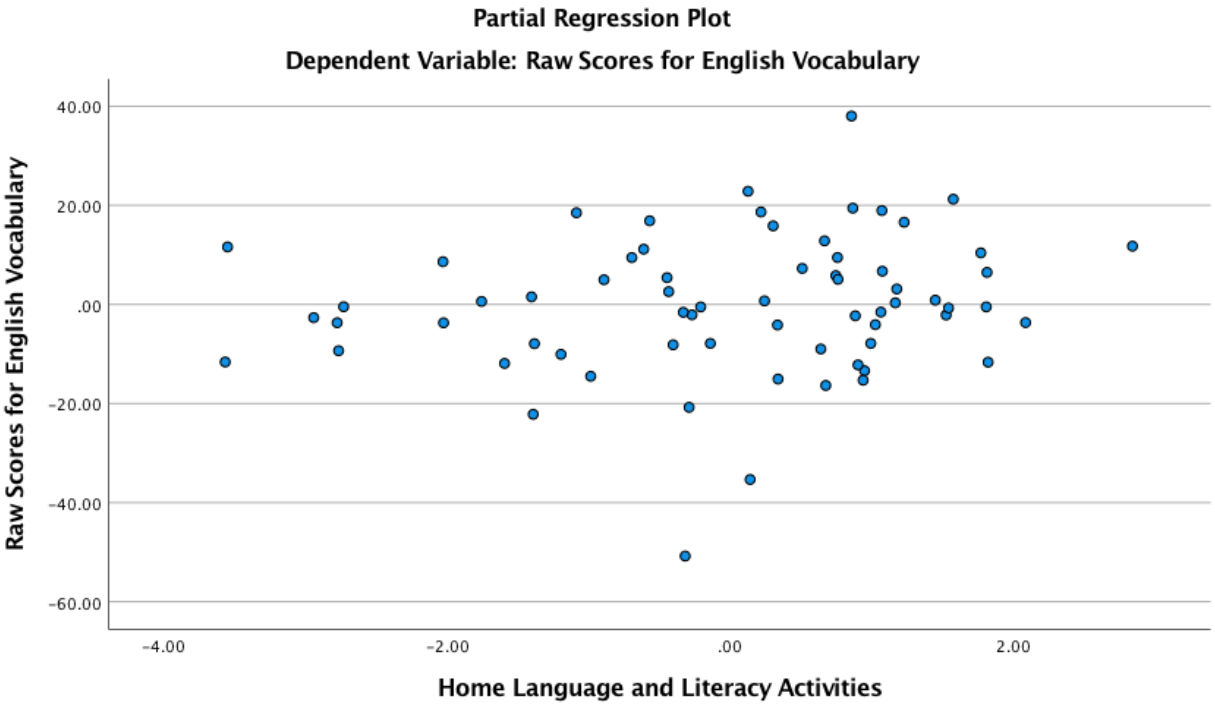
.50
1.00
1.50
Social Integration


Partial Regression Plot
Dependent Variable: Raw Scores for English Vocabulary
Raw Scores for English Vocabulary
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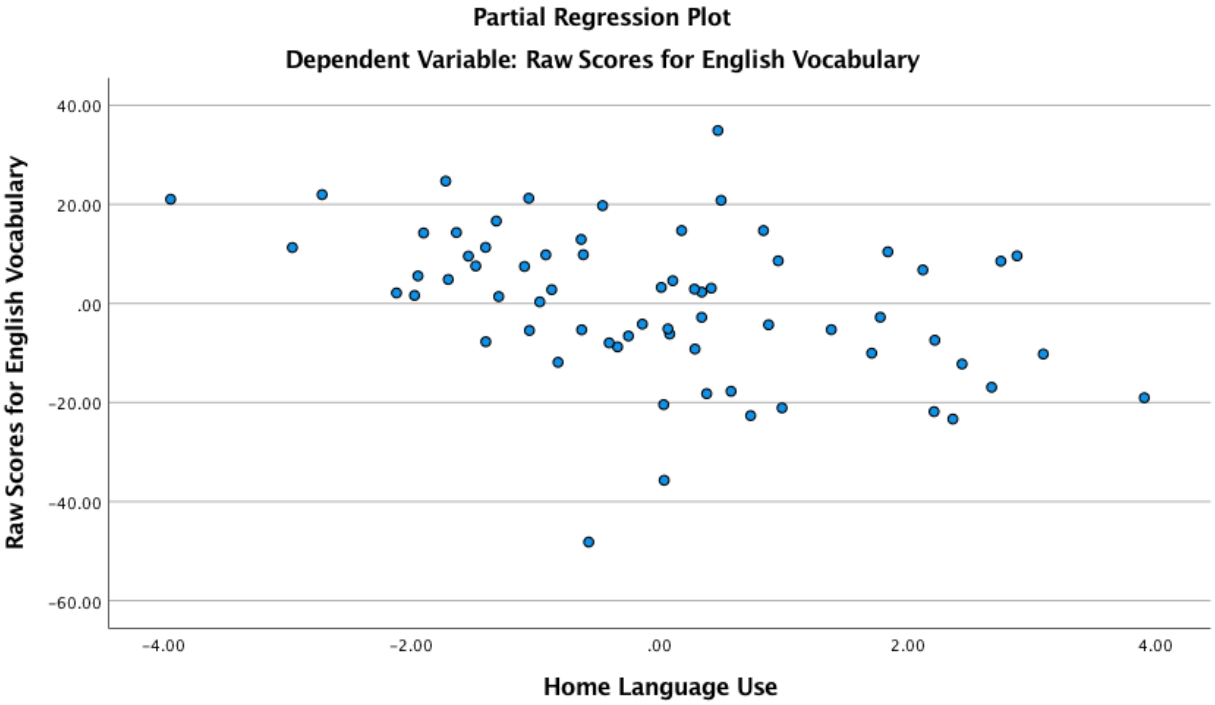
.00
