EMBODIMENT AND AGENCY IN DIGITAL READING: PRESCHOOLERS MAKING MEANING WITH LITERARY APPS



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ABSTRACT

This dissertation investigates meaning-making in children's joint-reading transactions with literary apps. The analysis of meaning-making focuses on embodiment as a central aspect of literary app's texts and their reading and on children's negotiation of agency in the act of joint-reading. Meaning-making is understood through a multimodal social semiotics perspective, which considers that meaning is realised in the dynamic transaction between reader, text and social context. Therefore, the dissertation integrates the analysis of the apps and of the children's responses to capture the dynamics of meaning-making in such transactions. Case studies were conducted with six families, who read the apps *The Monster at the End of This Book* (Stone & Smollin, 2011) and *Little Red Riding Hood* (Nosy Crow, 2013) in an English public library. The central method of data collection involved video-recorded observations of parent-child joint-reading events, complemented by graphic elicitation, informal interviews and a questionnaire. The video data was analysed through multimodal methods.

The findings indicate that the participant readers used their bodies not only as a material point of contact and activation of the interactive features but also as a resource for meaning-making in their transactions with the apps. The reader's body was essential in their engagement with the material and interactive affordances of the apps, in reader's expressions of their responses, and in the sharing of the reading experience with the parents. The body of the reader, through spontaneous and interactive gestures, is a mode of communication in the multimodal ecologies of both the text and the reader's responses. Furthermore, the child readers constantly negotiated their agency within the constraints posed by the text, which include the narrative itself and its interactive features, and those posed by the joint-reading situation. The bodies of the readers played an essential role in this dual negotiation of agency. Children's agency was scripted, that is, the readers exerted their agency within the limitations of a script. The script, however, allowed readers to improvise, and their performances also involved resistance to the script through playful subversion. In the joint-reading event, children's agency was foregrounded, positioning the children as protagonist readers, who performed most of the interactions and lived the aesthetic experience of the text fully, to the expense of their

parents, who mostly participated as supporting readers, transferring their agency to the children through scaffolding.

Key-words: meaning-making; literary apps; preschool children; embodiment; agency; digital reading; case study; multimodal social semiotics

DECLARATION

This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except as specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as specified in the text.

I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University of similar institution except as specified in the text.

It does not exceed the word limit approved by the Degree Committee.



Cambridge, UK

To my parents Eron and Carlos

To Renato

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This thesis has one author, but an incredible number of lives were mobilised for this research to happen and be materialised in this monograph.

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1 INTRODUCTION

Literary apps are semiotic artefacts and a new form of digital fiction in which children's literature and digital media converge in a hybrid multimodal, multimedia, interactive text. While they tend to draw significantly on the picturebook tradition as many, if not most, literary apps are adaptations of picturebooks, they also extrapolate the picturebook form considerably due to their different materiality (Henkel, 2016), and their nature as coded, interactive and multimedia texts (Prieto, 2015). As is often the case, in the process of 'remediation' (Bolter & Grusin, 1999), several features and characteristics of the picturebook might remain in literary apps. Some characteristics that often remain are the 'drama of turning the page' (Bader, 1976) and the interdependence of words and pictures, while new features are added, such as movement and animations, sound effects and music, read aloud options, hypertextual structures as well as various forms of interactivity and participation.

This new and complex textual configuration consequently affects the experience of reading significantly, involving new processes of meaning-making in the transactions between readers and these interactive stories. One central aspect is the alternative materiality of touchscreen devices, whose possibilities of interaction require the reader to engage their body frequently in the process of reading. Such engagement can happen through interactions with the touchscreen or alternative forms of interaction, such as movement activation (like shaking or tilting the device) or voice/sound activation (like blowing into or talking to the device). The body of the reader is thus required in new ways in this type of reading, and it gains new functions and signification in the process of meaning-making. The interactive possibilities of literary apps also alter the dynamics between reader and

text and the role of the reader in the process of reading, providing new possibilities for them to exert their agency.

This thesis investigates meaning-making in children's transactions with literary apps by analysing the iterative process of meaning-making that happens between the meanings suggested by the literary apps *The Monster at the End of This Book* (Stone & Smollin, 2011) and *Little Red Riding Hood* (Nosy Crow, 2013) and the responses of 4-year-olds in joint-reading with a parent in a public library. The analysis of this dynamic process focuses on the body as a material point of meaning transaction and negotiation of agency between reader, text and co-reader.

In this chapter, the foundations of the research are introduced. First, the personal motivations that led me to embark on this research journey are presented. Next, literary apps and their reading by young children are proposed as a topic worthy of investigation because of their significance as children's cultural and aesthetic semiotic artefacts. The chapter continues through the discussion of issues of terminology, leading to the proposition the term 'literary app' as a name that acknowledges that these texts make poetic uses of the technological and semiotic possibilities of the app format to convey a literary text. In the following section, some definitions of literary apps present in the literature will be debated. This discussion will inform the definition of literary apps which guides this research. The final key construct to be discussed regards the activity that the meaning-maker realises as they engage with literary apps. Reading (and reader) is proposed as a term that adequately acknowledges the active role of the individual in meaning-making. To position the literary app and children's embodied reading of children's literature in a historical perspective, a brief consideration of interactive books and children's material engagement with children's literature since the 17th Century is presented. The chapter concludes with an overview of the thesis.

1.1 Personal Motivation

After working as an editor and designer of textbooks for a multinational publishing house in Brazil, I faced the challenge of creating their first digital books. In the process of learning (mostly by trial and error) how to create the "book of the future," that is, how to transform a text constituted of words and pictures and typography on paper into a digital multimedia reading experience, I was forced to think about the nature of this new form of text and how those changes might alter the process of reading and creating

meaning from a book. I had never spent much time thinking about how we make sense of print books. For me, it was "natural," something I have always "known."

In 2012, I decided to return to university and explore systematically the questions about the nature of digital books that had been troubling me in my professional work. In my MA in Children's Literature at the University of British Columbia, Canada, I explored how "playfulness" manifests in literary apps (Frederico, 2014). The detailed analysis of several literary apps in this MA thesis allowed me to start to form an understanding of the meaning potential of these multimodal texts, but I felt a fundamental element was missing in my research: the reader. How could I aim to understand meaning-making without considering how real child readers engage with these texts, especially since there is an important gap between my experience as an adult who grew up in the 1980s and that of a preschooler born in the 2010s? These reasons have led my research in the direction of literary apps, and more specifically, to conduct empirical research with children to understand their meaning-making processes when reading literary apps.

1.2 Rationale

Literary apps emerged with the release of Apple's tablet computer, the iPad, in 2010. In just eight years and despite the media discourse being systematically alarmist about the possible "dangers" of mobile technology for children (Hamer, 2017), these devices now pervade the life of a significant number of children from a very early age. OfCom's UK national survey (2017) reported a sharp increase in access, ownership and use of tablets by 3 and 4-year-olds since 2010: 86% of 3 and 4-year-olds have access to a tablet computer at home, with 65% making actual use of this device (p. 37); 26% of 4-year-olds have their *own* tablet (p. 45). Tablets are young children's preferred electronic device because they are multifunctional computers which allow children to engage in a variety of activities, while these features are available in a light, portable device with a (comparatively) big and easy to use touchscreen (Chaudron, 2015). The importance that tablet computers are increasingly gaining as the main electronic device for children is so great that Apple's 2017 advertisement for the release of the iPad Pro followed the day of a middle-grade child using the tablet in various daily activities, including video-chatting with friends, writing, taking photos, drawing, and of course, reading (in this case, comics) (Apple, 2017).

It is not surprising, therefore, that the production of apps for children is huge. Although the numbers are generally not made public by big companies like Apple and Google, a

look at the list of top downloaded apps in the book category of the Apple AppStore, according to the website App Annie ("App Annie," n.d.), reveals that in many countries most apps in the top five paid books category are targeted at children. This predominance of apps for children in this category also happens in the UK, as seen in Figure 1.1. As a result, literary apps have been recognised as an important literary, entertainment, media and cultural artefact for children by multiple awards in different parts of the world. Some examples are the Bologna Ragazzi Award from the Bologna Book Fair (Italy); the Digital Book Award from the UK Literacy Association; the Kapi Award from the Children's Technology Review (USA); the Digital Ehon Award from the Tokyo Digital Children's Book Fair (Japan); and the Jabuti Award for Best Digital Children's Publication (Brazil).

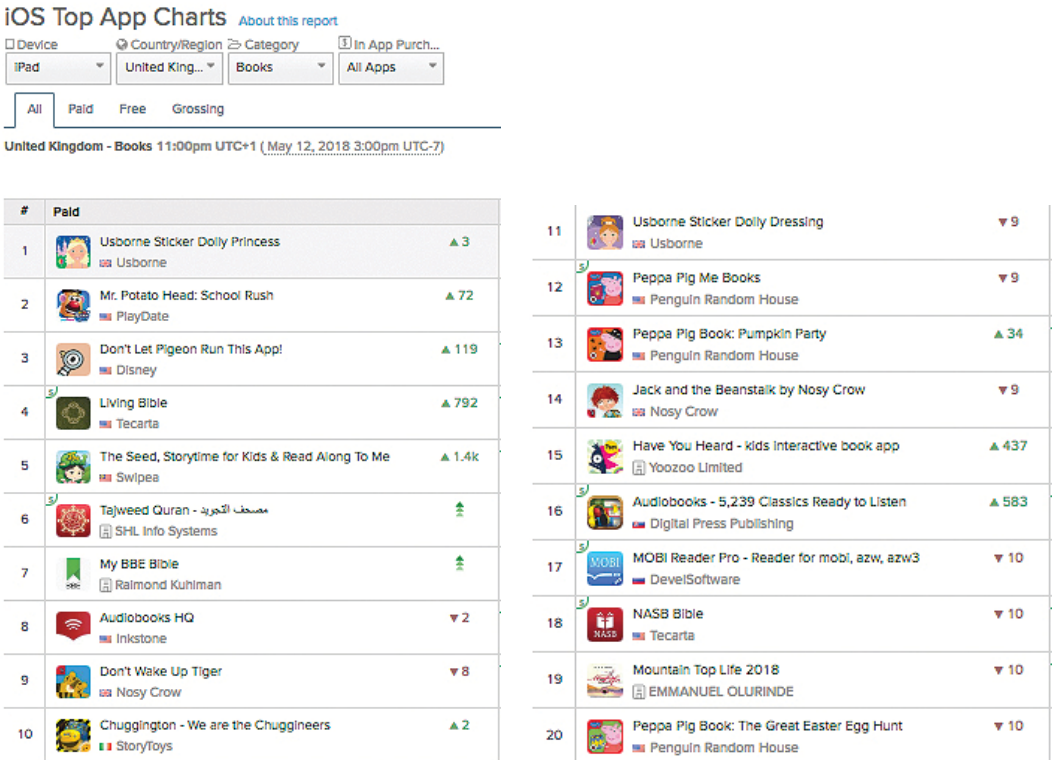


Figure 1.1: iOS top app chart in the UK, book category.
Chart of the most downloaded paid apps in the UK in January 29th, 2018, in the books category of the iOS AppStore. Twelve out of the twenty bestselling apps are aimed at children. Screenshot from the website App Annie, https://www.appannie.com/ © 2018 by App Annie. Reprinted under the fair dealing regulation.

Furthermore, the research evidence strongly indicates the personal and academic benefits of reading for pleasure (Clark & Rumbold, 2006; Cremin, Mottram, Collins, Powell, & Safford, 2014). The scholarship also strongly advocates the importance of reading picturebooks to children's cognitive and emotional development (Bettina Kümmerling-Meibauer & Meibauer, 2013; Nikolajeva, 2014), aesthetic development (B. Kiefer, 1988,

1995), literary competence (Sipe, 2008), and language and literacy development (Meek, 1982, 1988).

Considering the level of pervasiveness of technology in young children's lives, in addition to the cultural significance of literary apps targeting young readers, and the importance of reading in the early years, there is a strong demand for more research that aims to understand digital reading and meaning-making in children's transactions with literary apps.

1.1 Literary apps: terminology

As an emergent phenomenon, the terminology in this field is still under development, and a variety of terms have been used to refer to digital literature for children available as apps.

'App' is the abbreviation of 'application,' or a "piece of software designed and written to fulfil a particular purpose of the user" (Application, 2010), so they can be programmed to create narratives that explore any feature of digital media. 'E-books' are electronic books that *require an application* to be transformed from code into a readable text including words, pictures and sounds. The term e-book is commonly misused to refer to the hardware used for delivery of e-books, such as e-readers, tablets, smartphones, or desktop computers (Armstrong, 2008). E-books are then created under the limitations of the software in which they will be read, and usually offer fewer features than apps, although potentially in the future e-books and apps might be able to offer the same technical possibilities for creators. Although apps have the technical potential for presenting a narrative that smoothly integrates multimedia features and interactivity, it does not mean that all apps do so, and the presence and ways of integrating these features can vary significantly from one app to another.

Whether because many literary apps are adaptations of picturebooks or because many researchers come from a (picture)book tradition, the notion of 'book' has repeatedly been used to characterise these texts. Several terms that include a reference to books are used to refer to literary apps, for instance:

- 'book app' (Stichnothe, 2014; Turrión, 2014);
- 'picturebook (or picture book) app' (e.g., Aguilera, Kachorsky, Gee, & Serafini, 2016; Al-Yaqout, 2011; Al-Yaqout & Nikolajeva, 2015; Hamer, 2017; Nagel, 2017; Zhao & Unsworth, 2017)
- 'picturebook 2.0' (Serafini, Kachorsky, & Aguilera, 2015)

- ‘storybook app’ (e.g., Aliagas & Margallo, 2015, 2017; Kucirkova, 2016)
- ‘digital picturebooks’ (e.g., Al-Yaqout & Nikolajeva, 2018; Mackey, 2016; Yokota, 2015)
- ‘iPad books’ (Kucirkova, 2013).

Many literary apps have strong connections with the picturebook format. For instance, one of the apps in this project, *The Monster at the End of This Book* (Stone & Smollin, 2011), is a remediation of a picturebook and in its digital version maintains strong links with its codex antecedent. Yet, the animated sequences, sound effects, and additional interactions have transformed this text significantly, adding meanings and likely changing the experience of reading.

Some scholars apply adjectives to the term book app in order to make it more specific, such as ‘children’s book apps’ (Stichnothe, 2014), referring to its audience, or ‘multimedia books apps’ (Turrión, 2014), which accounts for the fact that many of these texts have additional media, creating a multimodal text that goes beyond the image-word relationship implied in the term picturebook. Heading in the opposite direction, the total lack of adjectives and the simple use of the term ‘app’ (Schwebs, 2014) implies a rejection to directly associating apps with books or picturebooks, taking into account the hybridity of the format. Evidently, the problem is that “app” refers to the whole range of software available for digital devices, and does not take into account the specific literary qualities of the apps in question.

Calling these texts “books” becomes even more problematic when the broader corpus of literary apps is considered. In many works, the book-like features are just as crucial as the game-like or movie-like features, and in some cases, the book-like features are indeed absent. For instance, in *Little Red Riding Hood* (Nosy Crow, 2013), the other primary text used in this research, the hypertextual structure of the text, the possibilities of multiple endings, and of moving the characters around, of generating extra dialogue in a random sequence, and of using unusual forms of interaction such as blowing or moving the tablet, all promote a significant divergence from the typical configuration of picturebooks. Furthermore, the multimodal ensemble of literary apps is significantly different from that of the codex book, including aural modes like sound effects, music and narration, the moving image, and, as argued by this research, the body of the reader. These essential differences between books and apps affect and change the experience of reading and the making of meaning with literature.

An alternative emerging term is ‘story app’ (Brunsmeier & Kolb, 2017; Merchant, 2014, 2015, 2017; Zheng, 2016). Story app is potentially a good term because it combines references to the technical possibilities available in apps with the notion of story. The term, however, is ambiguous because it does not specify if the story will be *presented via* the app or *created through* the app. The category of apps *for* storytelling is a significant one (the potential of these apps is discussed, for instance, by Kucirkova, Messer, Sheehy, & Flewitt, 2013), so differentiating between these two types of apps, with important differences in purpose and affordances, is necessary. Another issue with this terminology is that story is not a synonym for literature. Games and movies also tell stories, resulting in another area of ambiguity regarding the term ‘story app.’ It is important to acknowledge that all terms present limitations and none of the terms presented do justice to the complex phenomenon that are literary apps. Perhaps in the future, as the characteristics of this new genre become better established, a new term that names clearly what literary apps are and are not will emerge.

Following Henkel (2016), I propose these semiotic artefacts be called ‘literary apps.’ Firstly, this term does not misleadingly characterise these texts as books, because they are not. Furthermore, the term ‘literary app’ better conveys the fact that these texts explore the features and affordances of digital media through a programmed software, an application or app, to convey a literary work. The very definition of literature or literariness is complex and much debated (Miall & Kuiken, 1999), especially when literature diverges from the traditional configuration of written words on a page (Aarseth, 1997; Hayles, 2008). Yet, I argue the term ‘literary app’ conveys the emphasis on the poetic and aesthetic features of these texts and of the reading experience they promote, aligning with the perspective assumed by this project. Finally, literary apps are part of the broader category of ‘digital literature’ (or ‘electronic literature’ and the shorter forms ‘e-literature’ and ‘e-lit’), which designate literary works in electronic format in general. Digital literature also includes CD-ROMs, DVDs, electronic console (EC) books, e-books and apps, hypertext novels, literary games, amongst others.

1.3 Literary apps: Definition

Despite the novelty of the phenomenon of literary apps (or perhaps because of that), few works state a definition of what literary apps are. Often, mirroring the terminological propositions discussed above, these apps are presented by virtue of their similarities and

differences from the picturebook, therefore limiting an understanding of what literary apps are in their own right. This is the case of Serafini et al.'s definition:

> Digital picturebook apps may be conceptualized as enhanced renderings of the original print-based picturebook in that they offer additional content, features, and navigational options not associated with the print-based texts. Animations, sound effects, narrator voice-overs, and icons leading to hyperlinked resources are just some of the features offered in these digital versions. (2015, p. 18)

Ramada Prieto offers a definition that is disentangled from the notion of book (although it still presents literary apps in relation to print texts). He suggests literary apps are

> a programmed computer product that is capable of coding multiple semiotic substances in order to construct its discourse and, in addition, allows for the inclusion of the reader as an active participant in the discursive structure, the reading of which tends towards rupture of the traditional linearity of printed text. (2015, p. 50)

Ramada Prieto's definition is successful in stating that literary apps present multimodal and multimedia "substances," that they are coded texts, which allows their interactive and hypermedia features, and, finally, that the reader's participation is a fundamental aspect of these works of digital literature. The proposition that literary apps tend towards a rupture of linearity is, however, contestable. Questioning this view, Schwebs (2014) suggests that the reading events involving literary apps remain linear, and interactivity simply promotes a change in the tempo of reading. Similarly, Al-Yaqout and Nikolajeva (2018) suggest the exploration of the visual text through interactivity is comparable to that promoted in children's picturebook shared-reading with an adult, who often encourages them to stop and consider the details of the illustrations. Moreover, another aspect not contemplated by the above definitions regards the materiality of literary apps and how this materiality is explored and expanded by their interactive features, affecting the reading experience (Henkel, 2016; Merchant, 2017).

While Ramada Prieto's definition is probably the best in communicating what literary apps texts are regarding their computational nature, this perspective is somewhat distant from the semiotic and empirical view presented by this project. In this project, therefore, literary apps are defined as semiotic artefacts available as apps that make use of the material, coded, multimodal, hypermedia possibilities of mobile touchscreen devices to convey a literary work in which the participation of the reader through interactivity is

essential to the unfolding of the story. Because of the limited sample, this project will focus on narrative fictional apps, excluding informational texts, concept books and poetry. In accordance with the definition above, the apps used in this research present different instantiations of materiality, coding, multimodality, multimediality and interactivity.

1.4 *Reading* an app

The affordances of literary texts as apps impact readers' meaning-making processes. The interactive features of apps transform some of these processes into material, visualisable gestures, problematizing whether engaging with apps constitutes reading, using, or playing. For instance, Sargeant (2015) advocates that people *use* apps, taking for granted that reading also involves an active participation from readers. The term 'use' imparts a functionality to literary apps that I believe is more detrimental than useful in understanding how meaning is constructed from them.

Some other scholars claim that children play rather than ("properly") read. Cahill and McGill-Franzen (2013) state, "even though it may look like the children are only playing with the book apps, learning still occurs" (p. 37). Nottingham-Martin (2015) suggests the term 'rea-player' – a mix of reader and player – to designate the person engaging with a literary app and Mackey (2007) employs the metaphor of "playing the text" to refer to meaning-making with a wide range of texts, print and digital. The playful aspects of apps are important and affect meaning-making, but multimodal social semiotics theory presupposes a broader understanding of 'reading-as-sign-making' (Kress, 1997) that embraces all forms of texts and the notion of multiliteracies, recognising the agency of readers and its active participation in constructing meaning from a text. Thus, this work uses the term *reading* to refer to making meaning from the multimodal text of a literary app and *reader* to the participant in this process.

1.5 A step back in history

While the affordances of digital media and touchscreen devices generate new possibilities for storytelling as seen in some innovative literary apps, it is important to position these texts historically, as many of these features have appeared in previous texts for children several centuries ago. Interactivity is an affordance that defines literary apps and can be traced back to early movable books.

Reid-Walsh (2018) investigates interactive children's books from 1650 to 1830 such as turn-up books, paper dolls, toy theatres, up to pre-pop-up books involving mechanisms such as the disc-and-tab and the *volvelle*. She looks back at these historical artefacts through the lens of contemporary comparative and digital media scholars such as Murray (1997), Wardrip-Fruin (2009) and Bolter and Grusin (1999), approach which brings to light the similarities between these early interactive texts for children and digital texts like literary apps. She claims interactive books are hybrid texts that involve children visually, through words and images, but also through touch. These characteristics are also highlighted as central to the poetics of literary apps by, for instance, Schwebs (2014) and Nagel (2017). Reid-Walsh also discusses reader's agency when reading these texts. The affordances of each format promote different levels of agency to the reader, a perspective which can also be transferred to literary apps. For instance, toy theatres present today digital counterparts as apps, and both print and digital versions afford readers with dramatic agency and the possibility to direct existing stories or creating their own, assuming an authorial role. These apps, however, are not considered under the scope of this research, which focuses on apps for reading, rather than telling, stories. In the conclusion, she argues that complex contemporary pop-ups can afford contradictory positions to the readers: "Interactors can set a movable book in motion but subsequently settle into a passive role of spectator of the arresting effects" (p. 222). This perspective is also suggested by some scholars in relation to apps, especially with regards to forms of interactivity which do not present a cause-and-effect relationship with the events in the narrative (e.g., Turrión, 2014; Stichnothe, 2014). This thesis explores this apparent contradiction through examples of children's responses to literary apps that suggest they remain agentive even when constrained by the affordances of the texts.

Children's material relationship with books and reading is not exclusive to engagements with interactive texts. Grenby (2011) investigates the child reader from 1700 to 1840, and argues that children often searched books' 'material gratifications' rather than 'textual gratifications.' Possessing books was a great source of pleasure, that could even surpass the pleasure of reading, as owning books indicated respectability and superiority. Likewise, children today value the ownership of electronic devices, which are for many of them objects of desire (Chaudron, Di Gioia & Germo, 2018). In the 18th Century, the material exploration of books, which left traces in the books themselves such as dog's-ears, was seen as an inappropriate use of books by most adults, which valued books mostly for their educational value. Yet, publishers explored the material relationship

children had with books, by associating them with toys, as in the famous example of Newbery's *A Little Pretty Pocket Book*, as well as through the publication of interactive books, as examined by Reid-Walsh.

Today, although electronic devices are expensive and fragile, Chaudron et al. (2018) report that European parents in 2017 were less worried about children damaging the devices than two years earlier. Also, despite the virtual quality of digital literature, publishers continue to explore the artefacts' materiality through embodied and often expressive forms of interaction with the device. Although apps are a novel and often innovative format of storytelling, the works of Grenby (2011) and Reid-Walsh (2018) highlight the continuity of embodied, material uses of literary texts by children since the 17th Century, practices which assume new facets in contemporaneity. Print interactive texts evolved into the complex pop-ups existent today. Literary apps are another category of semiotic artefact for children which explore material, embodied forms of reading and engaging with literature, exploring the possibilities of children's agency in reading. Both aspects of meaning-making, embodiment and agency, are the focus of this investigation.

1.6 Overview of the thesis

This thesis is organised in nine chapters. Chapter 2 presents the theoretical framework in which the research is grounded. It is organised in three parts. The first part lays multimodal social semiotics perspective on meaning-making, which takes into consideration the roles of the text, the reader and the socio-cultural context. The second part considers the current knowledge and scholarship regarding the features of literary apps and their reading by young children, complementing the gaps in this emerging area of research with relevant research from related fields. Considering the gaps in the literature identified in the previous section, the third part of the chapter discusses the concepts of embodiment and agency as essential to the process of meaning-making with literary apps. Deriving from the framework that has been established, the chapter concludes with the research questions that guide the study.

Chapter 3 is devoted to the research design. It starts with the ontological and epistemological underpinnings of this research and the presentation of the methodology. The chapter then describes the sampling criteria, the setting of the research and the selection of primary texts. Next, the methods of data collection are presented: observations of children joint-reading the selected apps with a parent is the primary

method, complemented by graphic elicitation, informal interviews and a questionnaire. The chapter also includes an overview of the pilot study, followed by the ethical considerations, and concluding with a presentation of the process of data analysis.

The findings of the research are organised in an introduction (Chapter 4) and two parts, the first examining embodiment (Chapters 5 and 6) and the second, agency (Chapters 7 and 8). The introduction to the findings presents the profile of the children that participated in the research, a summary of the primary texts, and one vignette from the data. This vignette exemplifies the analytical process and sustains the prominence of embodiment and agency as aspects of meaning-making that were also foregrounded in the data, as well as in the literature, as discussed in Chapter 2.

Part I of the findings, dedicated to embodiment, begins with the analysis of the literary apps affordances that promote the engagement of the reader's body, especially with regards to interaction (Chapter 5). Chapter 6 shifts the attention from the text to the child readers and their responses to such affordances, as well as their spontaneous performative responses, in which they engaged their bodies without the expectation of a response from the text.

Part II of the findings examines the dynamics of agency in the reading events observed. Chapter 7 investigates the negotiation of agency between the child readers and the text, considering how the narrative and its interactive features operate as a script for readers' agency. In Chapter 8, agency in joint-reading literary apps is considered through the investigation of the negotiation of agency between child and adult readers. The reader's body appears as an important element in children's negotiation of agency both with the text and with the co-readers.

The thesis concludes with a synthesis of the research findings and the answers to the research questions. The contributions to the field, limitations of the research and implications of the findings to parents, educators and creators of literary apps are also highlighted. The chapter ends with considerations for future research.

2 THEORETICAL FRAMEWORK

This chapter presents a review of the literature and the theoretical framework which guides the project, leading to the research questions that frame the investigation of embodiment and agency in children's meaning-making with literary apps.

It is structured in three parts. First, based on research on semiotics, reader-response theory, picturebook theory and new literacy studies, the roles of the reader, the text and the social context in reading are discussed, building a theoretical framework that establishes how meaning-making occurs in the transactions between readers and texts. In this discussion, multimodal social semiotics emerges as a contemporary theory of meaning-making that considers both texts and readers as fundamental in this process, and that the individual instances of meaning-making, simultaneously, build the social context and are bound by it.

Since readers and texts are equally essential to the process of meaning-making, the second part of this chapter discusses the essential characteristics of the literary app as a semiotic artefact, namely its multimodal and its interactive nature, as well as the central features of literary app reading by young children, considering their responses to these texts and the dynamics of parent-child joint-reading.

From the review of the literature in part two, some crucial yet under-researched aspects of meaning-making with literary apps emerge: embodiment and agency. The third part of this chapter, therefore, completes the framework by reviewing the literature on these

areas. The chapter ends with the definition of the research questions that guide this study and how it contributes to the development of the field.

2.1 The making of meaning

2.1.1 Signs and meaning-making

Semiotic theory posits that we understand the world through representations of the real, which take place in the form of signs. The most basic understanding of what a sign is (Saussure, 1974/1916) describes it as a dyadic structure formed by a 'signifier,' or the material manifestation of the sign – the printed word and its phonetic counterpart – and the 'signified,' its concept or meaning. While Saussure analyses form (syntax) and meaning (semantics) separately, in social semiotics the sign is considered as an inseparable whole (Kress, 2010). Another recurrent criticism to Saussurean 'semiology' is its 'phonocentrism,' or disregard for other meaning-making systems besides language, more specifically, besides the phonetic aspects of language, but the seminal elements of his theory allowed other thinkers to extrapolate it.

Meaning-making or 'semiosis' is not static as proposed by Saussure, but a process (Peirce, 1974/1934-35). The Piercean sign is triadic: the 'representamen' refers to the formal aspects of the sign: the 'object' is what the sign refers to; the 'interpretant' its meaning. Within the cultural system in which the continuous process of semiosis takes place, multiple meanings can be attributed under the restrictions generated by the formal features of the object (Hodge & Kress, 1988; Peirce, 1974/1934-35). In picturebooks, the 'synergistic' process of meaning-making occurs as distinct semiotic triads that represent the verbal and the visual signs of a picturebook text; the interpretation of a triad of verbal sign occurs in terms of a triad of visual sign and vice-versa, resulting in a third semiotic circle that is unique and more complex than the previous ones, in a constant and continuous process resulting in complex and multiple meanings (Sipe, 1998). In literary apps, this dialogic dynamic of interpretation also involves, simultaneously, aural sings (music, sound effects), kineikonic signs (animation), and signs that emerge in the participation of the reader through interaction, exponentially "complicating" these relationships as each of these signs influence all the others and are also influenced, simultaneously, by them.

2.1.2 The social aspects of meaning-making

Saussure (1974) distinguishes 'langue,' the language system or the social aspects of language, from 'parole,' or individual utterances of language: "In separating language [*langue*] from speaking [*parole*] we are at the same time separating: (1) what is social from what is individual; and (2) what is essential from what is accessory and more or less accidental" (p. 14). Although acknowledging that signs are created by social convention, Saussure ignores that "the utterance is a social phenomena" (Voloshinov, 1973/1930, p. 82). "Language is at once basically social and intensively individual" (Rosenblatt, 1994/1978, p. 21); thus, meaning resides in the individual utterances and the interests of the participants in communication, interests that reflect the sign-makers and their histories, and their consideration of the communicational environment, to which they adjust the signs they are creating (Kress, 2010). Bakhtin (1981) claims,

> The word, breaking through its own meaning and its own expression across an environment full of alien words and variously evaluating accents, harmonizing with some of the elements in this environment and striking a dissonance with others, is able, in this dialogized process, to shape its own stylistic profile and tone. (p. 277)

Meaning, therefore, is not fixed in the sign, but changeable according to specific social contexts; a particular meaning of a word can only be shaped in relation to its context or 'environment,' in a dialogic relationship, so the transaction between word and object that generates meaning is not unidirectional.

Readers bring a different 'horizon of expectations' (Jauss, 1982) to the reading of a text depending on the time (and paradigm in vogue at that particular time) they are situated in. The different social groups, or 'interpretive communities' (Fish, 1980), readers belong to also influence the meanings they construct while reading. In the case of picturebooks and preschoolers, which in the UK refers to 3 and 4-year-olds, besides eventually being part of a nursery classroom community, the family itself constitutes an extremely influential interpretive community. Heath (1983) analyses how three Southern United States communities' conversations about books and bedtime story practices framed children's language development and affected integration in the educational system, showing the impact of the familial interpretive community in young children's lives. Moreover, Levy (2011) discusses how home print and digital literacy practices are disregarded at school from reception stage, affecting children's perceptions of reading. She posits that, as early

as at the end of reception year[1], the influences of home practices and of the family as an interpretive community are overcome by the educational discourse about what reading means, negatively affecting children's confidence as readers and narrowing their definition of reading to that of decoding *writing* in *print books*.

2.1.3 The text guiding the meaning-making possibilities

The participation of readers as co-sign-makers (Kress, 2003), generating new meanings according to their interests and previous experiences, depends to a great extent on the formal features of the texts with which they engage. "The text serves as a blueprint, a guide for selecting, rejecting, and ordering of what is being called forth; the text regulates what shall be held in the forefront of the reader's attention" (Rosenblatt, 1994/1978, p. 11). As a result, the formal characteristics of the text in question have fundamental participation in the creation of new signs while reading. For instance, 'polyphonic' (Bakhtin, 1984) – in opposition to 'monologic' – novels are narratives in which the various voices of the characters speak directly to readers, without a direct mediation or interference from authors. The picturebook text – and by extension, the literary app's text – is polyphonic in essence due to its multimodal nature (Anstey & Bull, 2004), as "the double narrative of every picture book, written and illustrated, inherently results in the multiple depiction of a polyprismatic reality that symbolically implies the passing from one Truth to many personal truths" (Yannicopoulou, 2010, p. 80). This aspect relates to Sipe's (1998) explanation of the creation of a third semiotic circle that emerges in the synergy between written and visual signs, generating various meaning possibilities. Polyphony in literary apps is made even more complex with their additional modes and the new voices and layers of meaning that come with them. Also, in apps, these modes may allow readers to assume the roles of these various voices through interaction.

Nonetheless, the active participation of readers does not occur solely in interactive digital texts. All texts present, to different extents, blanks or gaps (Iser, 1974), which are filled by readers according to their previous experience and the history of their encounters with those signs and with that particular genre. In literary texts, this

[1] The reception year is first year of formal schooling in the UK which children attend at age 5. In reception, formal teaching of reading and writing is introduced.

accumulated experience is called ‘literary competence’ (Culler, 1980). In reading picturebooks, literary competence also refers to the assimilation of the conventions of visual texts (Nodelman, 1988), in addition to the conventions of written texts. Furthermore, literary competence needs to incorporate new features to account for the multimodal and interactive characteristics of digital literature such as literary apps (Colomer & Vázquez, 2015; Javorsky & Trainin, 2014). Such expansion of the concept of literary competence is similar to that proposed by the term ‘multiliteracies’ (Cope & Kalantzis, 2000, 2015), which expanded the concept of ‘literacy’ to accommodate the multiplicity of communication modes present in contemporaneity.

In multimodal texts such as literary apps, the layering of meanings presented by different modes naturally generates specific forms of gaps. To make sense of the narrative, readers are obliged to fill these specific gaps by establishing relationships between the modes based on the formal features of the signs in each of those modes. The various kinds of relationship between modes contribute significantly to the creation of different aspects of the narrative, such as point of view, characterisation and setting (Nikolajeva & Scott, 2006). When the relationship between images and text is ironic or contradictory in some way, the gaps generated tend to be what Nikolajeva (2005) terms ‘creative gaps,’ or “gaps that authors leave to stimulate the readers’ imagination and active involvement with the text” (p. 259). Without filling some of these gaps, readers may not grasp the essence of some narratives. In apps, besides gaps between image and text, there can be gaps between image and music, or between writing and sound effects, etc., while interactions constitute gaps that are overtly created by authors with the expectation of reader’s intervention in the text, influencing the narrative flow and/or creating content that to various extents changes the narrative.

Each text affords a different level of participation from readers in filling the gaps, ranging from ‘open’ to ‘closed’ texts (Eco, 1984): “An open text is a paramount instance of a syntatic-semantico-pragmatic device whose foreseen interpretation is a part of its generative process” (p. 3). Similarly, texts can be ‘readerly,’ suggesting a passive position of readers towards the text, while ‘writerly’ texts invite readers to participate actively co-constructing the text (Barthes, 1975). Literary apps promote a new dimension of the concepts of open/writerly texts since reader participation takes the form of a material engagement with and co-creation of the text, which is only complete with the reader’s participation. Iser (1974) suggests texts that allow for a more active participation of readers in ‘filling the gaps’ have higher literary quality. In literary apps,

however, this relationship does not seem to be so direct, as the excess of gaps in the form of interactions does not necessarily create reader participation that is meaningful to the narrative (Chiong, Ree, Takeuchi, & Erickson, 2012). In addition, as Stichnothe (2014) proposes, while some apps allow "users to participate in enacting narrative patterns, not only receiving but actively taking part in shaping them" (p. 6), in some other apps these narrative devices, which in theory propose the co-creation of the text by readers, do so under the ruling of very strict frameworks, resulting in repetitive and uncreative interaction possibilities, which Turrión (2014) calls 'false participation.' Turrión (2015) also suggests that multimodal complexity and narrative complexity are not necessarily related, as all literary apps are formed by a multiplicity of modes, but not all apps present rich, complex narratives.

2.1.4 The role of the reader

As discussed, meaning is not "contained" in texts, waiting to be found out by readers. What readers bring to the text is as important as the text itself (Iser, 1974; Rosenblatt, 1994/1978). Rather, "interpretation is not the art of construing, but the art of constructing" (Fish, 1980, p. 327), which implies the agency of readers in their encounter with texts. Meaning is generated through a creative process of "anticipation and retrospection" (Iser, 1974, p. 290) in which readers make connections and relations among formal units, resulting in meanings that go beyond what is formally there.

Iser (1974) argues, "it is the interplay between 'deduction' and 'induction' that gives rise to the configurative meaning of the text, and not the individual expectations, surprises, or frustrations arising from the different perspectives" (p. 287). From a social semiotics perspective, however, the individual interests also guide the process of deduction and induction. Mackey (2007) also suggests that bottom-up processes, such as "use the information of the letters, the spaces, the capitalization and so forth" are accompanied by top-down processes in which readers "use [their] general knowledge of the world and of the way stories usually work in order to rule out some options and highlight particular possibilities" (p. 88).

The active participation of the reader in meaning-making was also discussed by Kress (1997), who posits, "reading is sign-making, in which the object which is being read forms the substance of the new sign-making by the reader" (p. 46). The creative process of reading as new-sign-making was discussed many years before the "multimodal turn" by Rosenblatt (1994/1978), who calls it the 'poem.' The poem

"presupposes a reader actively involved with a text and refers to what he makes of his responses to the particular set of verbal symbols" (p. 12). The critical difference in their approaches relies on the fact that Rosenblatt's concept of text is limited to verbal signs. The interest of readers, as proposed by Kress (1997, 2010), is discussed by Rosenblatt in terms of 'efferent' and 'aesthetic' stances towards reading, in which readers may approach texts with an attitude that emphasizes the search for information or other objective outcomes (efferent) or the pleasures of the reading experience itself (aesthetic). In the early years, the experience of literature is likely to tend towards the aesthetic end, especially in the case of joint-reading at home. Often, as children start school, they are encouraged to assume an efferent reading of literature (Levy, 2011). The ludic features of literary apps, promoted not only by their interactivity and the engagement of the reader's body, but also by the playful uses of the different modes and by metafictionality (Frederico, 2014) suggest aesthetic rather than efferent approaches to the reading of literary apps.

The reader in question in the analysis of meaning-making does not necessarily refer to a real person engaging with a text. In theoretical approaches to semiosis, the reader being considered is 'implied' (Iser, 1974), or "the author's image of the recipient that is fixed and objectified in the text by specific indexical signs" (Schmid, 2014, Definition, para 1). Picturebooks can be considered to have two implied readers, an implied child reader, and an implied adult reader (Ewers, 2009; Nikolajeva, 2005), because children's access to these texts is highly mediated by adults, who also act as readers in joint-reading. Nonetheless, the complexity of the various layers of meaning in picturebooks makes it challenging to delimit and differentiate child and adult implied readers. As the visual text is central to the picturebook narrative and young children, in fact, do not read the verbal text in picturebooks but are read to, they can be considered implied viewers (Nodelman, 1988). In literary apps, the dual readership is a possibility, but apps also foster autonomous reading, and the notion of an implied reader must be expanded to accommodate the implied viewer, listener and interactor.

2.1.5 Multimodal social semiotics approach to meaning(-making)

Although the understanding of the importance of the reader and the situatedness of meaning-making in the literary experience was claimed much earlier by Rosenblatt (1994/1978, 1995/1938), in contemporary communication, new kinds of texts are continually emerging. Several forms of digital textuality, including literary apps,

explicitly challenge, for instance, the traditional roles of writers and readers, the passivity of readers, the linearity and unidirectionality of the information "flow" and the permanence of texts. As part of this landscape, literary apps are texts that challenge our view of children's literature and of the literary experience in the early years and allow for new forms of meaning-making. Their analysis, therefore, requires a multidisciplinary approach that goes beyond literary criticism.

This research assumes a socio-cultural perspective to meaning-making and is guided by the theoretical lenses of multimodal social semiotics, as expressed primarily in the work of Kress (2010), Kress and van Leeuwen (2006), and van Leeuwen (2005, 2015). In *social* semiotics, the social context is the "source, the origin and the generator of meaning" (Kress, 2010, p. 54). The social context is materialised in the signs, which are *designed* by individuals according to their communication purposes, at a specific time-space. The social context is not taken as a top-down relationship with the individual, but the opposite. The individual instances of communication construct the social context, reason why the social – and hence meaning – is fluid and in constant change: "signs are always newly *made* in social interaction; signs are *motivated* …; the forms/signifiers which are used in the making of signs are *made* in social interaction and become part of the semiotic resources of a culture" (Kress, 2010, pp. 54–55, emphasis from the original).

Therefore, from a social semiotics perspective,

> Meaning is understood as being realized in the iterative connection between the meaning potential of a material semiotic artifact, the meaning potential of the social and cultural environment it is encountered in, and the resources, intentions, and knowledge that people bring to that encounter. (Jewitt, 2013, p. 251)

Social semiotics acknowledges that all the elements in the system of communication (the text, the reader, and the social) play a part in the construction of meaning.

Multimodal social semiotics is based on four key theoretical assumptions: (1) language is part of a multimodal ensemble, it is not the only nor the most important mode; (2) each mode realizes different communicative work; (3) people *orchestrate* meaning through their selection and configuration of modes; (4) the meanings of signs are social and situated, they vary in different settings, periods and according to the social group of the individuals (Jewitt, 2014).

2.1.6 Multimodality and social semiotics

Multimodality and social semiotics are not (necessarily) synonyms. Multimodality is a field of enquiry, a phenomenon to be investigated, "the phenomenon that discourse is almost always multimodal" (van Leeuwen, 2015, p. 447). The phenomenon of multimodality is not new, as communication has always been multimodal. In coining the term multimodality, nonetheless, Kress and van Leeuwen (2001) propose a repositioning in research, shifting the focus from (oral and written) language as the main form of communication towards a "satellite view of language" (Kress, Ogborn, & Martins, 1998), where language is seen as part of a complex system of modes. As a result, not only do the other modes gain more attention in the study of communication but also a new approach to language as part of this "universe" needs to be configured.

Social semiotics, on the other hand, is a theory of meaning that originated with Halliday (1975, 1978), who claimed language is social semiotic, where social semiotic is "a system of meanings that constitutes the 'reality' of culture. This [system] is the higher-level system to which language is related: the semantic system of language is a realisation of the social semiotic" (1978, p. 123). According to Halliday's (2007/1975) seminal work, language serves three 'semiotic roles,' or metafunctions, "an ideational role, that of **being about** something, and an interpersonal role, that of **doing** something [… and thirdly] the text-forming or textual role that language serves, ... a role that is purely intrinsic to language" (p. 173-74, bold from the original).

Kress and van Leeuwen (2006) elaborated a "grammar" of visual design, expanding the application of the metafunctions to the visual mode. This grammar, however, is "seen as a characterisation of ways of achieving communicative functions and not as a set of rules determining 'grammaticality' or formal 'acceptability' " (Bateman, Janina, & Tuomo, 2017, p. 50). This mapping of the semiotic resources for their analysis of the visual is a central aspect of Kress and van Leeuwen's theory, and they further expanded the concept of social semiotics to all modes, generating the notion of multimodal social semiotics (Kress & van Leeuwen, 2001). Although all modes realise the metafunctions, they have different specialisations. For instance, while the verbal and the visual modes have specific semiotic resources to realise each of the metafunctions separately, sound presents some resources that can realise simultaneously more than one metafunction (van Leeuwen, 1999).

According to van Leeuwen (2005), social semiotics is not "self-contained," it needs to be integrated with other theories related to the specific phenomenon being studied, in this case, children's meaning-making with literary apps. Social semiotics then provides the foundation of this project's understanding of the dynamics of meaning-making, but the complexity of analysing the full process of communication that happens in reading demands the integration of perspectives from research on children's literature, picturebook studies, electronic literature, reader-response studies, new literacy studies, game studies, interactive narratology, amongst others, as highlighted in this chapter.

2.1.7 Social semiotics within the different approaches to multimodality

Social semiotics is not the only theory used to analyse multimodality. According to Jewitt (2014), another quite developed branch of multimodality is the Systemic Functional Grammar (SFG) multimodal approach to discourse analysis (applied to the analysis of children's literature, for instance, by Guijarro, 2014; Painter, Martin, & Unsworth, 2013). SFG is also based on Halliday's work, but with a stronger emphasis on the linguistic aspects of his theory – on grammar, textual analysis and the mapping of texts' systems networks – giving less emphasis to the context and almost none the sign-maker, which makes the approach problematic to the understanding of meaning-making as conceptualized in this research. This approach differs from social semiotics mostly in that, "in the social semiotic approach to multimodality, the metafunctions are generally used as a conceptual tool to describe and explore the semiotic resources and meaning potential that people use to make meaning rather than to map the system itself" (Carey Jewitt, 2014, p. 18).

Another significant area of multimodal research is multimodal interaction analysis (Norris, 2004), which, assuming an ethnographic perspective, claims meaning can only be analysed in social interactions, waving away from textual analysis and systemic approaches. While SFG focuses on the text, multimodal interaction analysis focuses on social interaction, not emphasising the influence of texts in meaning-making. While this approach offers limitations to the analysis of meaning-making in literary reading, it offers some insights on the role of people's bodies in social interaction. As this research focuses on the joint-reading as an event and a form of social interaction, insights from this perspective are incorporated when relevant.

2.1.8 Critical concepts in multimodal social semiotics

The concepts of 'mode' and 'modal ensemble' are central to the multimodal social semiotics analysis of communication. According to Kress (2009, p. 54), a 'mode' is a "socially shaped and culturally given resource for meaning making." Furthermore, a condition for a particular resource to be considered a mode is that it realises the three Hallidayan 'metafunctions' (1978): ideational, interpersonal and textual. Defining what constitutes a mode in a specific genre of text or of social interaction therefore emerges from the phenomenon itself. For instance, picturebooks are traditionally analysed in terms of written and visual modes (e.g., Lewis 2001; Nikolajeva & Scott 2006; Nodelman 1988), but if the picturebook is considered within the social interaction or a parent reading with a child, the verbal spoken mode becomes relevant.

As discussed, in its socio-cultural situatedness, meanings transmitted by the different modes are not static or fixed, but in constant change. Each mode has different meaning *potentials* based on their history of use, so what is considered a mode in a community depends on the community's understanding and use of the affordances of that mode to communicate. The idea of meaning potential is also critical because it establishes that the sign is just a suggestion of meaning. Hence, the analysis of semiotic artefacts does not establish what they mean, but indicate how the constellation of meanings of a text suggests certain meanings, which might be confirmed or challenged by the readers.

'Modal ensembles' are "representations or communications that consist of more than one mode, brought together not randomly but with a view to collective and interrelated meaning" (Mavers & Pahl, 2012), where each mode performs different and specialised communicational roles, without the necessary protagonism of language. Also, 'text' does not refer to writing, but to these coherent multimodal ensembles, which may or may not include written or spoken language, and may be an artefact, like a literary app, or an event, like reading a literary app.