2.00
Home Language and Literacy Activities


Partial Regression Plot
Dependent Variable: Raw Scores for English Vocabulary
Raw Scores for English Vocabulary
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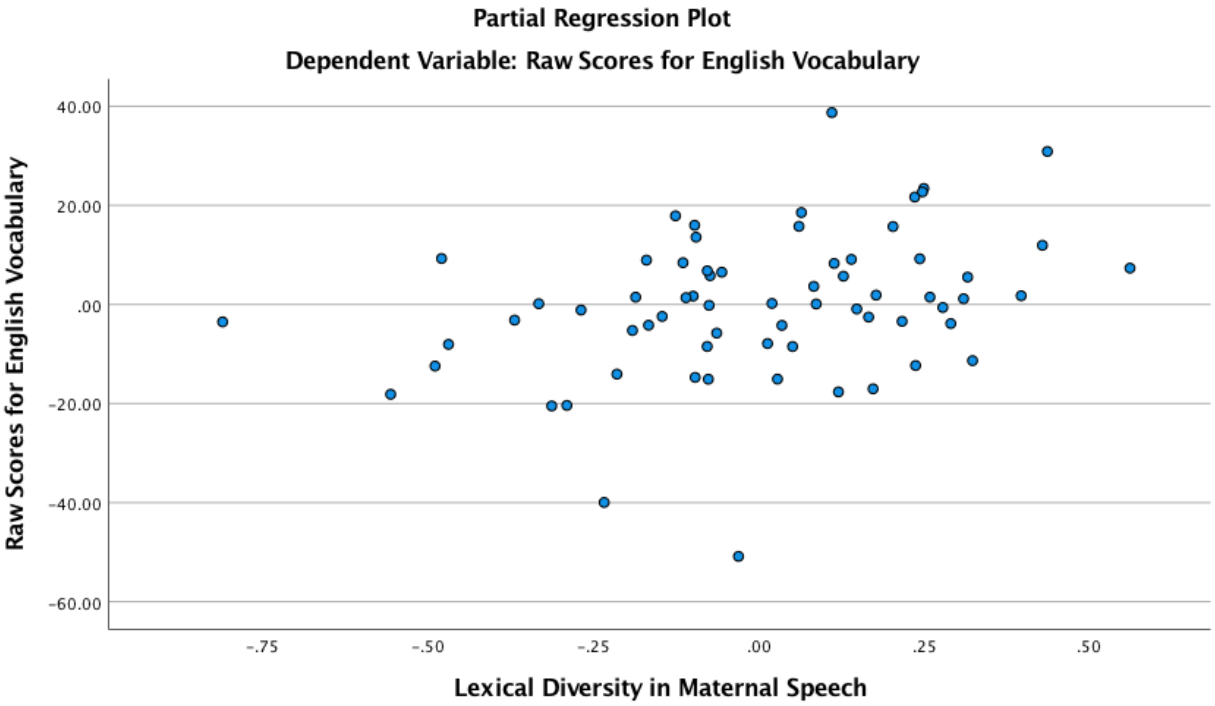
.00
2.00
4.00
Home Language Use


Partial Regression Plot
Dependent Variable: Raw Scores for English Vocabulary
Raw Scores for English Vocabulary
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-20.00
-40.00
-60.00
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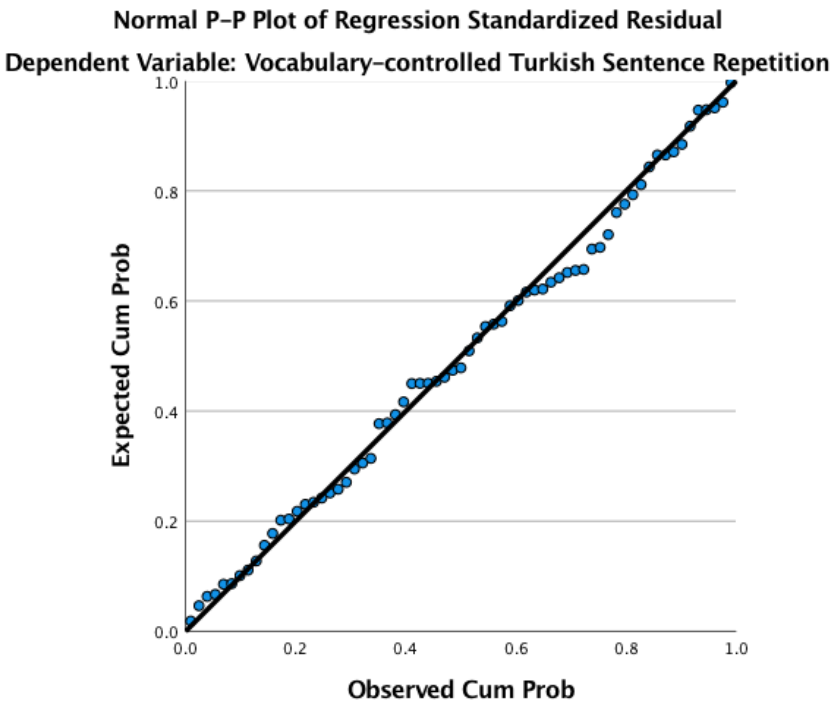
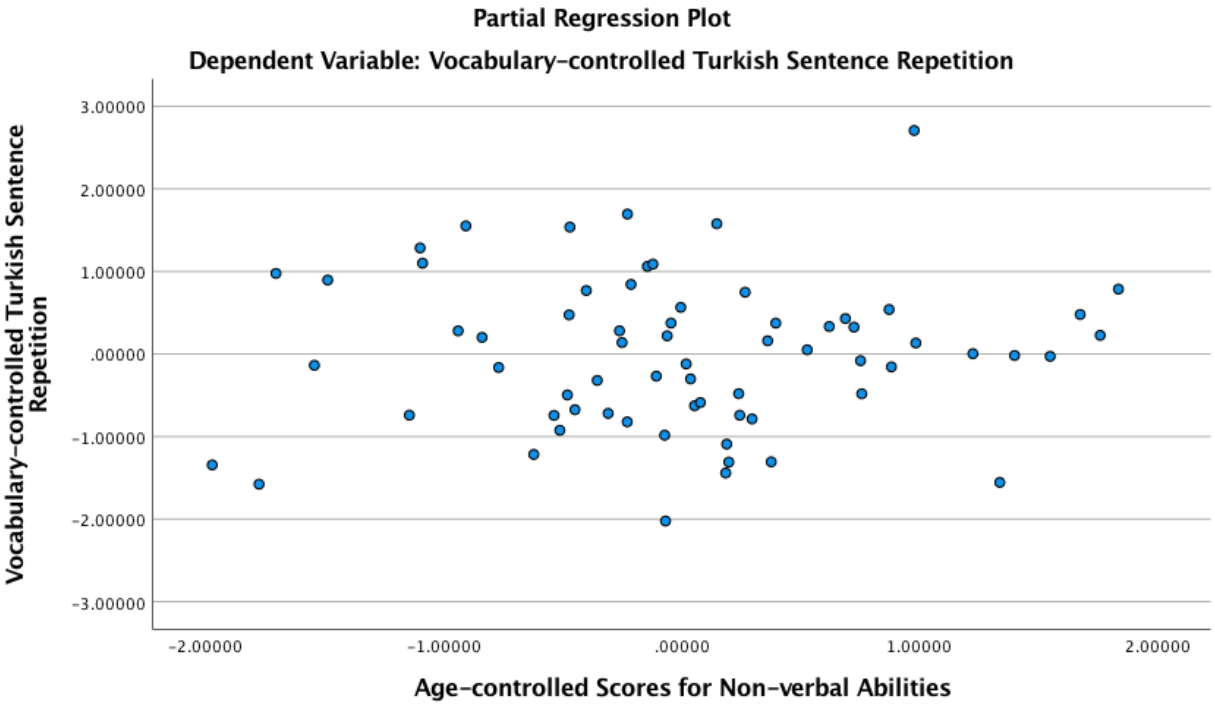
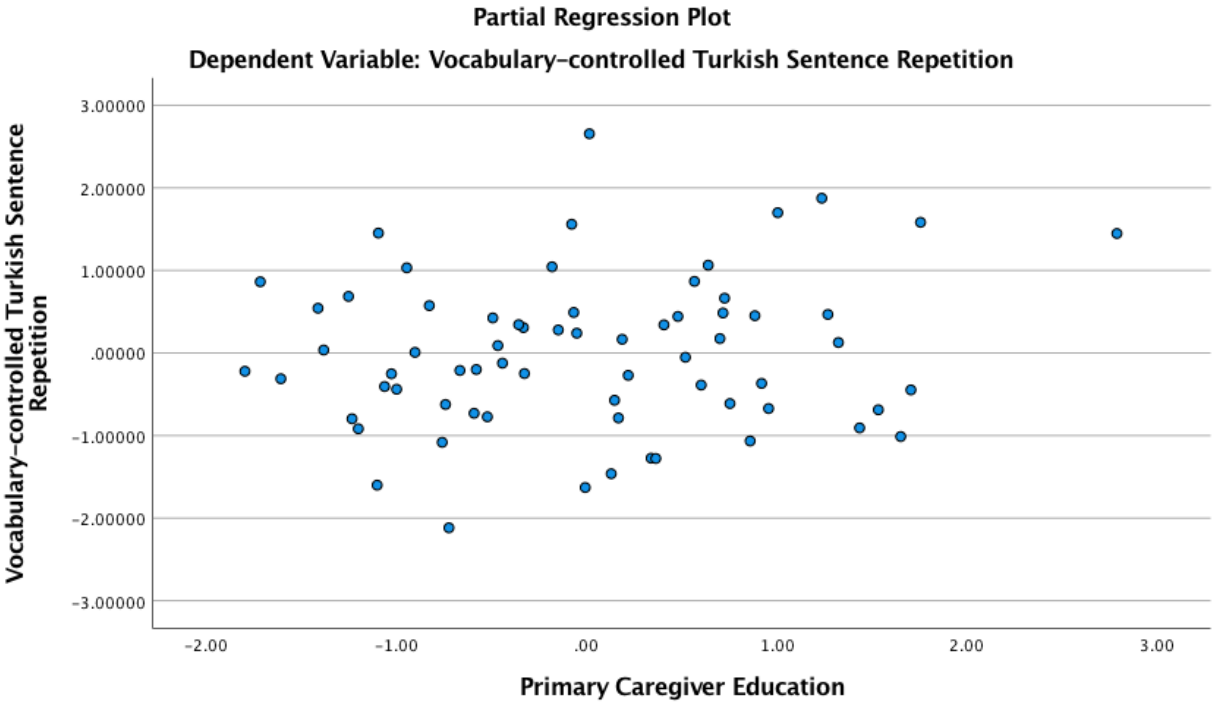
-.50
-.25
.00
.25
.50
Lexical Diversity in Maternal Speech