2.1.9 The meaning functions according to social semiotics

The metafunctions or meaning functions are essential constructs in the social semiotics perspective on meaning-meaning and are some defining criteria as to whether a resource for meaning-making constitutes or not a mode. Since the metafunctions regard meaning through representations of the world and literary texts are representations of the world, there are important relationships between the elements that constitute each of the metafunctions and key concepts in narrative theory.

The 'ideational metafunction' refers to the function of texts to "construe human experience" (Halliday & Matthiessen, 2013, p. 30), or to represent the world around us. This representation involves participants (people, animals, objects, etc.), the processes related to these participants (doing, being, sensing, saying, existing and behaving), and finally the circumstances regarding these processes and participants (when, where, why or how). Regarding the literary apps in question in this study, the world being represented is a fictional world. The participants refer to the characters; the processes, to events, actions and relationships between the elements in the story, and the circumstances, to representations of time and space, including the setting and contextual elements. The ideational metafunction relates to what is considered in narrative theory the 'story' level of the literary text, or what is told, as different from the 'discourse,' or how the story is told (Chatman, 1978), which is manifested in the social semiotics framework through the other two metafunctions.

The 'interpersonal metafunction' consists of the function of texts in "enacting our personal and social relationships" (Halliday & Matthiessen, 2013, p. 30). As all texts exist in a context of communication, there is always the relationship between sign-makers and readers as co-sign-makers, and these relationships are materialised in the text. In the case of fictional narratives, authors usually become invisible, and these relationships are transferred to the narrative world and its participants. The interpersonal metafunction also relates to the notion of metafiction, or stories that "comment upon, or direct attention to, the nature of fiction in the process of creating it" (Lewis, 2001, p. 93), thus breaking or creating ambiguity regarding the boundaries between the fictional and real world. Intertextuality is also a way of connecting the fictional world with the real world through references to other pre-existing texts (images, books, media, people, etc.) that the author assumes to be part of the cultural repertoire of the (adult, child, or both) implied reader(s).

The 'textual metafunction' refers to the function of texts creating coherent texts, coherent both internally and with the context of production (Halliday, 1978). It is considered an enabling function because the other two depend on this intrinsic function of texts to be realised. Aspects like the structure of the information and their position, repetition, rhythm, use of devices for framing and creating salience are some of the resources used to create coherence (Halliday & Matthiessen, 2013; Kress & van Leeuwen, 2006). In multimodal texts, the integration of and relationships amongst

modes are also important aspects of the textual metafunction, because they promote cohesion to the modal ensemble.

2.2 Literary apps and their reading by young children

During the three and a half years through which this project has developed, the research in literary apps for children has grown significantly with an increasing number of articles and chapters published, conference presentations and the publication of the monograph *Digital Literature for Children: Texts, Readers and Educational Practices* (Manresa & Real, 2015). While in 2014 very little had been published from an aesthetic perspective, both regarding literary textual analysis of apps and (even less) regarding children's responses and engagement with these texts, a body of work, even if still small, is now established, and the field is being recognised, for instance, through the publication of chapters specifically on children's digital literature in *The Edinburgh Companion to Children's Literature* (Beauvais & Nikolajeva, 2017) and *The Routledge companion to picturebooks* (Bettina Kümmerling-Meibauer, 2017).

The next sections will review this literature, integrating it with research from social semiotics, picturebook theory, reader-response, electronic literature, interactive narratology and multimodal interactive analysis, with the objective of framing the analysis of literary apps and their reading by preschool children.

2.2.1 The multimodal ecology of the literary app

From a multimodal social semiotics perspective, literary apps are multimodal texts in which different modes of communication are orchestrated to convey a narrative. The field of children's literature, however, has been analysing the multimodality of picturebooks and comics, for instance, before the notion of multimodality was coined or widespread in research circles (e.g., McCloud, 1994; Nikolajeva & Scott, 2006; Nodelman, 1988; Schwarcz, 1982; Sipe, 1998).

Lewis (2001) was one of the first authors to incorporate social semiotics in the analysis of children's literature and proposed that the picturebook can be understood as an 'ecosystem,' in which words and images are interdependent and 'interanimate' each other, or the words affect the meanings of the images and vice versa. In the case of a change in one of the elements, the whole system is affected, resulting in new, different meanings. The notion of 'ecology' seems useful to conceptualise the multimodal configuration of literary apps as well. Apps, however, present additional modes to

writing and images which significantly alter their nature. Usually, literary apps present the *auditory* modes of *speech*, *music,* and *sound effects*, the *visual* modes of *static images*, *writing* and *moving images*. These different modes present a different set of affordances and limitations, and thus conduct different functions in the narrative.

Picturebook research has comprehensively highlighted the affordances of words and images and their use in conveying these narratives in ways that are useful for the analysis of literary apps, as many apps make similar use of the affordances and structures of words and images to convey their narratives. The differences between images and words are usually described in terms of the linearity of language and its suitability for telling, in opposition to the spatial affordances of images and their aptness for showing (Nikolajeva & Scott, 2006; Nodelman, 1988; Sipe, 1998).

Van Leeuwen (1999) maps the semiotic resources of auditory modes. Sounds, music and spoken language are linear and sequential, instead of spatial and simultaneous, as images are. Sound also has an immaterial quality, as it disappears after played, not allowing readers to possess it, only to experience it; this contributes to sound's immersive nature, which does not allow one to move away from it as one can do when seeing an unpleasant image or reading an unpleasant word or passage. Also, auditory modes invite a collective, participatory experience, thus potentially contributing to the participatory features of apps; audio may give readers the same auditory perspective as that of the characters. Sound, in the form of music or the presence of a soundscape, due to its complexity as a meaning system, may add a new layer of meaning to the picturebook narrative that can corroborate or change the meanings being expressed by the verbal or the visual text (Nugent, 2013). Speech commonly appears in literary apps, as many apps have "read to me" or even "record your own reading" options. Speech is closely related to the writing mode and shares with it lexical, syntactical and grammatical structures whose level of detail and specificity is exclusive of the verbal; on the other hand, the materiality of speech affords this mode resources such as rhythm, intonation and silence not present in writing (Kress, 2010).

While Al-Yaqout and Nikolajeva (2015) suggest that the imposition of speech as a particular performance of the writing given in the 'read to me' mode of apps is problematic because it guides readers' interpretation, it can be argued that the inclusion of speech is not necessarily a new modality in apps, since, traditionally, print picturebooks are read to young children (Sanders, 2013). One significant difference is that, when read at home, each reading presents a slightly different performance, while

apps usually present only one version of narration. This feature can influence the affective and bonding attributes of the joint-reading experience that are also transmitted through the act of reading aloud. On the other hand, the quality of the performance when a professional actor interprets the story can enhance the emotional impact of the story for both adult and child readers.

The moving image or the 'kineikonic' mode is the transformation of the visual mode through time (Burn, 2014). It integrates linearity and temporality to the spatiality of the visual mode, thus combining elements of transiency and simultaneity. Mackey (2016) suggests that movement, especially with regards to the written text, is a contrasting feature of apps in relation to the codex book, in which words are always still. She argues that the transiency of words in apps dismantle the relationship between written text and the layout of the "page"/screen, forming a relationship of either/or, instead of the simultaneity typical of books. In books, the words are always displayed at the same position, on an individual page, which exists even if they are temporarily unavailable as readers read another page. Nonetheless, the ways in which movement is added to the scenes of literary apps varies significantly from one app to another.

In some apps, animated sequences are automatically played at the beginning of each scene like cutscenes in video games and generate a pause in the interactive possibilities. In other apps, movement is created through interactivity: in some cases, readers are required to tap so the animation can unfold; in other cases, readers have further control of the movement, for instance moving characters or objects around. At times, especially in the earliest apps, movement was incorporated similarly to centuries-old pop-up techniques (Nugent & Frederico, 2013), but instead of the hand of the reader physically controlling the movement, the control is simulated in the screen.

According to Schwebs (2014), user-controlled animations can expand, enrich or enhance the main story and work as satellites from the main events of the narrative, so they are not distractions but expansions of the aesthetic narrative experience. The moving image is also not necessarily a new mode in apps, in comparison to print picturebooks, since it is a central aspect of, for instance, pop-up books. The movement of turning the page is also a central movement in books that is usually taken for granted, but it also adds linearity and temporality to the picturebook visual text. While some apps mimic the movement possibilities of the codex, other apps have incorporated elements of animated

movies, but in literary apps there is usually an alternation of animated and static moments, which in some cases can be controlled by readers.

Finally, literary apps are multimodal *and* interactive texts, and interactivity presents a challenge to the multimodal framework as interaction can happen through a variety of modes. A useful proposition to the understanding of interactivity from a social semiotics framework is the notion of 'meta-mode' suggested by Burn (2014). A meta-mode is a mode that orchestrates other modes. Burn suggests that in live-action films, filming and editing are examples of meta-modes. In the case of literary apps, interactivity can work as a meta-mode as it allows readers to manipulate visual, verbal and aural aspects of the text, activating changes in these elements according to pre-programed possibilities.

Therefore, a tentative ecology of literary apps can be represented visually as Figure 2.1, in which the different modes of literary apps are in a relationship with one another, and interactivity works as this permeable membrane around the different modes, allowing the reader to manipulate them. This ecology is built solely through a textual perspective and does not consider the participation of the readers, which is crucial in literary apps. The findings of this research will bring new light to this ecology, which will be revised in the Conclusion Chapter. Furthermore, the tidy and symmetric organization of this visualization must be seen as a representational device, because the relationships between the different modes are not necessarily constant and equal, and the 'modal density' (Norris, 2004) shifts across the narrative, that is, the modes that are foregrounded and backgrounded, gaining more or less importance in conveying the narrative, vary.

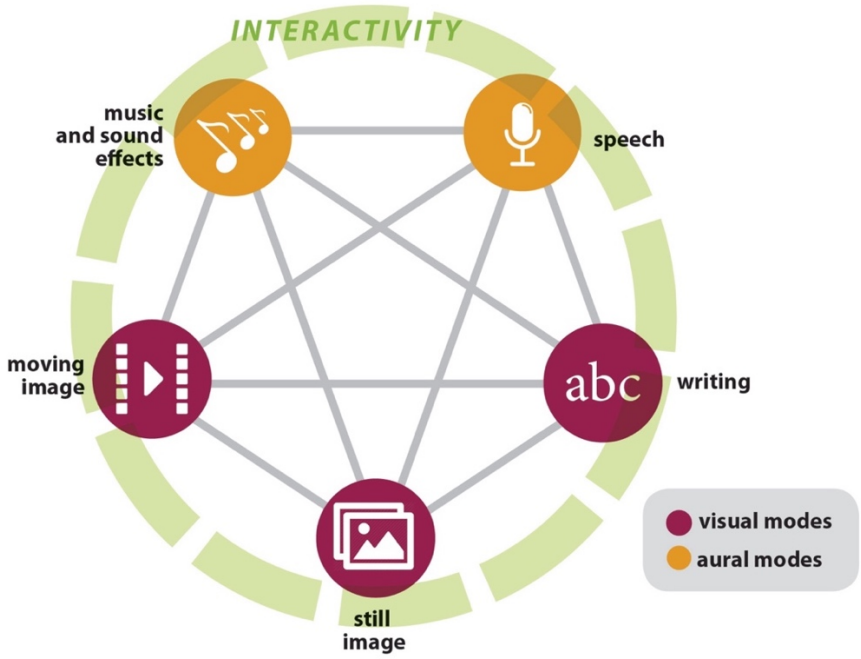


Figure 2.1: Visual representation of a tentative ecology of the literary app.
The figure includes the modes of music and sound effects, speech, writing, still image and moving image, which might appear simultaneously or in alternation. Around it, a permeable layer of interactivity, a meta-mode which allows the reader to manipulate the different modes according to the pre-designed possibilities of the text. The grey lines indicate the relationships between modes, with each mode establishing semiotic relationships with all other modes.

2.2.2 Interactivity in literary apps

Interactivity has increased importance and participation in the meaning-making processes involving literary apps (Nagel, 2017; Schwebs, 2014; Turrión, 2014; Zhao & Unsworth, 2017). It is a feature of digital texts that promotes the relationship between readers and texts in new ways, allowing readers to act to alter the signs that are displayed, and how they are displayed in the text within coded, pre-designed possibilities. As Hayles (2008) suggests, "the new component possible with networked and programmable media is the cycle's completion, so that the feedback loops run in both directions – from the computer to the player and from the player to the computer" (p. 83). Moreover, Schwebs (2014) highlights that interacting with the text in literary apps is a profound source of aesthetic pleasure in apps and a central element of what makes their text literary in a novel and unique sense. Interaction is not to be seen as a synonym for transaction (Rosenblatt, 1985, 1994/1978), which regards the meaning-making process involving reader and text in the act of reading: transaction is "meaning that happens between reader and text" (1985, p. 98).

Zhao and Unsworth (2017) propose interactivity in literary apps involve three stages:

> 1) the *action*—typically a multitouch gesture (e.g., swipe, tap, drag, etc.) or less typically other types of physical action, such as shaking the device; 2) the *hotspot or button*—the area on the interface that can be activated by gestures; and 3) the *outcome* or the functionality (such as edit, share, audio recording, etc.), triggered by the action. (p. 93, emphasis added)

For them, therefore, the action of the reader is the initiator of the interactivity. It is relevant that an element of interactivity is a gesture by the reader, as this is a critical way in which literary app reading is embodied. Furthermore, interactivity is directly related to the materiality of the device, as readers must physically engage with it to perform the interaction.

Several attempts, from different theoretical perspectives, have been made to classify different forms of interactivity in interactive narratives (e.g., Ryan, 2015; Schwebs, 2014; Stichnothe, 2014; Turrión, 2014; Zhao & Unsworth, 2017). One of the most influential taxonomies for interactivity in interactive narratives more broadly (and applicable to literary apps) is Ryan's (2015) proposition of two axes to map the participation of the reader in the fictional world: internal x external and ontological x exploratory. The combination of these two axes generate four types of interactivity: (1) 'internal-ontological'; (2) 'external-ontological'; (3) 'internal-exploratory'; and (4) 'external-exploratory.' Internal refers to the user assuming a role within the storyworld, usually through an avatar, and external when the reader controls the narrative from an external, god-like perspective. Ontological refers to interactivity that affects the outcome of the story, while in exploratory, the participation of the reader does not have a clear impact on the events.

Ryan (2015) also proposes another framework for the analysis of interactivity which refers to the "level of the text affected by the user's interventions" (p. 175). The levels she proposes are based on the narratological differentiation between story, or "the content" (events, characters, settings – the ideational meanings) and discourse, "the expression, the mean by which the content is communicated" (Chatman, 1978, p. 19). According to this taxonomy, therefore, an interaction can:

(1) neither affect the story nor the discourse ('peripheral interactivity') – mostly through the control of how the story is displayed;

(2) affect only the discourse ('discourse-level interactivity'); or

(3) affect the story, which can happen in two ways:

(a) the effect of the action in the story is pre-defined and not variable;

(b) through a system of artificial intelligence, the action generates story in real-time.

The understanding that interactivity can affect different levels of the narrative has been foregrounded in the analysis of literary apps, as three proposed classifications of interactivity follow this rationale, even though they frame interactivity in different terms (Stichnothe, 2014; Turrión, 2014). Turrión (2014) proposes three forms of relationships between reader and narrative:

> Real participation stands for an interactive proposal in which the action of the user works in a necessary cause-effect relationship with the story. Simulative participation occurs when the user's action produces an effect in the story that would appear equally even if he or she did not trigger the hot spot. False participation refers to cases where the effect of the user's action is repetitive or meaningless for the development of the story. (p. 4, emphasis added)

Turrión's 'false participation' can be said to reflect interactions that operate only at discourse level, 'simulative' gives readers the impression of operating at the story level while it only operates at discourse level, and 'true participation' operates at the story level. Similarly, Stichnothe (2014), based on the Bal's (2004) differentiation between 'fabula' (the events, what is told) and 'story' (how the fabula is told), suggests the classification of literary apps in two types. In 'multiple fabula apps,' the reader can make choices through interactivity that alter the plot. Therefore interactivity in this type of app operates in Ryan's third category. In 'alternative story apps,' hotspots allow the expansion of the story but the plot remains the same, therefore operating only at discourse level.

Turrión and Stichnothe attribute literary value to different types of interaction, valuing narratives that present interactivity that operate at the story level as of better literary texts than those that operate at the discourse level. One issue with this proposition is that the meaningfulness of an interaction depends on the reader's perspective as well as on the configuration of the text, as the first part of this chapter, as well as Nagel (2017), highlight. At the situated reading event, a reader's personal, intertextual, and contextual connections might forge meaningful relationships between the action and the narrative independently of the level of participation the interaction proposed.

While Zhao and Unsworth's (2017) conceptualisation of the structure of the interactive action discussed earlier begins with the action performed by the reader, all the classifications discussed above regard only the textual level, considering what are the effects of the action of the reader in the text but ignoring the action itself. However, the material and embodied connection between the reader and the text realised through interactivity is an important aspect of meaning-making (see Section 2.3). This seems to be especially relevant to the analysis of literary apps because many apps make creative and performative uses of the device's possibilities such as requesting the reader to tilt, shake or even blow into it. There seems to exist, therefore, a gap in the conceptualisation of interactivity with regards to the relationship between the gesture of the reader and meaning-making in the context of the narrative. This project will contribute to scholarship by addressing this gap through the analysis and comparison of the gestures suggested by the apps and those effectively performed by child readers.

The literature suggests that the potential effects of interactivity in the reading experience are, on the one hand, immersion, and on the other, disruption and fragmentation. Empirical research has reported events of both immersion and disruption when children read literary apps. Aliagas and Margallo's (2017) suggest that interactivity promoted what the authors called 'emotional' and 'cognitive' immersions. Emotional immersion takes place when readers experience being in the role of a character, while cognitive immersion refers to instances in which they assume a role as co-authors. On the other hand, Real and Correro (2015) report the disruption in children's independent reading of apps in a nursery, while Merchant (2015) claims that interactivity demands a level of dexterity that was also at times disruptive for toddlers reading with an educator in a nursery. Questioning this view, Aliagas and Margallo (2017) suggest that even when interactivity appears to fragment the reading experience, it promotes reader's engagement. Aguilera et al. (2016) add that this perception of disruption derives from the comparison between the reading experience with apps and that with books but, that from a game studies perspective, interactivity may be seen to deepen the narrative experience.

Interactivity in literary apps is also suggested to affect reader and text power relations, influencing reader's negotiation of agency. Stichnothe (2014) proposes that the enhanced plot development input available to readers in 'multiple fabula apps,' offers them real agency, while in 'alternative story apps,' readers' agency is restricted and they are tied to the app's fixed narrative features, suggesting to readers "adherence to narrative patterns" (p. 7) rather than creative paths. Kucirkova (2016) posits that the personalisation made possible through the

interactive features of literary apps is also a form of expanding reader's agency through the integration of personal content and data into the story. The simple customization of the app's features, conversely, would not provide readers with the same possibilities of creative input. Stichnothe's and Kucirkova's propositions have in common that they attribute agency to the extended authorial features of certain forms of interactivity in literary apps. However, the reading process itself involves the agency of the reader in making meaning (Kress, 2003) and interactivity also affects this 'readerly' layer of agency. The discussion of agency in the process of reading and how it is affected by interactivity is another aspect that has not yet been explored by research on literary apps and an area where this research will contribute to scholarship.

2.2.3 Reading literary apps

Considering the socio-cultural context of production of literary apps, these texts are often positioned within a transmedia framework (Jenkins, 2006), since many apps appear as one of many different instantiations of a narrative (Hamer, 2017; Schwebs, 2014; Serafini et al., 2015), which may also be available as picturebooks, cartoons, movies, games, virtual worlds, toys, etc. Research observing children's practices around literary apps at home confirm that often children engage with these stories through various of these instantiations, fluidly moving from literary apps to YouTube videos, to toys, etc. (Aliagas & Margallo, 2015; Real & Correro, 2015).

Reading literary apps is proposed to be a complex and fluid aesthetic process between text and reader (Merchant, 2014; Nagel, 2017), whose pleasure of reading manifests itself in the affective, creative, interactive, shared, personalized and sustained potential of each text (Kucirkova, Littleton, & Cremin, 2016). One of the unique aspects of reading literary apps is the extended engagement of the reader's body in the interactions with the touchscreen story and its importance in the processes of meaning-making (Merchant, 2014, 2015, 2017). The complexity of the poetics of literary apps has been discussed in terms of the multiplicity of modalities and different forms of sensory stimulation that Engberg (2014) called the 'polyesthetic' and Schwebs (2014) discusses in terms of a 'multisensory experience.' Both emphasize the importance of the tactile experience as a singularity of such texts that is fundamental for the understanding of the aesthetic dimension of the literary apps.

While studies in children's responses to picturebooks are many and diverse, so far few projects have considered young children's responses to literary apps (Aliagas & Margallo, 2015, 2017; Kucirkova et al., 2016; Mackey, 2016; Merchant, 2014, 2015, 2017; Real &

Correro, 2015). Considering this gap in the literature, research on children reading picturebooks can be a useful foundation to the understanding of how children respond to (multimodal) literature. Research on children's responses to picturebooks (e.g., Arizpe, Colomer, & Martínez-Roldán, 2014; Arizpe & Styles, 2016; S. J. Pantaleo, 2008; Sipe, 2008) advocates the richness and complexity of picturebook texts to develop children's literary competence both in verbal and visual terms.

In classroom group-readings, children negotiate meaning as a group, and the scaffolding from peers and teachers is essential in how they construct and deepen their interpretation and develop narrative understanding. The importance in providing children with concepts and a metalanguage to talk about aspects of the narrative, specially in the visual text, and allowing them time to read, re-read and explore carefully the text have been pointed out as important aspects of teachers scaffolding of children's reading, while also promoting an enriching and pleasant aesthetic experience (Arizpe & Styles, 2016).

This body of research also suggests that, from a very early age, children can understand complex narratives and respond to picturebooks with deep and thoughtful interpretations (Arizpe & Styles, 2016). The dual nature of the picturebook text promotes complex affective and cognitive engagement, and is perceived as pleasurable by most children. Children make use of their personal experiences, including those with other texts and intertextual connections to make sense of the narrative, in a "life-to-text" movement, as well as using the narrative to re-signify aspects of their personal life, in a "text-to-life" movement (Sipe, 2008).

Children's responses to picturebooks have been classified using different methods by different authors (e.g., Arizpe et al., 2014; B. Kiefer, 1995; Sipe, 2008). The categories proposed by these three frameworks are not dramatically distinct, however. They all present a category of 'personal' responses, in which readers connect aspects from the text to their personal lives, as well as identify responses in which children comment about elements of the story and how the story is told, in both words and/or pictures. Sipe called this category 'analytical,' while Arizpe et al. separate the responses that refer to the story as the 'referential' and those that refer the discourse as 'compositional.' Kiefer separates these in 'informative,' when the children report what is in the text, and 'heuristic' when they use elements of the text to wonder or make inferences about aspects they do not know. Sipe and Arizpe propose an 'intertextual' category, in which readers connect the text with others texts and cultural artefacts, while Kiefer includes

these connections in the 'informative' and 'heuristics' categories. Finally, both Sipe and Kiefer have identified responses in which children express themselves as part of the fictional world, which Kiefer calls 'imaginative' and Sipe divides into 'transparent' and 'performative' responses, the latter referring to responses in which children, immersed in the fictional world, manipulate this world for their own purposes, while in the former they participate in the fictional world accepting it as presented.

These categorisations are important to indicate the processes of meaning-making children go through as they read literary texts but they present certain limitations. Firstly, they represent responses from a defined social encounter around literature, which is the reading-aloud of picturebooks at school. This type of encounter is a genre of social interaction itself, and as such, there are patterns of interaction involved: there is the expectation that the readers will share aspects of the story with the group and build meaning together as a group. Furthermore, in these events the expression of analytical skills are an expectation, so it is not a surprise that this category corresponded to the vast majority of responses in Sipe's research. Other types of reading events, however, might involve other forms and patterns of responses, such as the parent-child joint-reading explored in this project. Classroom read-aloud sessions encourage responses to be verbalised, and this body of research, therefore, centres on children's verbal expression. Responses to literature, however, are multimodal, including verbal utterances, which may carry comparatively more precise meanings, but also gestures, vocalisations, body and facial expressions. Sipe considers the embodied nature of response when he discusses the transparent and performative types of response, but the analysis is centred on the content of the verbal utterance. A reader's preferred modes of expressing their responses might also vary according to their age, and Hickman (1981) suggests young children tend to get immersed into the stories and use their bodies as response more often. Therefore, when considering other types of reading and younger age groups, other frameworks might be necessary.