Appendix 18.6. Regression plots for vocabulary-controlled scores of Turkish sentence repetition



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Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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2.00000
1.00000
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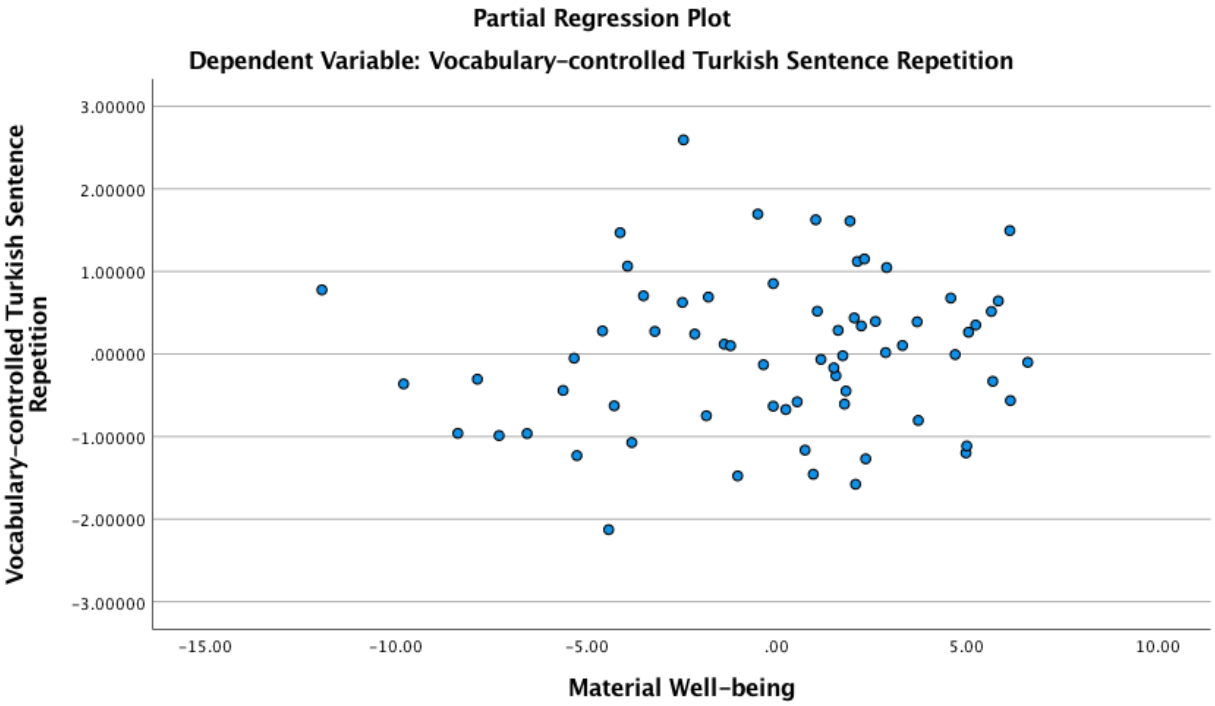
-3.00000
-2.00
-1.00
.00
1.00
2.00
3.00
Primary Caregiver Education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Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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2.00000
1.00000
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-1.00000
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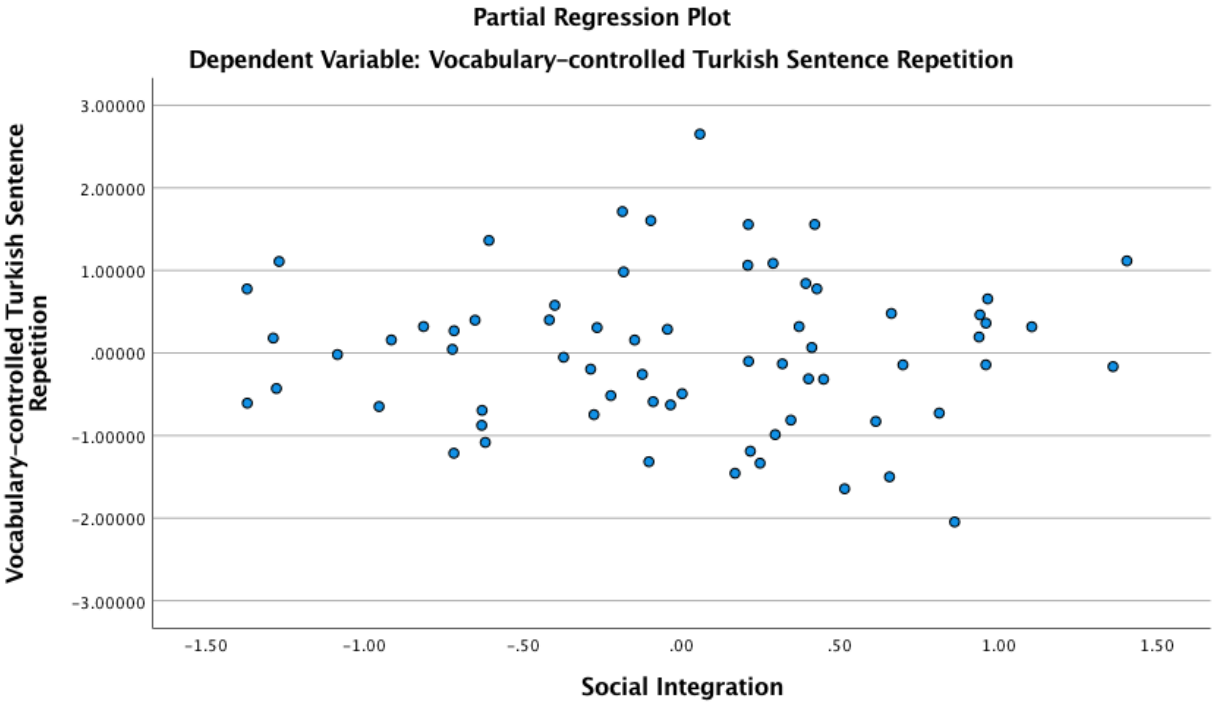
5.00
10.00
Material Well-being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Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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2.00000
1.00000
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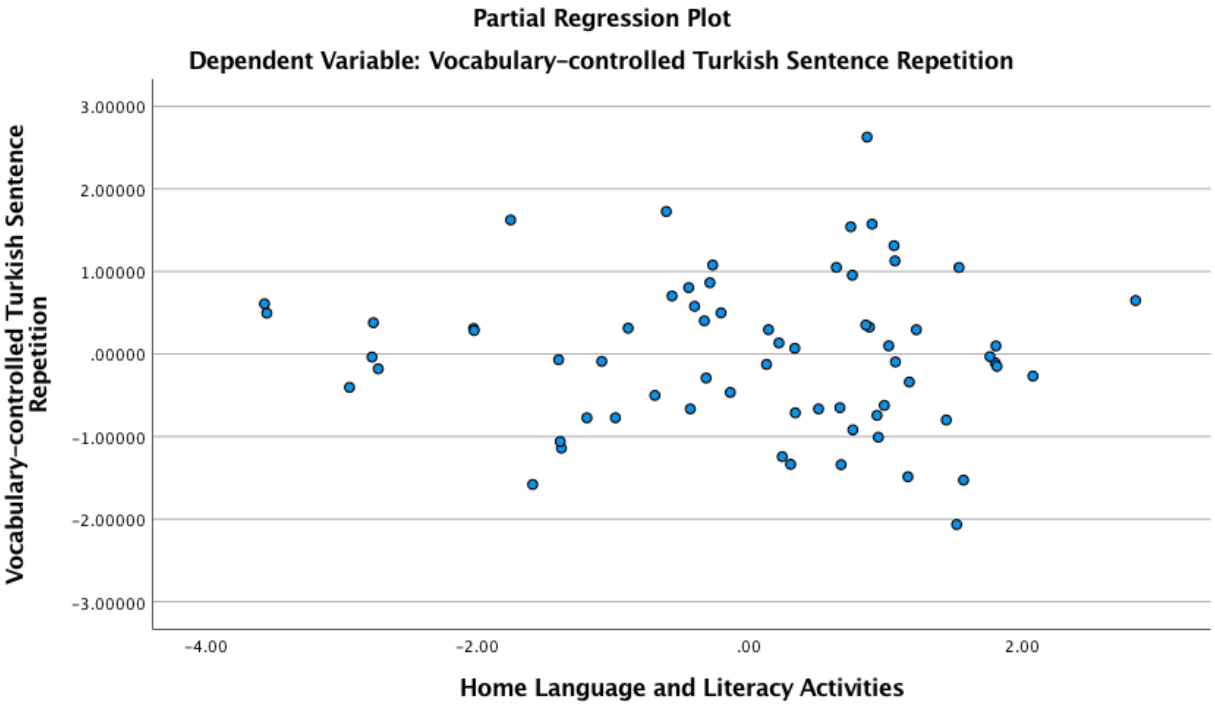
.50
1.00
1.50
Social Integration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Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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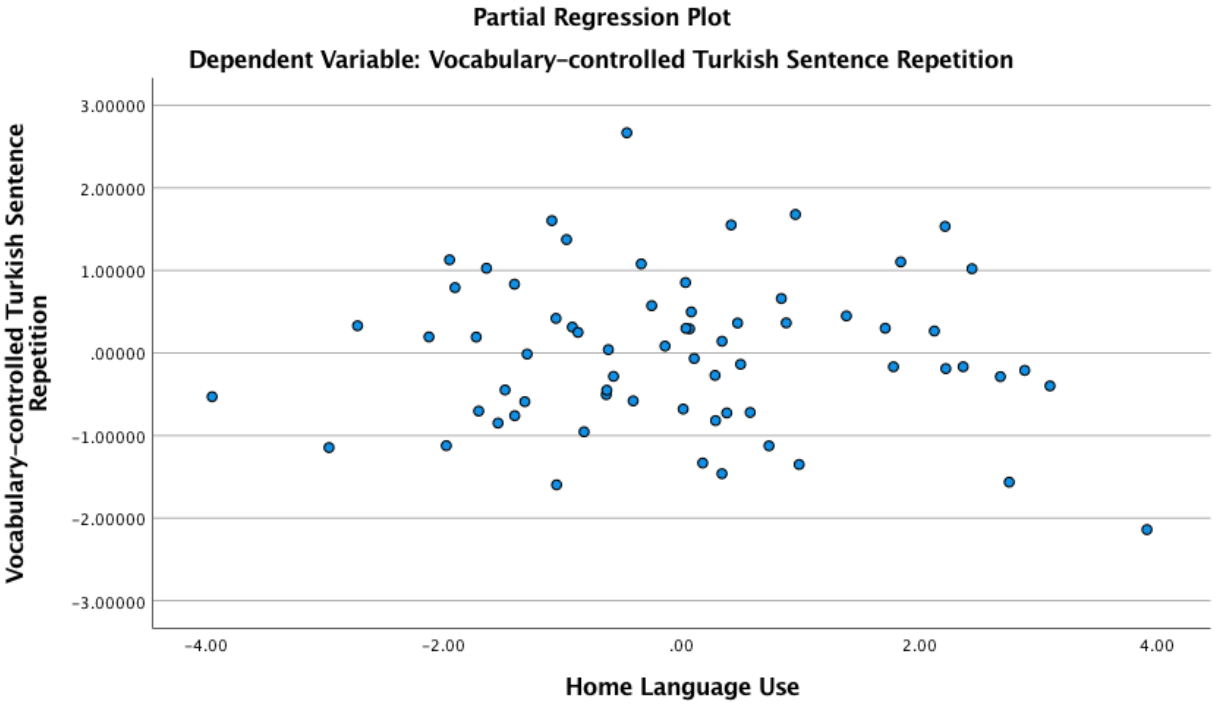
.00
2.00
Home Language and Literacy Activities