Merchant (2014) describes toddlers' responses to literary apps as "multiple actions and interactions [that] are woven together in a complex choreography of events" (p.135). In his research, the joint-reading events between an early-years educator and one or a small group of toddlers was characterized by little verbal interaction and multiple gestural responses, especially the use of the index finger, which was used for interaction, pointing, but also at times remained ready for action even when the hand was resting. Roskos (2012) also considered the multimodality of preschool children's responses to

literary apps in joint-reading. She considered three 'types of engagement': 'control engagements' (to operate the device); 'multisensory behaviours' (looking, touching, listening, moving, gesturing); and 'communication' (facial expressions, noises and language). This proposition of categorisation contrasts with Merchant's findings, in which gesturing was also consistently used for communication. Using Sipe's categories mentioned above, Aliagas and Margallo (2017) suggest that children's immersion while reading literary apps seemed to be enhanced by the interactive features of the narratives, and often they performed transparent responses and positioned themselves as characters in the story. Mackey (2016) suggests that the multimedia features of literary apps might alter their ontological status, which also seems to be related to this immersive narrative potential: an animated and responsive character might contribute further to the blurring of the boundaries between story and real worlds; this might especially be the case for characters that already exist in multimedia, such as TV characters, pervasively taking part in children's lives.

While Roskos (2012) and Merchant (2014) describe and categorize aspects of the multimodality and embodiment of preschoolers reading literary apps, they do not propose a framework for the analysis of how these embodied responses can be integrated into the analysis of meaning-making. Norris' (2004) framework for the analysis of multimodal interaction is therefore complementary and useful for considering the semiotics of participants' bodies in (social) interaction. She suggests "All movements, noises, and material objects carry interactional meaning when they are perceived by an individual" (p. 9). Besides spoken language, Norris suggests people use other modes for communication through the engagement of their bodies. 'Proxemics' refers to the distance between the individual and objects or other people. 'Posture' regards the positioning of their bodies, which indicate the directionality of their communication. '*Gesture*' often accompanies verbal language and adds spatiality to the linearity of language – gestures are, at once, spatial and linear and can work for representation. 'Head movement' can show multiple functions depending on the situated even and also carry important cultural associations. Finally, 'gaze' regards the organisation, structure, and intensity of looking, which suggest meanings in the context of the situated event. Norris' framework also suggests the multimodal action is the unit of analysis, and actions can be of 'lower-level' or of 'higer-level.' Lower-level actions are the small actions performed by the individual in communication (the individual multimodal utterances – e.g., a child looking at the screen, points and says, "Look!", can be

considered one multimodal utterance formed by gestures and spoken language). Lower-level actions are connected in chains of meanings to form the higher-level action, which is the socially framed action (e.g., the action of reading a story), and individuals may, at once, perform multiple higher-level actions.

2.2.4 Parent and child joint-reading literary apps

Especially in the early years, but in fact throughout childhood, the participation of adults in at least some aspects of children's reading experience is certain. Joint-reading is one of the manifestations of this triad of adult-child-literature. For Sanders (2013), joint-reading is a defining feature of the picturebook and an expectation that is manifested in picturebooks' material and representational features. This is referenced by the scholarship as the 'dual audience' of picturebooks (Nikolajeva & Scott, 2006; Scott, 1999).

Furthermore, joint-reading is a type of reading situation, a genre of social interaction that involves children and adults making meaning together with a literary text. In reading a text together, a dialogic relationship is established not only between each reader and text but between co-readers, forming a 'dialogic space of possibility' in which "in the space between the speakers – that is, the gap between intention and interpretation – meanings are provisional and response possibilities, multiple" (Maine, 2015, p. 19). Maine's research, nonetheless, refers to a dialogic space of possibility as created by peers reading together. In the case of parent-child dialogic reading, the difference in development, knowledge, experiences, interests and power, to name but a few, are likely to affect this space of possibility differently. In this space, though, there is an active negotiation of meaning, and this negotiation is also an opportunity to observe the meaning-making processes children go through when they engage with a text.

Much of the literature around parent and child joint-reading assumes a cognitive psychology perspective and analyses the impact of joint-reading in terms of children's language and literacy development. For instance, Bergin (2001) stated that affectionate relationships during joint-reading resulted in children that were more confident, less frustrated and more engaged in reading. Mol, Bus, de Jong & Smeets (2008) propose 'interactive joint-reading' – when parents ask questions and give feedback to the child during the reading activity – is beneficial for children's vocabulary development in comparison to non-interactive reading. Comparing joint-reading of the same story read in print and on the iPad (without any enhancements or interactions, though), Parish-Morris, Mahajan, Hirsh-Pasek, Golinkoff, and Collins (2013) and Krcmar & Cingel (2014)

suggest that in electronic reading the dialogue between parent and child concentrates on the book format rather than on its content, leading to lower levels of reading comprehension. Since most participants were likely to be novice users of such technology, it is possible that these results were influenced by a 'novelty effect.' Lauricella, Barr, and Calvert (2014), on the other hand, suggest that parents were more engaged when reading digital stories with their children than when reading a print book. Engagement was measured by parents "trying to converse with the child during the story, attempting to elicit interaction from the child …, and demonstrating a level of interest above and beyond casual acknowledgement of the child's explicit requests" (p. 20). Although the focus of this research is not to measure children's comprehension or language development, their findings are useful in suggesting that there is a great variety of types of interactions between parents and children, which interfere in the development of the reading event, and thus in children's meaning-making with literary texts.

From a socio-cultural perspective, the research of parent-child joint-reading has focused on understanding the importance of emergent and out-of-school literacy practices in educational terms (Heath, 1983; Levy, 2011). Aliagas and Margallo (2014, 2015, 2017) followed this research tradition and investigated children's out-of-school literacy practices around literary apps at home in an ethnographic study in Spain. They suggest a co-existence of print and digital reading habits, but important differences in the social dynamics around these distinct modalities: apps tended to be read during the day, in social spaces like the living room, as opposed to bedtime stories involving picturebooks that happen in the privacy of the bedroom. Another interesting finding from this research regards the more active presence of the father in digital shared-reading, while previous research suggested a dominant role of the mother in joint-reading in the early years.

Kucirkova, Littleton and Cremin (2016) present a robust framework to consider young children's engagement in reading for pleasure literary apps. They suggest this engagement has six facets: the 'creative' (being imaginative and innovative), the 'personalised' (connecting the story with one's one experiences and that of others), the 'interactive' (children's playful participation in the narrative), the 'shared' (the social exchange related to reading), the 'affective' (children's emotional connection with the story), and the 'sustained' (the possibility to read without interruptions). While in theory all these aspects would be enhanced by joint-reading, some empirical research suggests there can be conflict regarding some of them, especially regarding the interactive features and the shared dimensions. Rowsell (2014) suggests that the participatory

options of interactive narratives invites independent reading: interactivity involves choice and having multiple readers might require the negotiation between child and adult reader. Aliagas and Margallo (2015) also indicate the parents' diminished participation and control in joint-reading situations around apps, in which their role was reduced to that of 'facilitators.' The narration options also replace the important role the parents have in voicing aloud the story in joint-reading. As Mackey (2016) suggests, "parents may seize the opportunity to disappear from the exchange altogether" (p. 173). Finally, Merchant (2015) comments that the nursery teacher in his research became an "experienced co-listener" (p. 8), but that the release from the task of reading allowed her to give further support to the young child reader; this support was often necessary as the toddlers had difficulty in handling the interactive gestures on their own.

This literature suggests, therefore, that some features of literary apps such as narration and interactivity might alter the dynamics of agency between child and adult reader in joint-reading, but so far research has not overtly enquired about child and adult's negotiation of agency in reading literary apps, an area which this project aims to address.

2.3 Embodiment and agency in meaning-making

The first part of this chapter established how meaning is dependent on the dynamic relationship between readers and texts. The second part reviewed the research on literary apps, establishing an interdisciplinary framework for the analysis of the apps' texts and of reader's meaning-making processes with them. In the process, some gaps in the research on meaning-making with literary apps were identified. For instance, although research on children reading literary apps highlights its highly embodied nature, the various approaches to interactivity in literary apps have not yet considered how the first step of interaction, the gesture performed by the reader to activate the text, establishes meaning relationships with the narrative, affecting the making of meaning with the story. Furthermore, the review of the literature indicates that interactivity impacts the agency of the reader, but no research has overtly investigated reader's agency in literary apps from a readerly, rather than an authorial, perspective; that is, considering that readers are agential, even when they do not have the possibility to act as co-authors. Interactivity also seems to affect the parent-child joint-reading experience, therefore likely to affect the negotiation of agency between the two, another area that has not yet been researched. Therefore, two aspects of the dynamics of meaning-making when young children read literary apps with their parents emerge as worthy of further investigation: the embodied

nature of reading literary apps and the configuration of agency in the triad of adult-child-app. With the aim of addressing these important gaps in scholarship, these two aspects of meaning making, embodiment and agency, have been selected to frame the research. The next sections will discuss the literature in these areas, structuring a framework for the analysis of these two essential aspects of meaning-making with literary apps.

2.3.1 Embodiment and reading

An essential aspect of meaning-making (and therefore, reading) is its embodied nature. The understanding of the embodied nature of reading has not always prevailed and the Cartesian separation of mind and body has until recently informed not only research in reading and literature, but Western thinking more generally (Lakoff & Johnson, 1999). Digital technology, especially the proliferation of touchscreen devices in the last decade, has made the relationship between the reader's body and the act of reading explicit (Bezemer & Kress, 2014; Kokkola, 2017; McLaughlin, 2015). In parallel to that, a shift in the understanding of cognition through the paradigm of embodied cognition suggests that cognitive processes, amongst them language and reading, "are deeply rooted in the body's interactions with the world" (Wilson, 2002, p. 625).

The beginning of the digital era at the time of desktop computers, nonetheless, seemed to promote further distance between the reader's body and the text, which was now intangible and independent from its support (Mangen, 2008). The navigation of texts on the desktop computers involves the mediation of a mouse and a keyboard and its size and weight requires readers to sit in front of the fixed screen to read, significantly reducing the flexibility and handiness typical of the codex. This impression of disembodiment was, however, as Hayles (2008) points out, a historical construction, as digital texts always depend on the materiality of the device to be read. The complexity of this relationship between reading and manipulating the text through a mouse, however, is not straightforward for young children and this technology was not widely adopted for the early years. In the last decade, the widespread popularity of mobile touchscreen devices brought to digital reading the portability and the direct use of the hand for navigation, the same features that, according to Harnett (2017) contributed to making the codex the dominant medium for reading in the West since the first centuries of our era.

Mangen and Schilhab (2012) propose that reading is embodied in two ways: "(1) by being a multisensory engagement with defined, ergonomic affordances of the interface of a technical reading device, and (2) by the fact that … language and cognitive processes

pertaining to semantic information processing are embodied" (n.p.). The first aspect regards the fact that meaning-making occurs in this transaction between a material semiotic artefact, the text, and the reader whose materiality is represented by their bodies. As Kress (2003) suggests, all modes are material but the materiality of different modes is distinct; for instance, the materiality of speech is sound and that of images is graphic matter and light. Different materialities result in distinct sets of affordances for the modes, which requires different engagements of the reader's body for reception and production of meaning: "Sound has its physiological channels of reception, as does sight, and so of course do all modes, through touch and feel, smell, taste" (p. 46). As a result, the affordances of the codex suggest a certain habitus (McLaughlin, 2015), while those of mobile devices might suggest a different one (Adami & Kress, 2010).

The second aspect, regarding the embodied processing of language, is supported by a growing body of empirical research from the perspective of 'embodied cognition':

> Embodied cognition denotes a recent theoretical trend in psychology, biology, neuroscience, phenomenology and the philosophy of mind, focusing on how perception, cognition and motor action are closely connected and reciprocally dependent, and how they interact with and shape cognitive processes at different levels. (Mangen, 2010, p. 419)

These theories propose the connection between neuro-cognitive systems and perceptual-motor brain systems, suggesting cognition "is critically based on reinstatements of external (perception) and internal states (proprioception) as well as bodily actions that produce simulations of previous experiences" (M. Kiefer & Trumpp, 2012, p. 15). Empirical research on various aspects of human cognition seems to be validating, at least to a certain extent, the propositions of the embodied cognition perspective. Kiefer and Trumpp (2012) suggest the better results in letter recognition for individuals that use handwriting rather than typewriting can be explained by the fact that the hand, in handwriting, performs representations of the letters through the sensory-motor system. Brains scans showed that the brain activates motor regions in visual letter recognition for people who handwrite, but it does not for those who typewrite. In the Moved by Reading experiment (Glenberg, Goldberg, & Zhu, 2011; Glenberg, Gutierrez, Levin, Japuntich, & Kaschak, 2004), children had a better comprehension of stories when they used toys to enact aspects of the story rather than just rereading it. Similar results were achieved when they engaged in image manipulation instead of actual manipulation; that is, they

were requested to mentally "manipulate" the toys, and this improvement was true even in new situations where real toys were not previously manipulated.

The theory of the mirror-neurons mechanism has been very influential in this area and used to support many of the empirical findings as the ones mentioned above. It suggests that mirror-neurons "prime the relevant parts of the brain to take action, not only when an action is planned and executed but also when such an action is simply observed or described" (Mackey, 2017, p. 142). This suggests important implications for reading research, as it reveals the neuronal mechanism behind the immersive state experienced when reading literature: reading a literary text would activate the brain in similar ways to living the story, bringing new meaning to Rosenblatt's metaphor of reading fiction as a "lived through experience" (1994/1978, p. 27). Gallese & Wojciehowski (2011), as discussed by Mackey (2017), suggest the aesthetic stance taken by readers when reading literature would facilitate such embodied state of immersion or simulation, liberating them from the need to process the real world; they add that stillness, typical of reading novels, is believed to contribute to immersion in a fictional text. This is also supported by Mangen (2008), who suggests the choices and actions required in digital reading would promote a different kind of immersion, technological immersion, which would impair the achievement of the phenomenological immersion which happens through the interpretation of a fictional text. There has not been yet empirical research connecting these findings from neuroscience to children's reading of multimodal texts such as picturebooks, in which the child reader does not, in fact, decode the text and the experience of immersion involves aural and visual dimensions.

2.3.2 Materiality and the roles of the body

The eyes, hands and posture play essential roles in the act of reading, realising a series of adaptations so that the processing of the text can occur; this way, the body works both as a constraint (e.g., sight deficiencies) and an enabler of reading (McLaughlin, 2015). McLaughlin also claims the posture of reading might be related to the reading stance assumed by the reader; for instance, reading laying down in a bed or sofa can be associated with a more aesthetic and leisurely stance, while efferent reading tends to be related to more disciplined forms of reading, for instance sitting at a desk.

The role of the eyes in reading multimodal texts like picturebooks or apps is different to that of traditional reading. In picturebook read-aloud sessions with young children, the movement of the eyes is likely to concentrate in reading the images and longer fixations to

occur in the elements of the visual text that are highlighted by the verbal text (Evans & Saint-Aubin, 2005). In digital book reading, attention can be directed to the written text through the use of word-highlighting features (de Jong and Bus 2012, as cited in Smeets & Bus, 2013); in addition, when the details of the illustrations highlighted by the text are animated, children tend to fixate even longer on that element (Takacs & Bus, 2016).

The role of the hands was until recently a neglected embodied aspect of reading, but has emerged as an aspect of investigation in research on mobile touchscreen reading (Burnett, Merchant, Pahl, & Rowsell, 2014; Kokkola, 2017; Leander & Boldt, 2013; Mackey, 2011, 2017; Rowsell, 2014; Simpson, Walsh, & Rowsell, 2013; Walsh & Simpson, 2013). Reading on touchscreen devices demand a new "vocabulary of gestures" (Merchant, 2014, p. 124) and the development of a 'digital penmanship,' or an embodied knowledge that "[shapes] a rich multimodal semiotic vocabulary in children's digital play experiences" (Fróes, 2017, p. iv).

In *The Hand Manifesto* (2013), Printz enumerates some of the key roles of the hands for humans and I highlight five of them: perception, sociability, communication, action, and thought. The *perceptive* role has been suggested to influence reading in comparisons between print and digital reading (Mangen, 2008; Mangen & Schilhab, 2012), as the physicality of the book and the pairing between the materiality of the text and that of the medium would provide significantly more information to the reader. The intangibility of digital texts might not provide as many external indicators to the reader's memory as the codex (Morineau, Blanche, Tobin, & Guéguen, 2005). As perception is related to the sense of touch, its affective dimension, or the possibility of establishing an emotional connection through the hands, is referred as one of the important aspects of the use of the hands in meaning-making (Kress, 1997, 2003; Leander & Boldt, 2013; Mackey, 2007; Pink, Sinanan, Hjorth, & Horst, 2016). Such connection with the text through touch, which is more frequent in literary app reading than in print reading because of its interactive features, is also suggested to add an important dimension to the aesthetic experience of reading these apps (Schwebs, 2014).

The *sociability* role of the hands also relates to its perceptual function. Mackey (2007) proposes that in joint picturebook reading, hands promote social connection through the affective relationship between participants: "This element of connecting with hands may be one of the specific pleasures of reading graphic texts together and one reason why picturebooks are so often cited as creating bonds between the adult and child who read

them together" (p. 120). Merchant (2014) also describes the affective uses of the hand in toddler-educator joint-reading of literary apps in a nursery. These types of interactions in joint-reading also highlight the hands' interpersonal *communicational* role. Gesture research suggests gestures commonly work in tandem with language in interpersonal communication and that gestures can be indeed utterances, presenting many similar features to linguistic communication (Kendon, 2004). In both Mackey's and Merchant's research, the readers used their hands to communicate with each other in relation to the story, often through 'deictic' gestures (pointing) that raise attention to a certain element in the text or, in the latter case, to suggest children how to interact with the device.

The hands of the reader also function as *actions* in the reading event. On top of the deictic movements mentioned previously, whose role is the communication and collaboration between co-readers, Merchant identifies two other movements of the hand involved in literary app reading: 'stabilising' and 'control movements.' Grabbing the book or the device is commonly an action the hands perform while reading and they serve to stabilise the text as well as to support the reader's attention (Mackey, 2017; McLaughlin, 2015). Control movements are actions that aim at controlling the text, such as tapping or swiping; they are acts of communication between reader and text and might serve different purposes depending on the text being read and its pre-designed features.

Finally, hands have an important role in *thinking*. While Prinz (2013) separates this function as one function amongst others, in reading thinking seems to be happening through the use of the hands at all of the functions discussed previously. Considering that the connection between action and reflection (or thinking) are inseparable in meaning-making (Halliday, 2007/1975), and if gestures are utterances (Kendon, 2004), every act of communication is in itself thinking. Empirical research on literacy and literature has highlighted the role of the hands in making meaning from a text, be it a picturebook or a digital text. Merchant suggests, "in literacy, more often than not [hands and fingers] operate at the interface between bodies and meaning making" (2017, p. 254); while Simpson et al. (2013) claim that the active use of hands in digital reading highlights "the interaction between material, spatial dimensions and more immaterial thinking processes that occur as a result of the joint negotiation of text" (2013, p. 129). These qualitative accounts of the relationship between body, reading and literacy seem in accordance with the findings from the research on embodied cognition mentioned previously.

In literary app reading as well as read-aloud sessions with picturebooks, hearing is also an essential aspect of the multisensory reading experience. Sanders (2013) proposes that a central feature that defines the picturebook, and differentiates it from comics, is that it supposes shared-reading and an adult fluent reader who performs the verbal text. As research with eye tracking has revealed (Evans & Saint-Aubin, 2005), the connection between what the child hears and the visual reading path are intimate. Mackey (2017) also brings up the fact that hearing is an essential feature of the child's reading body. She discusses that the connection between the sounds and the written form is at the essence of learning to read and is powerfully related to reader's emotional experience.

Embodiment is, therefore, an essential aspect of literary app reading, but no research so far has investigated embodiment's role in children's meaning-making with literary apps considering the relationships between the body of the reader and the meanings that emerge in the context of the narrative. This project addresses this issue by examining how apps suggest a certain use of the body from the reader and then explores how readers effectively engage their bodies in reading, taking into account the suggestions from the text but also the context of reading and their knowledge, interests and motivations.

2.3.3 Agency in reading literary apps

Agency is a multifaceted notion that has been described across disciplines with slightly different emphasis. From a social semiotics perspective, readers are agents and agency is inherent to meaning-making, as readers bring their knowledge, interests, and motivations at the time of reading to create their situated and personalised meanings in transacting with the potential meanings suggested by the text (Kress, 2010). Agency, however, is not a synonym for free will. As Bezemer and Kress (2015) posit, "agency is always constrained. … first, by the affordances of modes, and second, by the attempts of other sign-makers to shape their engagement with the world" (p. 133). In reading, therefore, the affordances of the modes have been pre-shaped by other sign-makers – the "authors" – into a text, which work as a constraint to the reader's meaning-making. For the child reader, meaning-making with literary apps is also constrained by the interests of adult-sign-makers that mediate children's access to literary texts and to digital technology, but that also participate intimately in children's reading through shared-reading. Agency, therefore, is a fluid state and a relational concept. People are agentive in meaning-making but their agency is flexibly being reshaped in and by their engagement with

semiotic artefacts and other sign-makers. Hence, the concepts of open/closed (Eco, 1984) and readerly/writely (Barthes, 1975) texts can be said to relate to different levels of textual constrain on reader's agency in meaning-making.

Because in the case of children's literature adults (generally) control the creation, production and distribution of texts aimed at children, authors such as Nodelman (2008, 2016) and Rose (1993) argue for an impossibility of children's agency in children's literature. They see the interests of adults and the materialisation of these interests in children's literature form constraints that are insurmountable to the child reader. However, as highlighted by Gubar (2016) the work of these researchers does not involve the empirical investigation of meaning-making involving actual children and children's literature, in which children's agency might become visible.

Alternatively, Bernstein (2009, 2011) suggests the metaphor of the '(play) script' to explain how the affordances of semiotic artefacts work simultaneously constraining and promoting agency: "a 'scriptive thing,' [in her case, a toy] like a play script, broadly structures a performance while simultaneously allowing for resistance and unleashing original, live variations that may not be individually predictable" (2009, p. 69). Returning to Bezemer's and Kress' discussion, the structured affordances shaped by the authors into a text form a new set of affordances with which the reader can make meaning, therefore, constraining while simultaneously providing them with "material" to exert their agency in the act of reading.

The idea of acting within constraints is important when considering agency in reading. In reading fiction, the reader generally wants to be guided by the text, to flow through the constraints with minimal resistance to achieve narrative immersion (Ryan, 2015). At the same time, the reader is always making choices of which meanings are accepted and therefore, rejecting another whole set of possible meanings. What is meaningful at the situated reading event depends not only on the intentions, motivations and background of the reader and the socio-cultural context of the reading situation, but also on the context provided by the narrative on a moment-by-moment basis.