Partial Regression Plot
Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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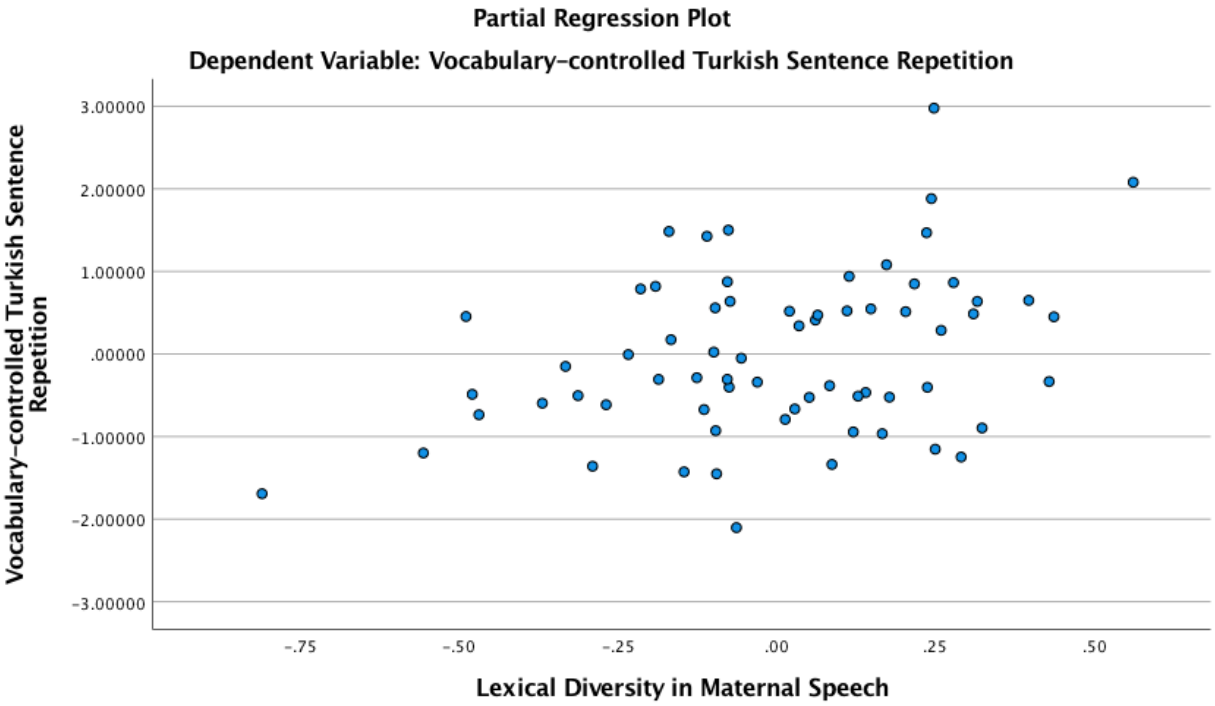
.00
2.00
4.00
Home Language Use