In interactive texts like literary apps, the participation of the reader through different forms of interactivity brings the discussion of agency in digital reading to the fore. Murray (1997), in her seminal work on interactive narratives, considers agency one central aspect of their aesthetics. She defines agency as "the satisfying power to take meaningful action and see the results of our decisions and choices" (p.126). This

definition of agency focuses on how agency is exercised in digital reading through interactivity and highlights that simply to (inter)act in digital narratives is not a synonym for being agential; the action needs to be meaningful and incorporated into the story. The relationship between the meaning of an interaction and a player's agency in video-games is further highlighted by authors such as Fendt, Harrison, Ware, Cardona-Rivera, & Roberts (2012), K. Tanenbaum & Tanenbaum (2010), and Wardrip-Fruin, Mateas, Dow, & Sali (2009). This body of work suggests that the idea of free will in games, that is, designing a game with as many interactive possibilities as possible to allow the player to navigate the fictional world as they please, should not be the aim. Instead, fewer but meaningful interactions should be preferred, focusing on developing games in which agency as a "commitment to meaning" is the norm (K. Tanenbaum & Tanenbaum, 2010). Because of the arduous and expensive work of developing interactive narratives, the meaning of the player's action should be valued to the point that some interactions might not need to provide players' with "real" agency, that is, with the actual possibility of changing the fictional world. Wardrip-Fruin et al. (2009) and Fendt et al. (2012) argue that achieving an illusion of agency provides the reader with a sense of agency that is equally pleasurable because meaning still guides the interactive design. The illusion of agency, in this case, refers to providing the player with an impression of having altered the fictional world, but in fact not doing so, as the story would continue the same way even if the player chose another option. From that perspective, both real or simulative interactivity, as suggests Turrión (2014), would provide readers with similar narrative pleasure. Therefore, the relationship between interactivity and agency is not linear; there is not necessarily a direct relationship between the possibility and frequency of interacting, the actual possibility of changing the narrative through interactivity, and the experience of agency.

Agency in meaning-making goes beyond the interactive features a text might have but in reading literary apps, some of the readers' meaning choices are materialised through the physical act of interacting with the narrative, action which activates a response from the program, manifested through visible changes in the text. For activation to happen the interactions must be in accordance with the text's framework, that is, the app must have been programmed to offer a response to that particular action. From this perspective, interactivity is also another form of constraining the agency of meaning-makers in reading.

The perspective that agency in meaning-making is constrained recognises the semiotic power of texts in suggesting meanings, but the responsive and (coded) generative nature of computers adds to the discussion of agency the questioning of whether texts like literary apps themselves have agency. Hayles (2008, 2016) advocates computers have agency based on the premise that cognition is distributed when we engage with any technology. A book or a computer conveying a literary work are, from her perspective, technological artefacts through which cognition is distributed. If cognition is distributed, agency is also distributed, she argues. Furthermore, Hayles' view is that the coded and interactive nature of the computer makes it more agentive than a book because "the computer can function as a partner in creating intermediating dynamics in ways that a book cannot" (2008, p. 58). From a social semiotics perspective, nonetheless, intentionality is central in defining who possesses agency: humans have intentionality, while objects including technology, do not. Artefacts "are products of human intentionality" (Hodge & Kress, 1988, p. 261). Therefore, this work parts on the premise that, although responsive to reader's interactions, literary apps are ultimately texts created by other sign-makers and therefore dispossessed of agency.

2.4 Synthesis and research questions

The research discussed above begins to build a picture of how literary apps *suggest* meaning and how children *make* meaning when they transact with these texts, but the gap is still considerable. Therefore, this doctoral study contributes to research by exploring, through the interdisciplinary framework guided by the lens of multimodal social semiotics presented in this chapter, the aspects of embodiment and agency within the dynamics of meaning-making in literary apps.

The first part of this theoretical framework has highlighted the dynamic relationships between reader, text and social context so that meaning-making can take place. The project assumes that observing actual reading events sheds new light to how we look at fictional multimodal texts like literary apps, while the close analysis of the text promotes new insights into children's meaning-making processes while reading. This understanding guides the research methodologically, leading to the analysis of meaning-making that looks in depth both to the text, mapping its affordances and meaning-potential, and to the reader and their responses, as signs of their meaning-making processes. Therefore, two underlying considerations of this research are:

- What are the affordances and meaning potential of the selected literary apps?

- How do preschool readers respond to literary apps in shared-reading situations?

Multimodal social semiotics offers a framework that allows for the analysis of meaning-making both in consideration to the potential meaning represented by the signifiers in a text, but also from the perspective of the reader-as-sign-maker, generating new signifiers when they encounter such texts.

Furthermore, the research discussed above highlights how embodiment is an essential aspect of meaning-making and an aspect that becomes more evident and significant in digital reading. While general aspects of embodiment in digital reading have been systematically discussed in recent publications, these investigations do not consider the relationship between embodiment and the experience and participation in the narrative. Furthermore, the changes in the reader-text and child-adult negotiation of agency promoted by interactivity and other features of literary apps are an important area of enquiry that has not yet been explored. Therefore, considering both the meaning potential of the literary app and the responses from the child readers in the situated reading events with a parent, the research questions that guide this study are:

1. How is meaning-making embodied in children's transactions with literary apps in joint-reading with a parent?
2. How does the child reader negotiate their agency with the text and the co-reader in joint-reading literary apps?

2.5 Advancing research on literary apps

The proposed theoretical framework and research questions aim to develop the current scholarship on literary apps and their reading by young children by investigating how embodiment and agency operate in meaning-making.

Social semiotics has been proposed as one of the theories which can contribute to the analysis of literary apps by Aguilera et al. (2016), and employed to theorise interactivity in literary apps by Zhao and Unsworth (2017). In both cases, social semiotics is used in the textual analysis of apps and the reader's perspective was not taken into account. They examine the meaning potential of apps but neglect meaning-making, which only takes place in the socially-situated reading event.

Aliagas and Margallo (2017) state that

> the Reader Response models that have been used over recent decades to understand children's reading experiences with storybooks need to be revised to better understand their current experiences with interactive texts. (p. 1)

In response, I argue that the integration through social semiotics of textual and empirical research perspectives is the optimal framework for the analysis of children's meaning-making with literary apps. Textual and empirical perspectives have been mostly isolated so far in research on literary apps. Hence, this research is the first to use the lens of multimodal social semiotics to theorise the dynamic semiotic system of the child-parent-literary app. The approach contributes to the development of both perspectives independently, as well as promotes a unified third avenue to the research in children's digital literature. This line of enquiry is crucial given the dynamic and interactive nature of literary apps and children's meaning-making processes.

Concerning the body of work on textual approaches to literary apps, the thesis expands the social semiotic conceptualisation of interactivity proposed by Zhao and Unsworth (2017) through the investigation of one specific step of interactivity: the 'action' performed by the reader. The action regards the embodied layer of interactivity, the gesture performed by the reader to activate the text. It is children's input into the narrative, also their response to the story and the moment in which the transaction is materialised. Yet, Turrión's (2014), Stichnothe's (2014), and Zhao and Unsworth's (2017) textual approaches overlook the 'action' and concentrate on theorising the effects of interactivity in the text. They fail to investigate the performative layer of interactivity and its importance in meaning-making. Addressing how the texts imply certain interactive gestures and how readers engage their bodies to interact, in the face of the textual suggestions, will illuminate the semiotic relationships that take place through the body of the reader during the transaction, an area yet unexplored.

Regarding the scholarship which examines children reading literary apps, this work builds significantly on the work of Merchant (2014, 2015, 2017), who has investigated toddlers reading literary apps in a nursery and highlighted the embodied nature of reading apps. Merchant's work, however, fails to address the literary aspects of the apps, their narrative features and the semiotic relationships that are forged within the context of a story. This thesis makes an in-depth exploration of the form of embodied interaction that Merchant calls 'control movements,' or interactions which allow readers to "control" the app. Within this category, there is a great variety of interactions, with

specifically associated gestures, and producing different semiotic relationships between texts and readers. While the social context of reading is significant, when reading literature the narrative context also frames the transaction, and the meaning of each action depends importantly on its relationship with the narrative. My research, therefore, expands Merchant's work by examining the role of the reader's body in meaning-making within the narrative context suggested by the selected apps.

Two essential works attempt an approximation between textual and empirical approaches to literary apps, Aliagas and Margallo (2016) and Nagel (2017). Nagel (2017) makes a phenomenological analysis of literary app reading based on her own experience as a reader. By claiming that the literary app is an event, she proposes that the app and the reader form a unit of meaning and that the meaningfulness of an interactive move can only be established from a reader's perspective. Nagel's conclusions, therefore, are the point of departure of this work, as they are premises of social semiotics theory. I enhance her line of enquiry by conducting empirical research with children as the target audience of the literary apps in question, capturing the child reader's experience of reading through the signs materialised in their responses.

Aliagas and Margallo's ethnographic research is the one that has better integrated textual and empirical approaches to literary apps so far. They have investigated the positions assumed by the young child reader through interactivity in relation to the fictional world, attributing them the roles of collaborator, storyteller, author or character. Their analysis of the apps apply Ryan's internal/external, exploratory/ontological typology of interactivity (2015), and therefore also neglect interactivity's embodied layer. While they consider children's embodied responses as signs of their immersion into the narratives, they do not inquire on the role of the reader's body in meaning-making. Finally, they claim interactivity empowers readers in relation to literary apps, suggesting that agency is an aspect that underlies their research. They do not, however, conceptualise and discuss agency as such. Hence, my research will move Aliagas and Margallo's approach a step forward by examining embodiment and agency as relational concepts that underlie the semiotic iterations between readers and literary apps.

Finally, while agency seems an evident aspect of digital reading and it has been highlighted in research in children's literature more broadly and in interactive narrative studies, it has only been superficially discussed in the field of literary apps. Aliagas and Margallo (2016), Stichnothe (2014) and Kucirkova (2016) discuss the potential of co-

authorship promoted by some apps, allowing readers to alter the plot or personalise the story. Hence, their approach to agency is an authorial one, and they dismiss the most fundamental aspect of agency with these texts, the agency that is inherent to the act of reading. Moreover, the work of Aliagas and Margallo (2015, 2017), Mackey (2016), and Merchant (2015) signal that the parent-child relationships when reading literary apps might be affected by their interactive and multimedia features. My research, therefore, narrows this critical gap in scholarship by investigating the child reader's agency when reading literary apps, both in relation to the constraints posed by the affordances of the text and those posed by the parents as co-readers.

3 RESEARCH DESIGN

3.1 Ontology and Epistemology

The core of this research lies in understanding meaning-making, thus epistemological assumptions permeate the research throughout. To maintain the internal coherence of the research, the same assumptions made regarding children's making meaning with literary apps extend to how I, as the researcher, make sense of the phenomenon being investigated.

In terms of epistemology, social semiotics sits in the realm of social constructionism. According to Crotty (1998), constructionism

> is the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context. (p. 42)

Constructionism aligns with the interpretivist paradigm, which "[begins] with individuals and [sets] out to understand their interpretations of the world around them" (p. 59).

In this multimodal case study, the reading event constitutes the moment of transaction, in which the child engages with semiotic artefacts, in this case interactive texts composed of signifiers in various modes. These signs are interpreted by readers according to their previous socially-shaped knowledge and experiences, but also according to their motivation and intentions at the moment of reading. Similarly, the research process is "a form of reading, and active making of meaning" (Yandell, 2013, p. 44). Thus, I have

conducted my own situated reading of the multimodal texts of the reading events, including apps, participants and their responses, and the context in which we are inscribed.

A multimodal social semiotics perspective of meaning-making is ontologically situated as realist and relativist simultaneously: "perception is selective. And yet the other affordances are objectively there" (van Leeuwen, 2005, p. 5). According to Crotty (1998), this is valid for all research guided by the social constructionism epistemology; people, with their subjectivity, construct meaning in their relationship with the objective reality outside of them, in this case, materialised in the signifiers in the apps. Similarly, as the subject, I am making an individual interpretation of the phenomenon, but am, at the same time, guided by its material signifiers. Also, I am bound by a *socially constructed repertoire* of theories and my *intention* to apply these theoretical lenses to my interpretation to finally generate new theory. These aspects bring an objective dimension to my subjective interpretation that allows it to be evaluated and validated in academic terms. Hence, my interpretation and the theory that emerges from it are not 'true' or 'valid' but are 'useful' (Crotty, 1998, pp. 47-48) to inform future explorations of the construction of meaning in literary apps that follow the same paradigm.

3.2 Methodology

This research is a multimodal case study, which uses the theoretical assumptions and the systematic strategies for data analysis derived from social semiotics to understand the complexity of the individual cases, which consist of a child and a parent reading together two literary apps. With the aim of acknowledging the social context and considering its influence in meaning-making, participant observation and informal interviews, are also part of this methodology.

3.2.1 A multimodal methodology

The combination of multimodality as a domain for enquiry and social semiotics as a theory of meaning has generated a new perspective in the research of meaning-making. Nevertheless, studying a multimodal phenomenon does not necessarily mean doing so through a multimodal methodology. For instance, some of the research on print picturebooks privileges the analysis of the visual mode (e.g., Painter et al., 2013), while some reader-response research relies mostly on children's verbal responses (e.g., Lewis, 1992). Assuming a multimodal perspective has both theoretical and methodological implications. It also poses challenges to researchers, as, in considering all the modes in the analysis of a phenomenon, the amount and the complexity of data increases. As a

result, researchers in the field have been developing methodological tools to help them deal with these issues.

Assuming a multimodal methodology brings consequences to the whole research process. It affects the theorisation of the phenomenon being studied, influencing epistemological and ontological assumptions, but also the data collection, which should account for all the modalities being expressed in this communicational process. It also affects the data analysis, as transcription should not be restricted to what is spoken, thus the development of multimodal annotation and transcription. Finally, it affects writing and disseminating research, where multimodal ways of presenting the results of a research project must be considered to do justice to the multimodal richness of the phenomenon being studied.

The project embraces a multimodal methodology, first, as it assumes the theoretical perspective of multimodal social semiotics. In terms of data collection, the first source of data is itself a multimodal artefact: the literary app. The collection of empirical data was also structured with the aim of capturing children's multimodal responses (verbal, visual, auditory, embodied), thus video-recording was essential. This complex multimodal data was analysed through the tools of multimodal annotation and transcription which considers all modes and their different roles in the communicational process with the same depth.

3.2.2 Case studies

Case studies are a standard approach in the multimodal research tradition because they allow for in-depth analysis of complex phenomena typical in this area of research. Case studies allow for a variety of research methods with the objective of having a holistic understanding of the object of study, primarily focusing on its intrinsic relationships, how its elements are interrelated and interconnected (Stake, 1995). It is suited to answer "how" questions (Yin, 2014), where the research aims for understanding rather than explanation, "chronologies more than causes and effects" (Stake, 1995, pp. 39-40). Bassey (1999) claims that, in focusing on the "study of singularities" (p. 4), case studies can be classified in three categories: theory-seeking and theory-testing case studies; storytelling-telling and picture-drawing case studies, and evaluative case studies. This study lies in the first category, whose outcomes "should be a worthwhile and convincing argument supporting a *fuzzy generalisation* (or in a more tentative form, a fuzzy proposition)" (pp. 12-13). Assertions resulting from the research are already a form of

generalisation (Erickson, 1986), drawn from the researcher's deep thinking and understanding, built based on "some hidden mix of personal experience, scholarship, assertions of other researchers" (Stake, 1995, p. 12).

Both the process of mapping the meaning potential of a multimodal text and that of understanding how children create meaning out of this potential require in-depth analysis of the individual qualities of both texts and readers, and the consideration of the elements of the social context that are materialized in the situation. This project is a collective case study (Stake, 1995) in which I have worked with a small sample of six children and their parents, reading two different literary apps. Understanding the 'whats' and 'hows' of meaning-making requires a detailed multimodal transcription and analysis of the phenomenon that cannot be undertaken with a large sample, where the richness of the details essential to understanding it would be lost. The results of this research may not be generalizable in statistical terms, but as Bassey (1999) suggests, may lead to 'fuzzy generalizations,' that carry a level of uncertainty, but still are essential in informing the constantly developing understanding of what literary apps and their characteristics are, and how children make meaning from them.

3.3 The readers, the texts and the context

In this research, each case consists of a preschool 4-year-old child accompanied by a parent reading a literary text. In this section, the characteristics of the participants, the literary apps, and the setting where their encounter occurred are described.

According to Halliday (1978), while the social context is an abstract notion that is impossible to be grasped and described when considering how meaning is constructed, the context of the situation, although also abstract, is something that can be described, and that affects directly the meanings that are created in a situated event. Thus, although every reading event is unique, certain aspects such as the child's age, the kind of reading event (individual, joint, group reading), where the reading event takes place (school, home, library), and which types of texts are being read (print or digital, narrative or concept book, fictional or informational) are variables that affect the stance readers take, the kinds of meaning they may construct and the ways they choose to express these meanings. Consequently, to make the cases comparable in some sense in this small-scale qualitative research, these aspects were considered carefully. These decisions, based on the literature and the experience of the pilot study, are described and justified in the next sub-sections.

3.3.1 Access to participants

A call for participants was advertised online in different websites and list-serves aimed at families, and several preschools, nurseries, public libraries, museums, etc. (see poster in Appendix A). I also volunteered at the city's public library conducting storytime sessions, both in English and in Portuguese, in the expectation that my involvement with the library community would provide me broader access to participants. After screening the potential participants according to the sampling criteria, six children accompanied by at least one parent participated in the research:

- Emme, 4y4m[2], and her mother Alex
- Amelia, 4y5m, her mother Becky, and, in one session, her Grandmother Judy
- Lukas, 4y7m, and his mother Silvia (participated in the pilot study only)
- Maria, 4y3m, her mother Daniela and her father José
- Molly, 4y4m, her mother Abby and, in two sessions, her sister Elsie, 2y6m
- Roza, 4y0m, and her mother Boguslawa (Bea).

This group of participants are part of a group sampling strategy, which "[selected] cases to create a specific information-rich group that can reveal and illuminate important group patterns" (Patton, 2015, p. 283). Within this type of sampling, 'homogeneous sampling,' which aims to "describe some particular subgroup in depth" (p. 283), was used. The characteristics of the group will be discussed next.

3.3.2 Child Participants

This study has as principal informants 4-year-old preschool children. There were many reasons why this specific group was chosen. Firstly, a great body of literary apps targets young children as their main audience. This can be partly explained by the strong connection between many of these apps with the picturebook tradition. Despite the increasing production of cross-over picturebooks, they are still considered primarily a form of literature to be experienced in the early years. Yet, reader-response research (on picturebooks) often focuses on children reading at school, more rarely considering preschoolers and even more rarely investigating reading out of school and parent-child joint-reading. Moreover, in the UK particularly, children go to school at a very young age, around 5-years-old, and are soon exposed to formal teaching of how to decode the

[2] Child's age at the first session of data collection.

written text, which significantly changes their perception of reading and literacy (Levy, 2011). During this transitional learning stage, children tend to focus on the decoding, or trying to decode, the written text (Hickman, 1981), rather than on making sense of the multimodal narrative as a whole, focusing on an efferent rather than an aesthetic reading stance, a process that was observed during the pilot study. This process also affects the parent joint-reading situation, as children, parents, or both, may prefer to shift from joint to solitary reading.

Considering this scenario and the fact that the research is interested in children's aesthetic responses to literary apps, I decided to focus on preschool children, which then limited the sample to 3 and 4-year-old participants. However, children's physical, cognitive and emotional development is significant between 3 and 4-years-old. 3-year-olds have a comparatively more limited ability to communicate verbally and graphically. Furthermore, they are still developing their ability to understand narrative picturebooks (Bettina Kümmerling-Meibauer & Meibauer, 2015). Hence, within the spectrum of "young children," the group of preschool 4-year-olds was chosen because at this age children are generally familiarised with reading narrative picturebooks but not yet exposed to formal reading instruction, while also able to clearly communicate their responses to the texts.

3.3.3 Adult participants and the joint-reading situation

Although the focus of this research is on children's meaning-making, the events in which meaning-making is examined are joint-reading situations with a parent. Maria was an exception because she always came to the library accompanied by both parents. Amelia had the company of her grandmother in one of the sessions, and Molly had the presence of her little sister in two sessions. The participants requested such alternative arrangements, which were embraced by the research, considering that these variations of joint-reading were spontaneous and within the understanding that meaning is socially situated. Because the focus was on the child's meaning-making, different configurations of joint-reading did not affect the analysis and theorisation of the project.

While most apps present a 'read to me' function where the text is read out-loud – thus mediation is not required even for pre-literate children – focusing on the joint-reading situation was a deliberate choice. First, through the dialogic relationship between reader and co-reader, the meaning-making processes are enhanced and become more explicit and evident, generating a 'space of possibility' (Maine, 2015) in which meaning is

negotiated and materialised through conversation, gaze, gestures, etc. These materialisations allow the visualisation of aspects of children's meaning-making.

In addition, this research considers that meaning is socially constructed, but the social context is too broad and abstract a concept to be grasped, thus the need to define a situation type, in which emerges a specific "constellation of meanings deriving from the semiotic system that constitutes the culture" (Halliday, 1978 p.109). Parent-child joint-reading consists in a specific type of reading situation, a genre of social engagement between parents and children, in which particular roles between the participants and the use of particular forms of communication are established. The definition of this situation type also depends on the setting where the event takes place, which is discussed below.

Finally, although research suggests that 78% of parents of 3-5-year-olds in the UK read to their children every-day and only 1% says they read less often than once a week (Scholastic, 2015), there is a gap in research regarding the responses of young children in this reading situation from an aesthetic perspective.

That being said, as the joint-reading situation is central to this research, the only sampling criteria for the joint-reader was to have the habit of joint-reading with the child, in print, digital, or both. If a parent did not have such a habit, the situation type as discussed would become artificial. The parent might not have known how to behave in the situation and not have elicited the child to respond to the text or create a dialogic relationship, as observed with one family in the pilot study.

3.3.4 Other sampling criteria

In addition to the criteria previously described, a combination of other sub-criteria was considered with the aim of having participants that would be natural and comfortable in the activities proposed.

First, it was recommended that the children had some experience in manipulating digital mobile touchscreen technology, such as smartphones and tablet computers, because the novelty effect could interfere with how the children made meaning from the stories. Although all the children had at least some familiarity with touchscreen technology, the fact that their uses of these devices were highly mediated at home seemed to add a certain excitement to their participation in the research that possibly would not be as significant in spontaneous readings.

Another aspect that affected the selection of cases was whether the families had the habit of visiting a library. As the research is considering libraries as a semi-naturalistic context[3] for data collection, it was preferable that participants were familiar with this environment, and this was also the case for all the families that signed up for the research.

Also, the sociability of the child and their openness and ease during the research situation was taken into consideration. If a child, in the initial encounter, showed significant signs of discomfort in engaging with me and in being part of the research, it would be recommended that the family did not participate in the study. Although the children were shy in the first encounter to different degrees, there were significant signs of enthusiasm and interest in reading the literary apps and sharing their experience.

Finally, the research aimed for a gender-balanced sample, but unfortunately only families of girls fitting the sampling criteria signed up for the main study. As discussions of gender were not a matter of analysis in the research, the final sample ended up consisting mostly of girls. The only boy to take part in the research was Lukas, who participated in the pilot study. This is a limitation of the research, because gender is likely to be expressed in reader's interests and motivations, but I argue that gender did not determine the findings. Issues of gender did not stand out in the children's and the parents' responses and attitudes towards the texts.

3.3.5 Setting

Assuming the setting, as part of the context of the situation, influences children's meaning-making processes, the decision of where to conduct the observations is determinant to this research. Initially, the idea was to conduct the observations at the families' homes. Because "the home, however, is an intimate setting – one that is laden with expectations and surrounded by physical and psychological boundaries" (Jordan, 2006, p. 170), conducting research at the participants' homes is delicate and somewhat intrusive, touching several ethical issues. Also, the reactivity effect may be intensified (especially with video-recordings), because the researcher is present in a setting that is

[3] Libraries are not entirely naturalistic settings because most libraries do not provide tablet computers for the reading of digital literature.

usually understood by the participants as their intimate space, increasing the discomfort of being observed instead of reducing it.

Ethnographic research has investigated children reading at home, but, in the first place, observing the socio-cultural context is the focus of this kind of research. Here, the context was not the focus of the research. Conversely, the details of the materialisations of meaning-making were fundamental to the analysis, thus it was necessary to have accurate video-recordings of the event. Therefore, the invasiveness of conducting research and filming at the participants' home seemed unjustified and problematic. At the same time, I did not want to conduct the research in a "neutral" setting, such as a room adapted as a reading space, because it then suggested an experimental design and contradicted the ontological, epistemological, and theoretical assumptions of the research. If the premise was that the social context was significant to meaning-making, it felt contradictory not to observe the reading event in a natural reading space.

The library then emerged as the ideal setting: it is a place traditionally devoted to books and reading, and more recently to access to computers and the internet. A partnership was formed with one public library to use the children's library as a setting at times when the library was not available to the public.

3.3.6 Selection of primary texts

This project involved textual analysis of, and children's responses to, two literary apps. To select these apps, I read and analysed over 120 literary apps (see bibliography in Appendix B). This first corpus was selected based on review websites ("Children's Technology Review," n.d.; "Common Sense Media," n.d.; "Gretel Recomendaciones Digitales [Gretel Digital Recommendations]," n.d.; "Kirkus Review," n.d.; "School Library Journal," n.d.; "The Horn Book," n.d.), awards ("Bologna Ragazzi Digital Award," n.d.; "Kapi Award," n.d.; "Parents' Choice Awards," n.d.), and recommendations from researchers in the field. The research focused on apps for the iPad because Apple's AppStore is the platform with most availability of literary apps. The two selected apps are only available for Apple devices. During data collection, the apps were played on an iPad Air, the most recent model of the device available at the time.

The first layer of elimination criteria involved selecting apps that were appropriate for 4-year-olds, that were fictional texts and that presented a narrative. After such narrowing down, the remaining apps were considered according to their literary quality. First of all, it was essential that the apps had a literary essence to them. Although hybridity is an

important feature of literary apps, apps that made a poetic use of the features of digital media to tell the narrative were prioritised, which included the use of multimedia and of interactivity in meaningful ways. Therefore apps that were merely digitized texts with hotspots and texts that tended more towards an experience of gaming were disregarded, although of course such delimitations are subjective. Finally, I considered the texts literary richness and potential to challenge readers and elicit response.

Having reduced my initial corpus considerably to a manageable number of apps, I chose the final two apps based on their narrative and textual affordances. The aim was to select apps that presented different sets of resources for meaning-making, thus allowing for a broader consideration of the meaning possibilities of apps in general. The task was not straightforward, because digital technology makes possible numerous combinations and resources. Unfortunately, due to the complexity of the phenomenon being studied and the depth of the analysis being proposed, it was not possible to select more apps to cover a broader range of affordances.

The Monster at the End of this Book (Stone & Smollin, 2011) (hereafter, *Monster*) was selected because it is a rich and engaging narrative that plays with metafictionality while it connects with children's emotional lives and experiences of fear. In terms of narrative discourse, it is a narrative told in direct speech, that addresses the reader directly. Animation is also an important component of the app: each scene starts with a fully animated sequence, that is then open for reader participation through interactivity. Furthermore, it is an app that makes use of the multimedia and interactive features of digital technology and at the same time makes direct reference to reading in traditional formats. The design of the app is also well developed: the app is easy to navigate and supports readers with clues when they do not know how to interact. Finally, the app is part of the transmedia project of Sesame Street's (Ganz Cooney & Morrisset, 1969-present). The app's protagonist, Grover, is a well know Sesame Street character, hence the app presented a potential for pop culture and intertextual connections.

The second app, *Little Red Riding Hood* (Nosy Crow, 2013) (hereafter, *Little Red*) was selected because it transforms the traditional fairy tale into a hypertextual narrative in which the reader can make choices that influence the outcome of the story and "help" Little Red through various in-narrative games. The result is a hybrid story that mixes a book-like narrative style with features typical of video-games. It is a highly interactive

text with multiple layers of participation. It also suggests highly performative forms of interaction, for instance through blowing or tilting the device to activate certain actions.

Another app, *Hat Monkey* (Haughton, 2013), was also initially selected as a third primary text and the participant readers read the app during the research sessions. Nonetheless, because of the richness of the data collected and the complexity of the analysis proposed, after data collection it was decided to focus the analysis on *Little Red* and *Monster*. The decision to keep these apps and exclude *Hat Monkey* was based on the fact that *Hat Monkey* only loosely presents a narrative. There is no strong causal relationship between the scenes, which show a day in the life of Monkey, with whom readers can play and communicate with. The open-endedness of this app resulted in significantly different responses from the readers, and such variation informed the decision to exclude this text from the final analysis. This data will be analysed and discussed in future publications, as it also presented valuable insights into children's meaning-making processes when reading apps.

3.4 Methods of data collection

3.4.1 Overview

As discussed, meaning-making is not necessarily explicit, and some aspects of it may not even pass through verbalisation because the signs being created may belong to non-verbal modes. Therefore, to analyse children's meaning-making when reading literary apps, multiple data sources that express various aspects of meaning-making were considered.

A first screening of the participants according to the sampling criteria was conducted via e-mail, and then the families were invited to take part in a warm-up session. In the warm-up session, an informal semi-restructured interview was performed to confirm that the participants' profiles were in accordance with the sampling criteria and to gather general information about their print and digital reading habits. Furthermore, in the warm-up session, child and adult participants engaged with me in the library, reading print and digital books, with the aim of establishing a relationship between researcher and participants and making participants comfortable in the research situation. The next stage involved the observations. Each observation session consisted of three different activities. First, parent and child read together one of the selected literary apps. When it was clear that the child had finished reading, paper and pencils were provided, and they were elicited to create a visual response to the narrative.

Finally, after the drawing, the children were presented with paper puppets and asked to re-enact the story with those. All activities were video-recorded, and during the drawing and puppet activities I engaged directly with the children and talked to them about their responses.

There were three (plus one optional) observation sessions. The interval between the sessions was of about two weeks, and the four sessions of data collection happened approximately in an interval of two months. In the first two sessions, the participants read and responded to a different literary app, respectively, *Monster* in session one, *Little Red* in session two. In the third session, they read the picturebook version of *Monster*, while in the fourth, optional session, they were free to re-read any of the selected apps they wished.

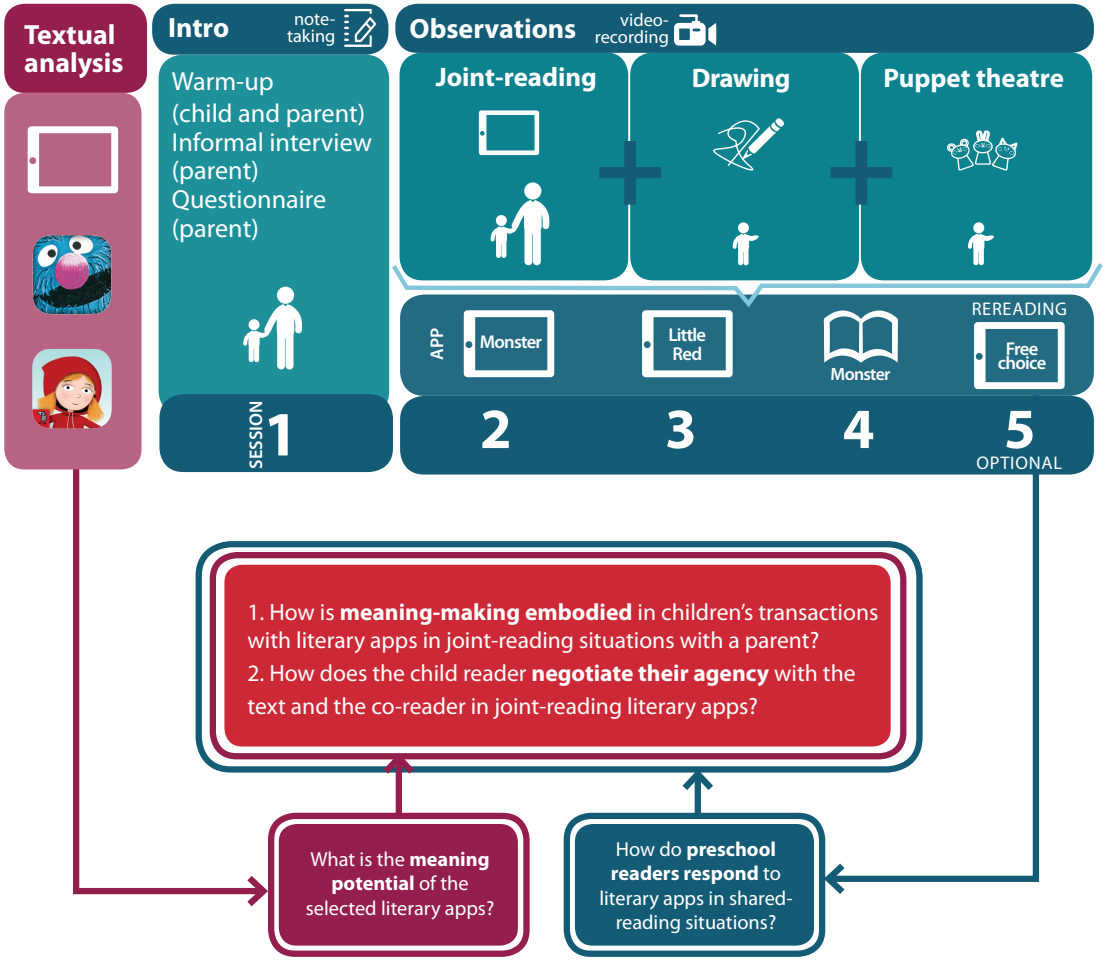


Figure 3.1: Visual summary of the data collection and how it informs the research questions.
It illustrates how the research design involves both textual analysis and empirical research with children and their parents, and the various stages of the sessions of data collection. The arrows indicate the origin of the data that will answer each of the underlying questions and how both inform the main questions of this project.

Rereading was encouraged because it is typical among preschool children (Crago, 2014) and it may allow for new, more profound meanings to develop as children reinterpret

the story based on their previous reading and the experiences lived between that first reading and the new one (Arizpe & Styles, 2016). Some children's interests in rereading were such that they requested to reread the same app or apps from the previous sessions already during the main sessions.

During the sessions, the children read not only the apps suggested by the research, but they usually asked for other stories, sometimes choosing books from the library shelves or reading other apps from the collection of apps available in the iPad. The structure of the sessions was also not strict in order to make the children comfortable, so when a child got into the library and immediately felt interested in reading a print book, that was encouraged.

3.4.2 Building the case: informal interviews and questionnaire

In qualitative case studies, getting to know the participants and their "uniqueness" concerning the phenomenon being studied is essential (Stake, 1995). Their uniqueness manifests at the moment of reading, as readers bring their interests, motivations, and experiences to make their interpretations of a text. These elements not only refer to readers as individuals but also signal aspects of the social context of which they are a part. Nevertheless, only observing the reading event would provide little explicit information about who these people are and their histories of reading, in print and digital.

The most efficient way of getting to know the participants as individuals is by talking to them. Thus, the first stage of data collection involved a short (around 15-20 minutes) semi-structured interview with the parent. The topics and issues discussed were outlined in advance (Appendix C), but the sequence and wording of the questions evolved naturally from the conversation. The advantages of this format of interview are that the tone can be kept natural and conversational, and yet the central issues are sure to be asked to all participants, maintaining a somewhat systematic collection of data (Patton, 2015). These conversations were not recorded, but field notes were kept. The initial interview happened during the warm-up session, but this process of knowing the participants extended through the research process as informal conversations that took place before and after the observations. Some parents were especially willing to share their views and perspectives and to ask advice with regards to their children's use of digital media or recommendations of other apps. Considering the child participants were very young, interviews of this sort were not conducted with them. However, through playful engagements with me before, during and the observations I could also gather

valuable information about the uniqueness of these participants, their interests in stories, reading and digital media, as well as their engagement in the research and willingness to continue taking part in the following sessions.

Additionally, to support better-informed interpretations of the reading events, the parents were asked to respond to a questionnaire (Appendix D) inquiring about their children's use of digital media and reading habits in print and digital formats. The questionnaire was developed by the BookTrust (Kucirkova & Littleton, 2016) and was used and adapted with the researchers' kind permission. The questionnaire was included as a source of data with the aim of getting a more systematic view of these families' profiles and habits of reading and using digital media. It also positioned the families in relation to the national statistics. The answers to the questionnaire were considered only qualitatively.

3.4.3 Warm-up session

With the objective of diminishing reactivity, the parents were asked to bring their children to the introductory meeting that happened before the observations effectively started. In the warm-up session, parent and child could familiarise with myself and the library where the observations took place. Because I would need to interact with the participants during the sessions, especially during the drawing and finger puppet activities, it was important that they felt comfortable in doing so. The activities involved reading print and digital books and talking about books and their reading preferences, as described above. The structure of the research and terms for participation, which had been sent earlier to the adult participants, were discussed and a child-friendly version of it was communicated to the child. The iPad was presented to the participants, and they read one or two literary apps to gain a better understanding of what kind of digital literary text the research was about. The participants were also invited to manipulate the recording equipment as a way of becoming more familiar and comfortable with the video-recording situation, as recommended by Flewitt (2005). None of the children seemed to have familiarity with professional video-recording equipment, and I taught them how to make a recording, they recorded me and then I showed them the recorded video through the camera screen. This aimed to provide these young participants with a better understanding of what their participation in the research entitled. With this information in mind, the children were enquired about their willingness to participate in the project and provided verbal consent.

3.4.4 Observations of shared-reading of literary apps

According to Yin (2014), the advantage of direct observation lies in the fact that they allow the researcher to cover the phenomenon in real time and to consider the context in which the event takes place, both aspects that are essential to this research. Only observing the event in real time would allow capturing the signs of meaning-making made by children while reading. Therefore, the data collected from the observations of children and adults co-reading the texts was the central source of data for this study.

When the participants arrived at the library, the seat that would accommodate all of them was already placed in the middle of the central section of the children's library, and a stool was provided for readers to support the iPad. The cameras were also already in place, positioned towards the seats. One limitation was that the parents did not have the freedom to choose where to sit and how to sit to read the stories together. Unfortunately, as I was alone in the library, it was not possible to provide such freedom to the participants, because the set-up of the cameras was time-consuming and complicated. While the families were reading the apps, I remained out of their sight making field notes. Very rarely the participants engaged with me. When that happened, it was usually by exchanging gazes, but at a few times by asking a question or making a comment.

3.4.5 Video-recording

For the detailed multimodal analysis of the participants' responses through speech, gestures, gaze, sounds, etc., it was necessary to have a permanent account of the sessions that could repeatedly be revisited. Therefore, the observation sessions were video-recorded from various angles using four cameras that allowed the clear visualization of the readers' responses (frontal, side angles), and of the screen and participants' haptic interactions with it (back and top angles) (Figure 3.2 below shows the views from each camera). The cameras were positioned with consideration that certain camera angles impart power relations that might influence the interpretation of data (Yandell, 2013), so camera 1 had a frontal view of the participants at approximate eye-level.



Camera 1: front-facing camera



Camera 2: screen-facing camera



Camera 3: side-facing camera



Camera 4: top-down-facing camera

Figure 3.2: Views from each of the cameras used in data collection.

Generally, camera 3 worked as a backup in case camera 1 failed, which happened in one of the sessions. Similarly, camera 4 worked as backup to camera 2, because it allowed the visualization of the screen from the top. Unfortunately, camera 4 was difficult to operate and stopped working half-way through a few sessions, so data from this camera was not analysed. Technical difficulties apart, the combination of images from the four cameras permitted a full account of children's responses in all sessions, having captured their verbal comments and conversation with the secondary participants, their facial and body responses, their gestures towards the screen and what was happening at the screen during the reading event.

The cameras were set up before the arrival of the participants and as much as possible away from their sight, in the effort of minimising reactivity. Nevertheless, as the iPad is mobile and the situation is informal, some participants moved during the reading event, requiring re-adjustments of the cameras, especially the one that aimed at capturing the device's screen. Before the reading of the app and the actual observation started, the participants were encouraged to read a book of their preference from the library shelf. This aimed to put the participants at ease in the research situation and allowed the adjustment of the cameras without raising much attention, as participants were already concentrated in the act of reading.

3.4.6 Graphic elicitation and puppet theatre

Although the observations of the reading events are key to this research because they allow an account of meaning-making at the time of reading, data was complemented with the observation of two forms of children's responses made immediately after the initial reading: the elicitation of children's visual response, and of their re-enactment of the stories using finger puppets.

Graphic elicitation facilitates "investigating layers of experience that cannot easily be put into words" (Bagnoli, 2009, p. 584) and has traditionally been used to capture children's responses to literature (e.g., Arizpe & Styles, 2016; S Pantaleo, 2005; Whitin, 1996), especially when reading texts with a visual component. In this project, children were asked to make a visual response to the narratives in the form of drawing and talk about their visual text. Furthermore, I provided finger puppets with the key elements of the narrative in question and asked the child to re-enact the story (See Figure 3.3).

Although the investigation of embodiment and agency in children's readings of literary apps centred on the observations of the joint-reading events, these sources of data generated important triangulation opportunities. The participation in the drawing and re-enacting activities afforded the participant children with the possibility to communicate aspects of their meaning-making that were silent or covert during the reading event. Their responses in these activities at times also highlighted aspects of the reading experience that were especially relevant for them. The drawings and re-enactments also provided an opportunity for further interaction between myself and the participants, and I asked questions related to their actions and choices, with the objective of giving them the opportunity to express and explain their responses and revealing more details of their meaning-making processes.

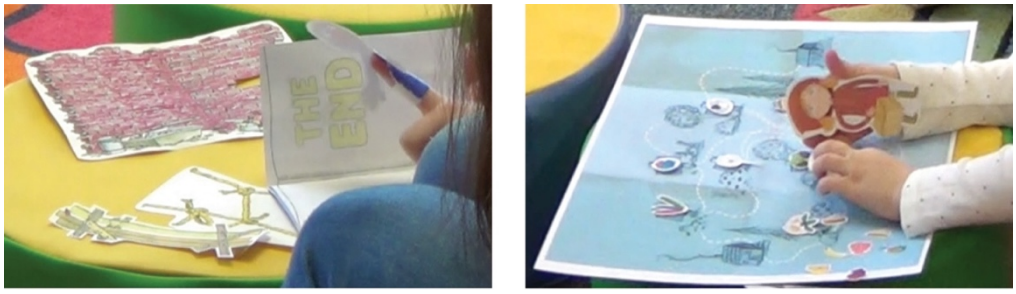


Figure 3.3: Puppets created for the re-enactment of *Monster* and *Little Red*, respectively.

3.4.7 Reading the picturebook version of *Monster*

Another complementary source of data was the observation of the participants reading the codex picturebook version of *Monster,* originally published in 1971. All participants

read the app version of the story in the first session and the picturebook version at a later session. The reading of the print version happened after the app version because the focus of the research was on the children's responses to the app, and it was intended that the participants did not have previous knowledge of the story.

The observations of the children reading the picturebook are not part of the main dataset of the project because they do not directly respond the research questions, which focus on investigating the nature of literary apps and their reading. It is not, therefore, the aim of this research to conduct a comparative analysis of app and picturebook readings of the same story. Observing children's responses to this participatory picturebook was important methodologically, though, because it provided another source for triangulation. In the first place, it extended my knowledge of the participants, crucial to the understanding of the cases. It provided information about their reading style and the parent-child relationships while reading literature in a format they were familiar with. Furthermore, although research on children's responses to literary apps has developed throughout the duration of this project, the soundest and most in depth works discussing children's responses to multimodal literature refer to children reading picturebooks (Arizpe & Styles, 2016; Pantaleo, 2008; Sipe, 2008). Hence, having a view of their responses to a picturebook would allow making substantiated links to this body of scholarship, supporting the interpretation of the children's responses to the apps.

This metafictive story, both in print and app version, establish a direct communication between reader and fictional world. Grover talks to the readers and the action of turning the page is made meaningful in the context of the narrative, so the participation of the reader is a significant element of this story already in the original print version. In the picturebook, however, the actions of destroying Grover's protections aimed to stop readers from turning the page are implied between one spread and the next, while in the app they are realized through interactive moves.

Having a perspective of the responses from the children to this participatory and dialogic picturebook importantly informed the analysis of their responses to the apps because it allowed to consider, in the process of exploring and interpreting the data, the aspects of such participation that were afforded by the narrative and those that were afforded by the medium and the added interactions present in the app version. Hence, the data from the children reading *Monster* in picturebook form do not configure an important part of the

findings chapters, but are highlighted eventually when relevant to the discussion of specific aspects of the children's responses to the apps.

3.5 Pilot study

A pilot study was conducted with four families and five children, and involved two phases. The first phase was an exploratory phase where I aimed to acquire experience with 4-year-old children reading apps. The second phase involved a more systematic design, in which three children from different ages (3, 4 and 5-year-old) participated in sessions whose format was similar to what was intended for the main study. In this phase, two sessions were planned with each participant. The first session involved the observation of the joint-reading of *Monster*, followed by the graphic elicitation activity. The second session involved joint-reading the app *The Three Little Pigs* (Nosy Crow, 2011), followed by the puppet theatre activity. Lastly, the participants read the print version of *Monster.*

The pilot confirmed the suitability of the methods to elicit the children's responses. Furthermore, it contributed to the choice of focusing on 4-year-olds, because it indicated that 4-year-olds are likely to be mature enough to read literary apps while more likely to focus on the aesthetic experience. In confirmation with the findings of previous research (Levy, 2011), the 5-year-old who participated in the pilot tended to focus on her own capacity to decode the words from the text rather than on her aesthetic experience, which might have compromised the research's focus on children's aesthetic experience. Finally, the pilot allowed me to put my feet into the field and have a real sense of the challenges of managing the research equipment, the participants, and the dynamics of the individuals in the research situation. This experience led me to develop a checklist (Appendix E) with all tasks that had to be performed before, during and after the sessions, to make sure that they developed as expected.

Lukas was the 4-year-old participant in the pilot. Because the data collected from his sessions were extremely rich and no boys signed up to participate in the main study, the data from his participation in the pilot were included was part of the main research data-set. He read the *Monster* app multiple times as well as the print version of the story but did not, however, engage in the re-enactment of *Monster,* nor read the *Little Red Riding Hood*, and his mother also did not respond to the questionnaire.

3.6 Research Ethics

This research was conducted according to the British Educational Research Association - BERA *Ethical Guidelines for Educational Research* (2011) and the Faculty of Education's *Research Ethics Review Checklist* (Appendix F). Accordingly, parents or guardians and children were informed of the values and aims of the research, my role as researcher and their role as participants, and how and to whom the results of the study are being reported. However, considering the age of the child participants, it was unlikely that they had a complete understanding of these issues. Therefore, these aspects of the research were communicated to the children in simple terms that aimed at facilitating their understanding, and throughout the project the children were given opportunity to manifest their opinion, enthusiasm, or discontent towards any aspect of the research. The children and their families were considered participants whose contribution was valued and respected always, rather than 'research objects.'

Before the beginning of the research, parents and guardians signed voluntary informed consent (Appendix G). I acted to the best of my ability with transparency and honesty towards the participants at all times. All participants were informed of their right to withdraw from the study at any time and without penalty, including the right to withdraw from video or audio-recordings. An important aspect of the ethical protocol of the research was getting consent from the children, making sure that they also had the chance to express their desire to withdraw from a session or the entire study. I was attentive to signs of discomfort, especially from the children, regarding the activities or the recordings, that could indicate a desire to withdraw from the activity or the video recording. Only once the cameras were mentioned spontaneously by the participants: Roza asked why I needed so many cameras and I explained, in as simple terms as I was capable at the moment, that it was because one of the cameras could stop working and because my work involved observing the details of her reading experience. Considering that she could be uncomfortable with the video-recordings, I requested another time her consent on being video-recorded, which Roza granted. After that moment, there were no signs of Roza being unconformable or looking directly at the cameras, which could indicate discomfort.

No incentives were offered to the participants in exchange for their participation, but it was expected that the research would be an enjoyable experience for them, as they were presented with high-quality picturebooks apps and the activities of drawing and finger puppets are usually pleasant to children. The participants were also gifted with the finger

puppets that they used on each session, with a copy of the picturebook of *Monster* and with a code or gift card to download a literary app of their choice in their personal devices. The gifts were given to the participants at the end of the sessions and not as an incentive for recruitment. They were meant to be a sign of appreciation of children's participation in the research.