Partial Regression Plot
Dependent Variable: Vocabulary-controlled Turkish Sentence Repetition
Vocabulary-controlled Turkish Sentence Repetition
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1.00000
.00000
-1.00000
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-3.00000
-.75
-.50
-.25
.00
.25
.50
Lexical Diversity in Maternal Speech

APPENDIX 19. Binary logistics regression analysis predicting language and literacy activities

Appendix 19.1. High frequency language and literacy activities as the outcome

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Primary Caregiver Education	.499	.157	10.055	1	.002	1.646
	Material Well-being	-.013	.038	.111	1	.739	.987
	Social Integration	.046	.201	.051	1	.821	1.047
	Constant	-2.161	.852	6.433	1	.011	.115

a. Variable(s) entered on step 1: Primary Caregiver Education, Material Well-being, Social Integration.

Appendix 19.2. Medium frequency language and literacy activities as the outcome

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Primary Caregiver Education	.176	.140	1.579	1	.209	1.193
	Material Well-being	.029	.037	.629	1	.428	1.029
	Social Integration	.112	.193	.340	1	.560	1.119
	Constant	-1.611	.797	4.083	1	.043	.200

a. Variable(s) entered on step 1: Primary Caregiver Education, Material Well-being, Social Integration.

Appendix 19.3. Low frequency language and literacy activities as the outcome

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Primary Caregiver Education	-.720	.164	19.223	1	.000	.487
	Material Well-being	-.018	.042	.183	1	.669	.982
	Social Integration	-.163	.219	.552	1	.458	.850
	Constant	1.596	.889	3.219	1	.073	4.932

a. Variable(s) entered on step 1: Primary Caregiver Education, Material Well-being, Social Integration.