As much as possible, all participants were treated with anonymity and confidentiality. The participants have agreed that their first names be kept in the thesis and in other publications that derive from the project as a way of recognizing the importance and value of their participation, while their family names are omitted. The need for multimodal transcripts that include images of the participants and the micro-analysis being conducted in this research required that the participants' faces be made identifiable in the dissertation and publications that derive from this research. The participants have agreed that excerpts of the video and audio recordings and transcriptions that derived from the research be made public as part of this thesis or in the dissemination of research in academic circles, such as in conferences and articles. This characteristic of the research, however, poses a limitation to the preservation of their anonymity. To make sure that the participants were still comfortable with having their names and images reproduced, at the end of the writing up of this thesis the participants were again consulted. They were provided with a sample of the multimodal transcripts and finally with a draft of the thesis manuscript, and they have agreed that their first names and images be kept in the thesis. The participants were informed of the intended dissemination of the research, of its outcomes and will be communicated in the future of any publication that derives from it. Consent, therefore, was not concluded at the end of data collection, but is an ongoing process (Flewitt, 2005) that continues as long as any stage of the project is still active and publications are still being produced out of the data collected. Permission to use screenshots from the apps and from the recordings of the apps as they were read by the participants was granted by the publishers.

3.7 Data analysis

The analysis of the data consisted of two main processes of analysis, a textual analysis of the literary texts' affordances and meaning potential and the analysis of the participants' responses. With regards to the textual analysis, an interdisciplinary theoretical framework was developed to support, on the one hand, the analysis of the affordances that promote embodiment in literary app reading, and on the other, the analysis of how

the meaning-potential of the app works as a script or constraint for the reader's agency. The description of the affordances and of the meaning potential is, obviously, partial: "by nature such inventories are never complete, because they tend to be made for specific purposes" (van Leeuwen, 2005, p.17). It is impossible to analyse the totality of the meaning potential of any text, and even more complex when dealing with a multimodal text like an app. In addition, I am aware that, although guided by such theoretical frameworks, every reading of a text is subjective. The textual analysis was also informed by the multimodal transcription of the text.

With regards to the readers' responses, there were significant challenges in handling the multimodal data and defining the process of analysis. Traditionally, qualitative research centres on the analysis of verbal language, which is then transcribed in its entirety, providing the researcher with textual units consisting of written text only, which can be split into smaller units and coded. The multimodal perspective assumed by this project required that data was transcribed multimodally, but this labouring and time-consuming task cannot be performed in the entirety of the dataset. Therefore, a process for reducing and sampling data was required, but reaching a satisfactory strategy required the exploration of different methods and the adaptation of such methods to suit the characteristics of this research. Bezemer and Jewitt (2010), propose five steps for the multimodal analysis of video data: (1) data logging, a verbal descriptions of the data; (2) viewing data, multiple views of the data that will lead to a sampling strategy; (3) data sampling, defining a strategy to sample the data; (4) multimodal transcription, transcribing not only what is said, but all the modes foregrounded in the data; (5) coding and data analysis. This process was followed with some adaptations:

1. Data logging

This involved creating a descriptive account of the events. The main events, related to the primary texts that are the focus of the research, were watched multiple times and a verbal description was created. For the shared-reading event, the unit of analysis was the scene, which presents a clear delimitation of beginning and end, and generally presents an internal structure that is repeated at every new scene, forming a clear and structured meaning unit. The length of the scenes varied according to the text and the participants' responses, though, and involved multiple utterances, performed in various modes. Similarly, a description of the app's texts scene by scene was produced and screenshots of the scenes accompanied the verbal description. Although the logging involved mostly

verbal language, the descriptions considered the multimodality of the events, reporting in detail their most significant sounds, gestures, movements and visual elements, as well as the verbal utterances from the participants.

2. Viewing data and epistemological transcription

The video of each event was repeatedly viewed in different ways, for instance without sound or in slow motion, with the aim of getting new insights into the phenomenon, identifying patterns and routines. New details and annotations were then added to the logging and they allowed, in the light of the research questions, the emergence of a sampling criteria. While the original framework proposes that transcription only happens in step 5, in this project exploratory and epistemological uses of transcription (Bezemer, 2014) were also part of the exploration of the data. That is, segments of the data were transcribed according to different parameters with the aim of providing new ways of knowing the data and the meaning-making processes that were taking place. For instance, particular sections of the data were annotated and coded for children's facial expressions based on Ekman and Cordaro's (2011) categories, and for hand gestures based on Fróes and Tosca's (2017) taxonomy, but finally these approaches were abandoned. Still, these exercises in coding and transcription provided new insights into the data.

3. Data sampling – stage 1 – theoretical coding

Viewing and transcribing parts of the data did not seem enough to indicate a clear sampling strategy in this project and, for this reason, Bezemer and Jewitt's method was again adapted. While they propose that coding should be the last step of the process, coding was used in this project not only as a form of analysis but also as a form of data sampling. Based on the logging and annotations of each scene made at the viewing step, and based on the research questions that guide this study, the scenes were coded into two broad categories of 'embodiment' and 'agency.' That is, scenes that were identified as being significant instances of children's embodiment in meaning-making and in which they expressed more explicitly their agency in the reading events were selected. Therefore, this first layer of data sampling criteria was a form of theoretical sampling.

4. Data sampling – stage 2 – thematic networks

Still, the number of scenes that were coded as belonging to the categories of embodiment and agency were many, and a second method of sampling was applied. This time, the method of 'thematic networks' (Attride-Stirling, 2001) was used as a guide. The method consists of defining themes that emerge from the data and structuring networks based on

such themes. The method also had to be adapted because it was a method developed for the categorisation of verbal transcripts of data, and the fact that whole multimodal scenes formed a unit of analysis added significant complexity to the process. Two networks were created, one for the theme of embodiment and one for the theme of agency, and each network was constructed by basic, organising and global themes:

> Basic Themes are simple premises characteristic of the data, and on their own they say very little about the text or group of texts as a whole. … [Organizing Themes] are clusters of signification that summarize the principal assumptions of a group of Basic Themes, so they are more abstract and more revealing of what is going on in the texts. … Global Themes group sets of Organizing Themes that together present an argument, or a position or an assertion about a given issue or reality. (Attride-Stirling, 2001, p. 389)

The final sampling criteria were based on the networks, and excerpts from the data that represented critical incidences of the Organizing Themes were selected to be transcribed. The central structure of the findings was established through the analysis of these critical incidences and how they supported the Global Themes.

5. Transcription

The scenes selected went through detailed transcription and analysis with the support of the multimodal annotation software ELAN (The Language Archive, 2015), which allowed the annotation of the different modes of both the app and the participants' interactions (see Figure 3.4). The ELAN form of transcription served an epistemological function, providing insights into the multimodality of the events, the different forms of responses, the distribution of responses in relation to the input from the app and across time. These informed the definition of themes and the creation of the networks. The ELAN transcript, nonetheless, did not serve a rhetorical function, that is, it could not be incorporated into the thesis and other publications as pieces of evidence from the data (Bezemer, 2014). Therefore, I developed another form of transcript that aimed to bring the richness of the data to the printed page, following the work of Norris (2004) and Bailey (2016). The transcript (see Figure 3.5) follows some of the conventions of a comic strip but also include conventions typical of the traditional transcript genre, such as the time stamp and verbatim transcriptions of what the participants say. The comic transcript was created with screenshots extracted from the video-data and aimed at representing what was going on in the app and with the participants simultaneously, as

well as allowing the representation of changes in the participant's postures, gestures and verbal utterances over time. These transcripts are presented as vignettes in the findings chapters of this thesis and used to support the discussion of the main themes that emerged through the deductive-inductive coding approach described earlier. The transcript format was also adapted to include other types of information from the data that were relevant to the discussion of specific cases.

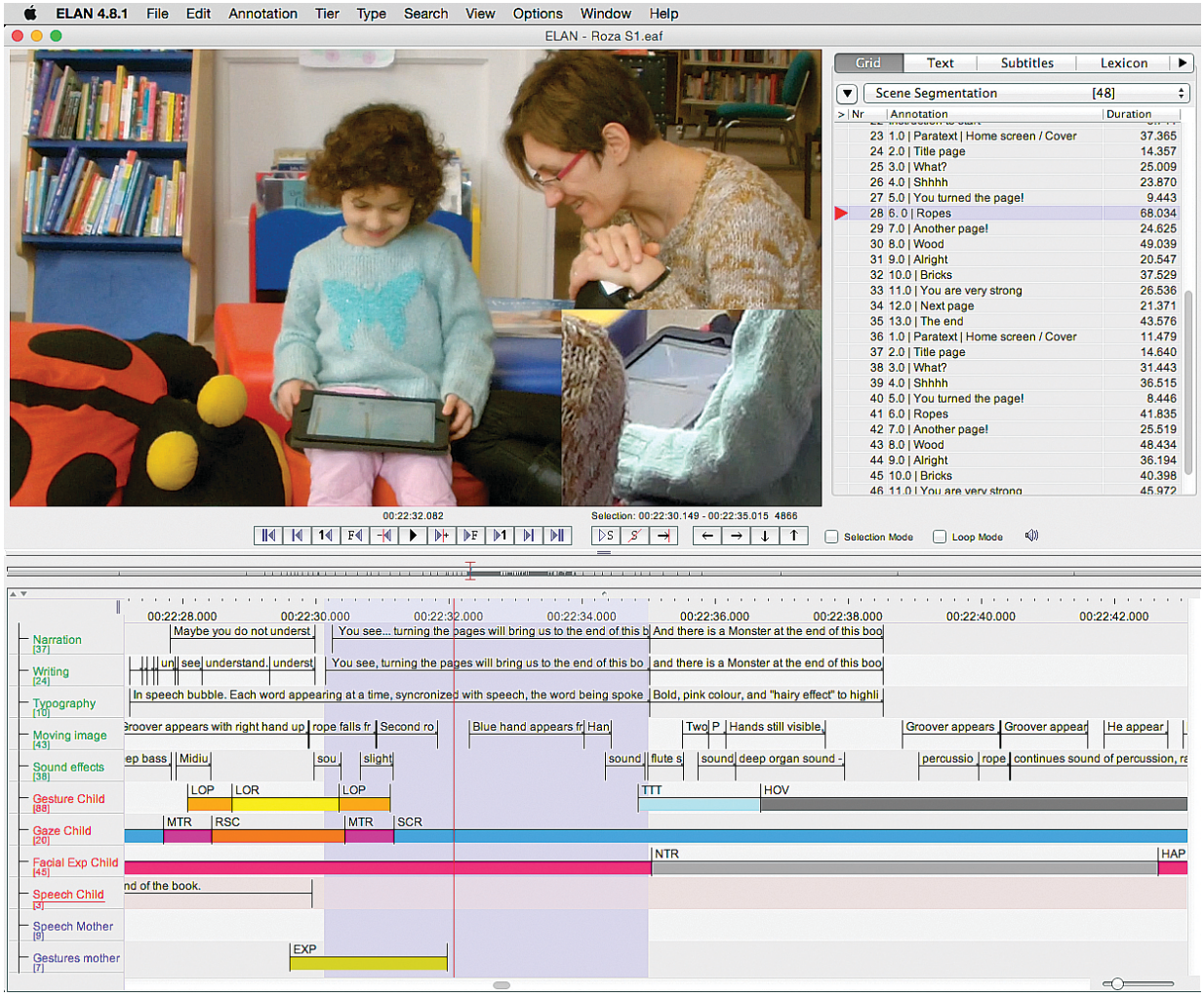


Figure 3.4: Screenshot showing data annotations and transcriptions using the software ELAN. At the top of the screen, the video is seen, showing in synchronicity the participants' responses and the screen of the device. At the right of the image, the list of scenes from the app. Bellow the control buttons, there is the video timeline. Further down, the tiers in which the annotations, transcriptions or codes are added in relation to the timeline. The green tiers refer to the transcription of the modes of the app text (scene delimitation, writing, typography, moving image, sound effects, narration). The following five (red) refer to the child's responses (facial expression, gaze, gestures, speech, vocalizations). Finally, the last four (purple) refer to the parents verbal and gestural responses.

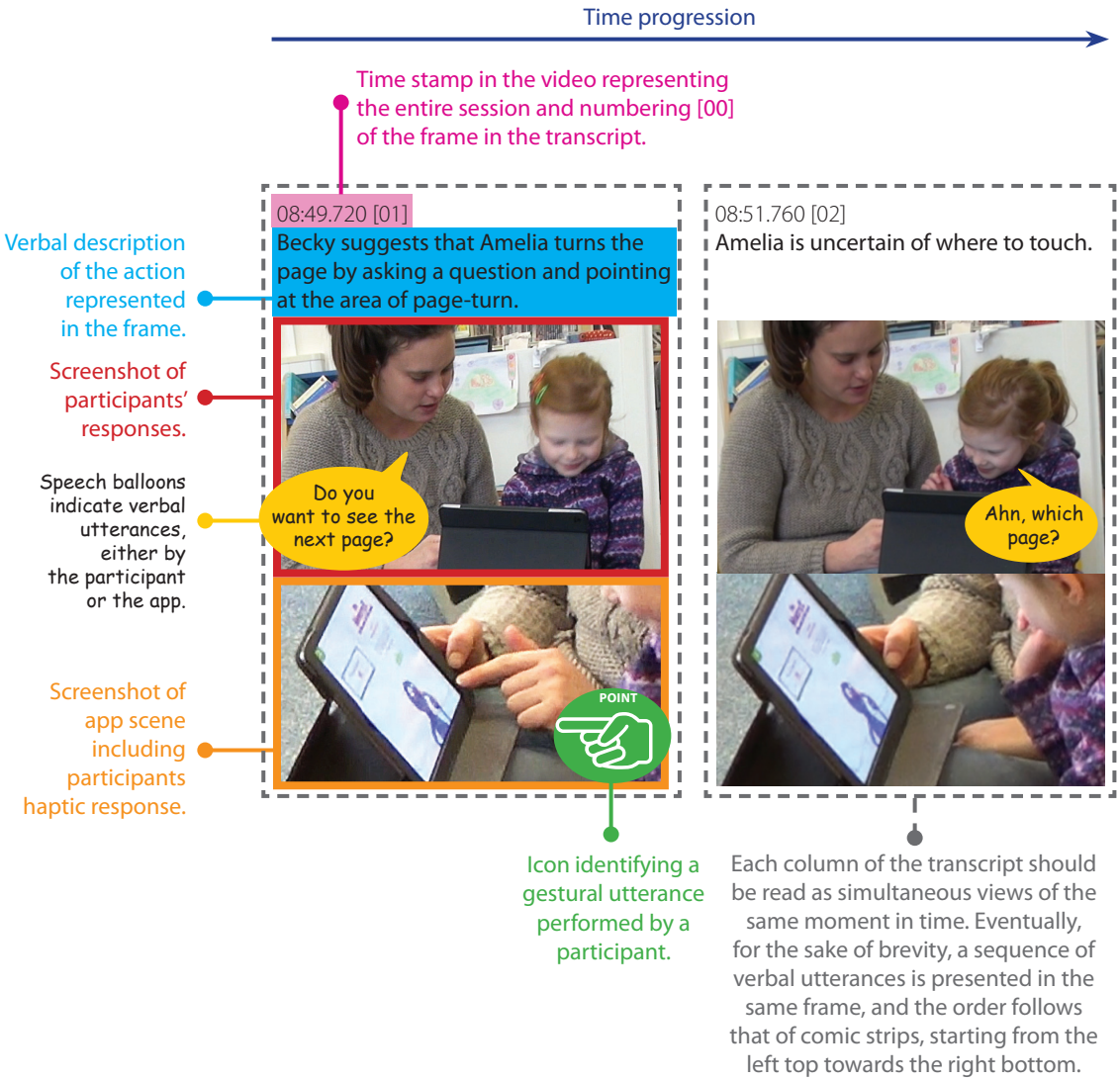


Figure 3.5: Annotated sample of the rhetorical transcript.
It includes indications of the different elements and what they represent, as well as indications of how to read the transcript.

Despite this transcript conveying much information that would be missing in traditional transcripts, it is important to highlight that transcripts are always rhetorical constructions and simplifications of the phenomenon (Cowan, 2014). Such textual constructions were made with the objective of highlighting the aspects of the data that were central to the arguments being made in the thesis. However, such reductions might lead to interpretations that diverge from the original. For instance, an image can capture micro-movements from the participants that were not as dramatic in the real event and in the video representation because it only happened during a fraction of a second, but because they are fixed in time in the transcript, they could be interpreted as having a salience that initially was not there. Hence, the analysis was based not only on the comic strip transcript but also based on the ELAN transcript and on multiple viewings of the video

file, in an iterative movement. Yet, the creation of the comic transcript did provide further insights into the data, also serving an epistemological function.
The observations of the reading events involved all stages of data analysis, while most of the secondary data (drawings and re-enactments) involved only the data logging and viewing data stages. This happened because the secondary data did not overtly address the research questions, which were centred in the process of reading, but they provided valuable information regarding the participants meaning-making processes in general and were used as sources for triangulation. Certain passages of the secondary data provided insights into the aspects of embodiment and agency of the reading event, so they were submitted to transcription and are presented in the findings section.

3.8 Attesting the quality of this project

This research, positioned in an interpretive paradigm, and interested in the individuality of each app and each child's meaning-making process, does not have the intent to measure the phenomenon in any way. As discussed above, the research operates under the assumption that the results achieved are not statistically generalizable. Therefore, the concepts of validity and reliability, pertinent to the positivist paradigm, are scarcely applicable to this project. Lincoln and Guba (1985), followed by Bassey (1999), suggest the concept of 'trustworthiness' as an alternative to the notions of validity and reliability. Trustworthiness accounts for the "respect for truth in case study research" (Bassey, 1999, p. 75) and is expressed throughout the research process.

Following Bassey (1999), the research process described above was designed with the aim of establishing trustworthiness. At the stage of data collection, multiple sources of data were used with the aim of providing a more complete and detailed account of the participants and their meaning-making processes, even though the focus of the research was on the reading of the apps. Furthermore, the method of video-recording helped to capture the children's talk and interaction with their parents, allowing multiple viewings and verbatim transcription. The analysis of the data involved repeated viewings of all the video data and the analysis and interpretation of the shared-reading events were considered continuously in light of the secondary data (drawings, re-enactments, as well as the knowledge of the participants reading habits and familiarity with literary apps and with touchscreen technology). The process of data analysis and interpretation was discussed continuously with and challenged by my supervisor, who worked as what Bassey calls a "critical friend" (p. 75). Furthermore, other qualified researchers helped

validate the transcription of the spoken language, which was often difficult to interpret because of the low volume of the children's voices. A researcher who is a Polish native speaker also validated some isolated instances in which Roza and Bea spoke in Polish during the recordings. The analysis and findings were also presented at conferences and research seminars, with the aim of being challenged by the academic community. The feedback from these presentations was considered and incorporated, when appropriate, into the analysis and interpretation of the data.

As the main participants in the study are young children, it was not viable to ask for their validation of the analysis. Nonetheless, I aimed to uncover as much as possible the participants' thinking processes during participant observation, in order to generate more possibilities of data triangulation. In addition, in reporting the research, this study was careful to "maintain a chain of evidence" (Yin, 2014, p. 45), or "establish an evidentiary warrant for the assertions one wishes to make" (Erickson, 1986, p. 90) by presenting in the report the process of induction that connected analogous and contrasting examples, exemplified with pieces of data.

4 INTRODUCTION TO FINDINGS

This chapter presents an overview of the participants, the selected apps and the analysis of the reading events. It starts with the profile of each participant and their co-readers, highlighting their experiences of reading and technology, age and text(s) read at each session of the research. Next, the general profile of the participants as a group is portrayed, establishing connections with the national statistics from the survey conducted by the Book Trust (Kucirkova & Littleton, 2016). The chapter continues with a summary of the selected literary app's plot and main features and concludes with a vignette from the data. This vignette works as a demonstration of this project's approach to the analysis of children's meaning-making with literary apps, and, more specifically, to the investigation of how embodiment and agency operate in these transactions.

4.1 Participants' individual profiles

Child **Amelia** **Co-reader (mother)** **Becky** **Co-reader (grandmother - only session 2)** **Judy**



Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading:
less than once a month
Had never read a literary app
Tablet use: few hours a month (father's tablet)

Confidence with technology
(reported by parent)

Amelia
Becky

Very confident | Fairly confident | Not very confident | Not at all confident

Participation in the research

Age	Session	Texts read
4y5m	S1	
4y6m	S2	
4y6m	S3	
4y7m	S4	

Other comments:
Embarrassed by my participation in the drawing session

Child **Emme** **Co-reader (mother)** **Alex**



Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading:
Had never read a literary app
Tablet use: few hours a week (father's tablet)

Only child who could decode the written text

Confidence with technology
(reported by parent)

Emme
Alex

Very confident | Fairly confident | Not very confident | Not at all confident

Participation in the research

Age	Session	Texts read
4y4m	S1	
4y5m	S2	
4y6m	S3	

Other comments:
Seemed confident in reading print and digital texts
Mother's preference for print books for Emme

Child **Lukas** **Co-reader (mother)** **Silvia**



Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading:
Had never read a literary app
Tablet use: none
Occasional use of touch technology
(sister's iPod touch)

Languages:
Portuguese and German spoken at home

Participation in the research

Age	Session	Texts read
4y7m	S1	Partial reading
4y7m	S2	

Other comments:
Enjoyed rereading

Child **Maria**

Co-reader (mother) **Daniela**

Co-reader (father) **José**

Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading:
Had never read a literary app
Tablet use: a few hours per month (father's tablet)
Focus on educational uses of apps

Confidence with technology (reported by parent)

Maria and José

Very confident | Fairly confident | Not very confident | Not at all confident

Languages: Portuguese spoken at home

Participation in the research

Age	Session	Texts read
4y3m	S1	
4y4m	S2	
4y4m	S3	
4y5m	S4	

Other comments:

Enjoyed rereading
José is a frequent e-book reader



Child **Molly**

Co-reader (mother) **Abby**

Co-reader (sister - sessions 3 and 4) **Elsie**

Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading: several times a week
Only child to have read fully interactive literary apps before the research
Tablet use: few hours a week

Confidence with technology (reported by parent)

Abby | Molly

Very confident | Fairly confident | Not very confident | Not at all confident

Participation in the research

Age	Session	Texts read
4y4m	S1	
4y5m	S2	
4y6m	S3	
4y6m	S4	

Other comments:

More interested in new apps than rereading
While in the library, more interested in books rather than apps



Child **Roza**

Co-reader (mother) **Bea**

Habits and experiences

Book reading: every day or almost every day
Library visits: regularly

Literary app reading: regular experience (once or twice a week), but not with fully interactive apps
Tablet use: few hours a week (sister's tablet)

Confidence with technology (reported by parent)

Roza
Bea

Very confident | Fairly confident | Not very confident | Not at all confident

Languages:
Polish and Turkish spoken at home

Participation in the research

Age	Session	Texts read
4y0m	S1	
4y1m	S2	Partial reading
4y2m	S3	
4y3m	S4	Partial readings

Other comments:

Enjoyed rereading
Often engaged in imaginative play in the library before and after the session
Mother's preference for e-books and apps for Roza



4.2 Profile of the participants as a group

As meaning-making is socially situated and framed by reader's knowledge, background, interests and motivations, it is essential to view the findings of this research in light of the group these participants represent. The information presented in this section is based on the questionnaires filled by the parents, on the informal interviews that took place in the warm-up session and on conversations that happened before or after the proposed activities. The families' profiles are contrasted with the results of the survey in which the same questionnaire was answered by 1,511 parents of 0 to 8-year-olds across the UK (Kucirkova & Littleton, 2016). The mothers who participated in the joint-reading sessions were the ones to answer the questionnaire, except for Maria, whose questionnaire was responded by her father. Because Lukas did not take part in the main study, Silvia did not respond the questionnaire. Therefore, when I refer to all parents but include a (*), it means the answer is valid for all participants except Lukas, because no information was collected from him and Silvia with regards to that topic.

General demographics: Probably because of the characteristics of the research, which involved parents and children visiting a library during the day for at least four times, families of a similar profile signed up in the study. They are all white, educated families. Maria's, Lukas' and Roza's parents are immigrants in the UK. They are all fluent English speakers who speak languages other than English at home. Amelia's, Emme's and Molly's families are British.

Reading print books: Shared-reading of print books was a daily activity and one that the parents valued as beneficial for their children. In this regard, the participant families represented the majority of families in England, as 82% of the parents in the national survey reported they read with their child, and 52% said they read every day. Furthermore, the parents all responded that they visited their local libraries often.

Reading literary apps: With regards to reading e-books and literary apps, there was much more variability among the participants. All parents presented concerns about the use of digital media and all children read much more frequently print books than e-books and apps and had a controlled use of digital devices. Nonetheless, all parents (*) were interested in literary apps, and Emme's, Amelia's, Roza's and Maria's parents agreed with the sentence, "I'm excited about what the new developments in interactive e-books will be." The only child to read apps several times a week was Molly; therefore she represents a minority of British children, as only 7% of the parents reported reading apps

every day or almost every day. As a teacher, Molly's mother had undertaken professional training on the use of apps, including literary apps, in the classroom, therefore she was familiar with the format. Roza was also familiar with literary apps, but she read them once or twice a week; Bea, nonetheless, suggested that the app's they usually read were less interactive than the ones used in the research and that Roza was not very engaged with them. Becky said in the questionnaire that Amelia read apps less than once a month, but during the conversations, she suggested they had never read apps like the ones being used in the research (that is, fully interactive apps). Maria, Lukas and Emme had never read a literary app before taking part in the research. The BBC CBeebies apps were mentioned by Amelia's, Emme's, Molly's, and Roza's parents as an example of their favourite apps. Maria's use of the tablet was centred on educational experiences and the apps *Literacy Letters* (Edward560, 2015) and *Kids Academy* (Preschool & Kindergarten Learning Kids Games, 2018) were mentioned. While playing in the library (but not during the reading events), Roza also made constant reference to the television show *Mia and Me* (Hahn & Lussi, 2011).

Mobile device access and use: All families had smartphones at home, but children's uses of the smartphones were limited. Conversely, only Lukas' family did not have a tablet at home, but they had an iPod touch, which can be seen as a tablet with the size of a smartphone, as it does not have the phone functionalities. Silvia reported that Lukas would eventually play games on this iPod, which belonged to his older sister. Maria and Amelia were children who used the tablet less frequently, usually a few hours a month, while Molly, Emme and Roza used the tablet a few hours a week. All (*) except Maria would use the tablet either with a parent or alone. Maria's father reported she always used the tablet accompanied by him. The habit of joint-use of digital media by these families, therefore, conforms with most of the British families, as 79% of the parents in the national survey also reported co-using digital media with their child, while 51% said the child also uses it alone.

Parent's reading and technology profiles: The only parent who reported not liking to read for pleasure very much was Bea, yet she was very invested in developing Roza's reading for pleasure habits in print and digital media. While all the other parents (*) were frequent readers, the only to show a preference towards e-book reading was José.

Overall, in comparison to the national survey, this portrait positions these families as typical families of young children with regards to reading and digital media. The

preference and higher frequency of print reading were predominant, and parents generally were readers themselves. Although children have access to electronic devices, their uses are limited and literary app reading is not generally an established practice, but parents showed interest in what they can offer their children.

4.3 Overview of the selected literary apps

Monster was one of the apps used in the pilot study, and it proved very successful with the participants. It is an adaptation of a Little Golden Book homonymous picturebook (Stone & Smollin, 1971). Both the book and the app are related to the franchise of the American children's television series *Sesame Street* (Ganz Cooney & Morrisset, 1969-present). In this story, Grover encounters a book called "The Monster at the End of this Book." Scared of monsters, Grover asks readers not to turn the pages of the book, as in doing so they have to face the monster. Grover's comments are ironic and trigger users to interact with the narrative and turn the pages. As readers ignore Grover's demands, swipe the pages and the narrative progresses, Grover starts creating barriers to stop them: he ties the pages with ropes, fastens them with boards and nails and finally builds a brick wall that covers the entire book. Interacting with the images, though, readers can dismantle the blockades. After begging the reader not to turn the penultimate page, the end of the book is revealed, and the only monster there is Grover himself. Embarrassed, he accuses the reader of being the one who had been scared.

The app makes use of speech, writing, static and moving images, sound effects, and the actions from the readers, whether they are merely turning the page or undoing Grover's protections, are necessary to the development of the story. There is no option to read by yourself or turn off the narration feature, unless readers turn off the device's sound. Most of Grover's verbal utterances appear written on the screen as he speaks, inside speech bubbles. The app is firmly based on its print counterpart, as the narrative remains the same and the scenes are based on the picturebook spreads, but the beginning of each scene presents an animated sequence, some of them of significant length. During the display of this sequence, readers are unable to interact. Also, the interactive features of the digital medium are used to expand the already interactive narrative, increasing the participation of readers in the story in comparison to the print version. *Monster* has 13 scenes, and the duration of the reading events ranged from 6min44s to 8min45s (first reading by each participant). Screenshots of each scene of the app are available in Appendix H. A full semiotic analysis of the textual features of

the app are discussed in Chapter 7, while an in-depth analysis of the app's interactive design is available in Chapter 5.

Despite being a retelling of a classic tale, *Little Red* is a 'born-digital' (Armstrong, 2008) text, as it does not present any pre-existing print version, though a picturebook version of the app was published afterwards (Nosy Crow & Bryan, 2015). In this version of the story, set in contemporary times, both Little Red and readers are given the possibility to choose – literally – their own path. The participation of the reader starts, however, still at Little Red's home, where they are invited to help her fill the basket of food for Grandma. Little Red walks alone in the forest, and at times Wolf can be seen hidden in the bushes. A red Owl accompanies her journey from a distance. While in the woods, Little Red faces three forks in the path. Each path leads Little Red to meet a different animal. She either helps them or plays with her new friends, and leaves having collected a different object at each encounter. In total, she makes three stops and collects three objects, from the variety of feathers, flowers, dandelions, acorns, thistles, water, honey, whistle or a spider. When choosing one path, the other possibility is left behind and does not become part of the story, unless readers use the navigation map to go to these other stops. When arriving at Grandma's house and facing Wolf, Little Red uses the objects she has collected to fight him. Depending on the "weapon" she uses at last, Wolf faces a different ending: honey brings a swarm of bees that chase Wolf way, the whistle played by Little Red is heard by the police, who comes to arrest him, or Wolf, scared of spiders, runs off as a big, hairy one is thrown at him. Finally, with the reader's help, Little Red unlocks Grandma from a cupboard, unpacks the basket and serves up the feast. Considering all the different paths, there are eight variations of the story in this app.

Little Red presents the modes of writing, speech, sound effects, sound-scape and static and moving images. Readers can choose between the options "Read and Play," in which the verbal text is spoken aloud, or "Read by myself," in which it is not. On both reading modes, they can interact or "play," despite only one stating this option overtly. Only Roza (inadvertently) chose the "Read by Myself" option, and her mother then read the written text for her. Child actors play all the voices. The narrator's passages appear in written form at a white box at the bottom of the screen, while the direct speech appears in speech bubbles. The beginning of each scene also includes an animated sequence, during which interactivity is unavailable to readers, but the animations in this app are more limited and localised. For instance, the characters do not show any variation of facial expressions within a scene, the movement on their faces being restricted to

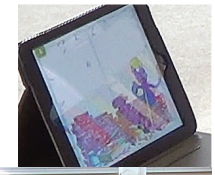
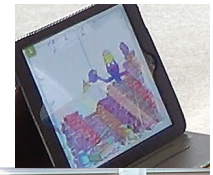
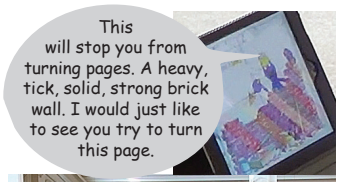
blinking. Conversely, readers have more freedom to manipulate the characters and move them around at most scenes. *Little Red* presents 25 scenes, and the duration of the reading events ranged from 19min53s to 27min16s (first reading of each participant[4]). Screenshots of each scene of the app are available in Appendix I. An in-depth analysis of the app's interactive design is available in Chapter 5.

Both apps present extra content in the paratext. Called sections "for grown-ups," they are protected with a simple question to avoid young children's access. They include tips for reading the apps, credits and information about the developers, information about their other apps and links to their website and their social media pages. Nonetheless, none of the participants ever explored the paratext and accessed this information.

4.4 Overall structure of the reading events

To start the presentation of the findings, one vignette portraying Emme and Alex reading one scene of *Monster* is presented with the objective of discussing the general configuration of the reading events and their multimodal features.

Vignette 4.1: Emme and Alex reading together one scene from Monster

	[01]	[02]	[03]	[04]
TIME STAMP	13:31.520	13:33.520	13:33.760	13:37.560
DESCRIPTION OF THE TEXT	Grover starts building a wall in front of the book, moving left and right and the wall gets taller. Sound effects suggest vigor and progression in his movements.	A rake up the bottom of the wall wiggles as the wall gets higher.		Grover talks about his new strategy to stop reader's turning the pages, a brick wall.
SCREENSHOT OF THE APP				
SCREENSHOT OF THE PARTICIPANTS				
DESCRIPTION OF THE PARTICIPANTS RESPONSES	The new scene begins and Emme and Alex still smile in satisfaction from having overcome Grover in the previous scene. Emme and Alex are very close together.	Emme makes a surprised face, possibly because the rake is wiggling and almost falls.	Emme makes a (unclear) comment about the bricks that could be related to the fact that the rake laid on the wall and did not fall after all.	Emme and Alex barely move, watching Grover speak.

[4] Roza's reading event was disregarded because she abandoned the reading event at Scene 4.

13:49.360 [05]
Grover stops speaking and resumes building the wall. Again sound effects accompany his action suggesting efficiency and vigor.



In the pause after Grover's speech, Alex asks Emme how she thinks she can interact.

13.53.760 [06]
Grover continues to build the wall.



Emme replies but does not move. Alex mumbles acknowledging Emme's response, but not clearly agreeing nor disagreeing with her strategy.

14:00.000 [07]
The wall is built and Grover is visible through a small window or hole he left in the wall. He is silent but moves slight and blinks. Apart from his movements, the scene is static.



Alex suggests that Emme interacts. Besides talking to Emme, Alex uses her body, specially her right arm, which circles Emme around, to slightly push her forward in the direction of the iPad.

14:02.200 [08]
Groves is still silent behind the wall.



Emme responds to Alex's suggestion by taping the wall once. To do the tapping she slightly moves away from her mother, towards the device.

14:03.160 [09]
Emme's action results in part of the wall collapsing, which is represented visually with accompanying sound effects. Grover also cries out loud as the wall collapses.



Alex responds to the effect in the story with surprise, which she expresses slightly by her facial expressions and more emphatically through the vocalization. Emme keeps her proximity to the device so she can engage in further interactions.

14:05.800 [10]



Emme then engages in a series of quick taps to other parts of the wall, knocking a part of it at each tap.

14:06.200 [11]
The areas of the wall around the spots touched by Emme's finger collapse one after the other. Grover cries in response. Because of the fast sequence of tapping, his sentences overlap.



Emme continues tapping. Her mother smiles suggesting approval.

14:07.640 [12]
The wall falls apart and the screen is covered by clouds of smoke.



They both smile at the outcome.

[01] Considering the app as the semiotic artefact that suggests meanings and generates a context for the response and participation of the readers, this scene starts with moving image and sound, showing Grover building the wall. Previously, he had nailed the pages with boards and nails, but Emme had dismantled those by sliding her fingers on top of the boards. Verbal language is not used to explain Grover's tactic at first. Both readers attentively look at the screen and still exhibit a smile which expresses their satisfaction with the outcome of the previous scene. They are closely together, with Alex embracing Emme from behind. Emme rests her arm, which holds her head, on her mother's body.

The proximity between them indicates the closeness of their relationship and the shared aspect of the reading activity, despite the fact that they do not look at each other.

[02-03] Grover's clumsiness seems to surprise Emme, who expresses her amazement through her facial expressions and then comments about the wall. It is not clear what is it that surprises her, as Grover quickly builds the wall, the rake stumbles back and forth, almost falling, to finally settle again against the wall. This movement is likely to have triggered Emme's response. Alex does not answer Emme's comment, possibly because of the lack of clarity of what is it that she is talking about.

[04] Grover speaks for a long duration, the app dominating the event with its use of movement, sound, speech, as well as the writing, which floats on the screen, in synchronicity with the words being uttered. The stillness of the participants and their direct gaze towards the screen indicate their attention to the performance of the app.

[05] As Grover stops speaking and resumes building the wall, a gap in the use of speech takes place, which is soon filled by Alex, who asks Emme about her possibilities of action. Despite her question addressing Emme, Alex does not look at her, keeping her gaze towards the screen, reading the animated sequence. With the question, Alex encourages Emme's reflection on what happened previously in the story, as she had to come out with different strategies to undo Grover's protections at each time, but also promotes reflection on the current scene, the app and the narrative's affordances, and on Emme's role in the story. Alex is also anticipating that, as it happened in the previous scenes, Emme might not be aware of the possibilities for interacting, and is therefore indirectly suggesting the need to participate to destroy the wall.

[06] Emme responds that she might be able to "push" the wall, which seems to refer to the gesture she needs to perform towards the screen, that is, tapping. Emme focuses on her role within the narrative, suggesting the blurring of the boundaries between fiction and reality. Her mother does not give a clear evaluation of her response; she neither suggests that, yes, Emme might be able to push the wall, nor that she should try something different. This way, she leaves Emme free to think and experiment on her own.

[07] As the wall is finished, the scene becomes significantly static, creating a gap for the participation of the reader. Emme, however, does not seem to understand the need for her participation immediately and does not move to "push" the wall, as she had indicated she could. Alex interprets that Emme is waiting for Grover to say or do something, and

explains she does not need to. She encourages Emme's participation not only by the direct verbal statement but by slightly pushing Emme forward with her arm.

[08-09] Emme makes a first interactive gesture, tapping in between Grover and the page-turning hotspot (bottom-right corner of the screen). To make this move, Emme distances herself from Alex slightly and gets closer to the device. Part of the wall collapses with a dramatic sound effect and Grover reacts with a startling vocalisation. Alex also makes a surprised face and exclaims "Oh!" The question posed earlier by Alex suggests she knew what the result would be, so it is likely that her surprise is acted out, or at least further dramatised with the aim of enhancing the significance of Emme's action.

[10-11] After an initial tap and the evaluation of the outcome, Emme starts a series of quick and sequential taps around the wall, each which activates more sound effects and responses from Grover. The speed of her tapping is such that his responses overlap. Towards the end of the sequence, Alex already starts exhibiting an approving smile.

[12] As the wall finally implodes and the screen is filled with clouds of dust, Emme returns to her resting position closer to Alex and expresses her satisfaction with the outcome through a smile. Alex exhibits a similar smile of satisfaction.

4.4.1 Higher-level actions in the reading events

The event above, as an example of the reading events observed in this project, is a complex orchestration of meanings. It is, simultaneously, a transaction between participants and the app and a social interaction around the app. With the objective of unveiling and analysing the multiple layers of the event, and the participants' engagement and actions, Norris' (2004) framework for interaction analysis is applied to this vignette.

Norris posits an event is formed of 'higher-levels actions,' or actions which present clearly defined social boundaries; higher-level actions can embed other higher-level actions, as well as multiple lower-levels actions, the individual actions and utterances from the participants. In the reading event, the main higher-level action being performed by both child and adult reader is that of reading the app. This is suggested by their continuous gaze towards the screen, even when they communicate with one another verbally, but also by the position of their bodies, which is close but arranged in a way that both can read the app. Their bodies face the device and are at a short enough distance so that they can extend their arms and interact with the screen without much effort. This action is framed by the start and the closing of the story. Nonetheless, the

reading action has other embedded higher-level actions: firstly, each of the participants is engaged in their own aesthetic experience; furthermore, each participant is also performing the action of sharing the story with one another.

A moment in which the sharing action is foregrounded happens in Frame 03 when Emme comments about the bricks. In a solitary reading, it is unlikely that the reader would make a comment out-loud, but in joint-reading, this is part of engaging in the sharing of the reading experience. Nonetheless, Emme, made few actions that aimed at addressing Alex, while Alex was most frequently engaged in communicating with Emme [05, 06, 07 and 09]. This aspect was even more salient for some other participants: it was not uncommon that a parent would make a comment and the child would not engage in it by responding verbally. Sometimes, even when parents asked questions, children would be immersed in the text and not reply. This happened for instance, when Amelia was reading *Little Red*. At the end of the reading, Becky commented, with a particularly worried tone, of her surprise with how "zoomed in" Amelia was during the reading.

In the vignette presented above, Alex engages verbally in questions that aim to support Emme's understanding of the story [05; 07] and exaggerates when expressing certain responses to add to Emme's emotional experience of the story [09]. When reading print books, Alex would also support Emme's decoding with phonics techniques when she stumbled with a word. These responses also reflect the data more generally, as all parents tried to engage verbally with the children, often through questions and vocalisations.

The aesthetic experience of reading, nevertheless, was likely also significant for the adult. When asked why they read print books to their children, the parents José, Alex and Abby said that, amongst other reasons, such as "the child likes it" or "the child benefits from it," they do it because *they* like it. Alex's smiles of satisfaction at the end of the scenes are silent signs that point towards this aesthetic pleasure, and some parents expressed their enthusiasm more overtly than others. Overall, the reading events suggest that for the children, sharing with their parents was a less significant higher-level action, while for the parents the shared aspect was at least as significant as the aesthetic experience. For Alex, and the other parents in the project, however, the action of sharing the story seems to be guided by their position as the knowledgeable adult who aims to expand and support the child's reading experience, while for the children this was more related to the parent-child interpersonal and affective relationship.

While this event does not show signs of the participants' awareness of the research situation, it is important to acknowledge this was not a naturally-occurring reading event and the participation in the research itself constitutes a high-level event which cannot be ignored. In the overall analysis of the reading events, although children were undoubtedly aware of the research situation, there were no obvious signs that they were affected by it during the reading of the apps. One sign of their awareness was, at the end of an activity, the expectation they expressed with regards to what would happen next. After the first session, children knew the structure and sequence of the activities – reading the app, making a drawing and playing with puppets – so, for instance, after finishing an activity, Amelia tended to ask, "Now what?" At times, children would also look at me when completing an activity and some would cheer up when they saw me bringing the crayons or the puppets. Parents also seemed to act naturally but they tended to show more signs of their awareness. For instance, Daniela looked at me a few times when Maria did or said something that she found extraordinary and exciting, sharing her enthusiasm.

Therefore, it can be argued that the map of the higher-level actions in the reading event can be visually represented as follows:

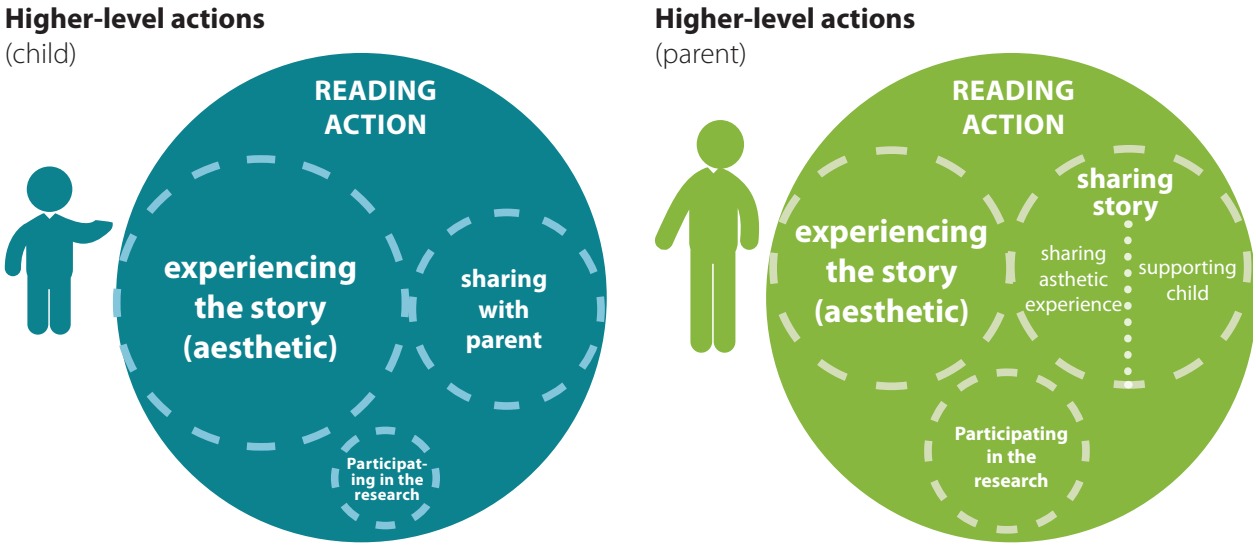


Figure 4.1: Visual representation of the higher-level actions taking place in the shared-reading of literary apps.
The outer circle in full colour represents the main higher-level action, reading the app, while the internal circles represent embedded higher-level actions. The size of the circles indicates the differences in priority and engagement by the participants: a bigger circle indicates higher priority and engagement, while a smaller circle represents lower priority and engagement.

It is important to indicate that this system is not static and equal for all participants. This representation aims to show the different actions involved in joint-reading and the fact that they have different significance for each of the co-readers – the child and the adult.

The uniqueness of the participant's experiences, interests and motivations result in unique relationships between these elements. Even within the same reading event, the priority and engagement alter at different moments. For instance, when the camera beeped in the middle of a session, the unexpected sound caused Becky and Amelia to stop reading and search the room for its origin. As a result, the higher-level action of taking part in the research, which tended to present little salience in the reading events, was foregrounded at that moment, indicating variation in significance of the different higher-level actions during the events.

Each of these higher-level actions is formed by multiple lower-level actions (Norris, 2004). Examples of lower level actions are making a facial expression, a gesture or a verbal utterance. The transcript presented above (Vignette 4.1) aimed at representing the most significant lower-level actions performed by the participants. The highly animated nature of this app makes it almost impossible, or at least extremely laborious, to represent every lower-level action taking place in the app. For instance, the movement of the rake bouncing seems to have caught Emme's attention, but it would require many frames to represent it in the transcript. In cases such as this, the verbal description was used instead to represent the action. Such lower-level actions explore different modes to communicate their meanings. For instance, in the app, the musical, extra-diegetic sound effect played as Grover builds the wall suggests his vigour, accomplishment and the progression of the wall getting taller and taller. This is mirrored in visual form by the speed of Grover's movements. On the reader's side, as discussed previously, their gaze, body movement, facial expression, gestures and verbal utterances give information about their meaning-making processes and their responses to the moment-by-moment changes in the narrative, as well as their sharing of the reading experience with each other.

4.4.2 Multimodal communication in the act of reading

Next, another form of transcript is presented, which aims to reveal the use of the different modes by the app (yellow), the child (green) and the adult (red) across time in this event. Some modes are continuous throughout the event. For instance, regarding the reader's communication modes, this happens in proxemics: the participants are always positioned in relation to one another and to the device. Regarding the app, the movement in the images is also continuous; at times the scene is mostly static, but Grover is always slightly moving, as live beings usually do. Yet, there are moments in which these modes are foregrounded in meaning-making, while in other moments they are backgrounded.

According to Norris (2004), in communication, the intensity of the modes varies throughout the event. Modes are of *high intensity* when their relevance is such that, if such mode is discontinued, it alters the higher-level action. Modes are of *medium intensity* if the effect of discontinuity changes only slightly the higher-level action, while *low intensity* applies to modes that can be discontinued without affecting the higher-level action. In the following transcript, the moments in which the modes have medium to high intensity are represented:

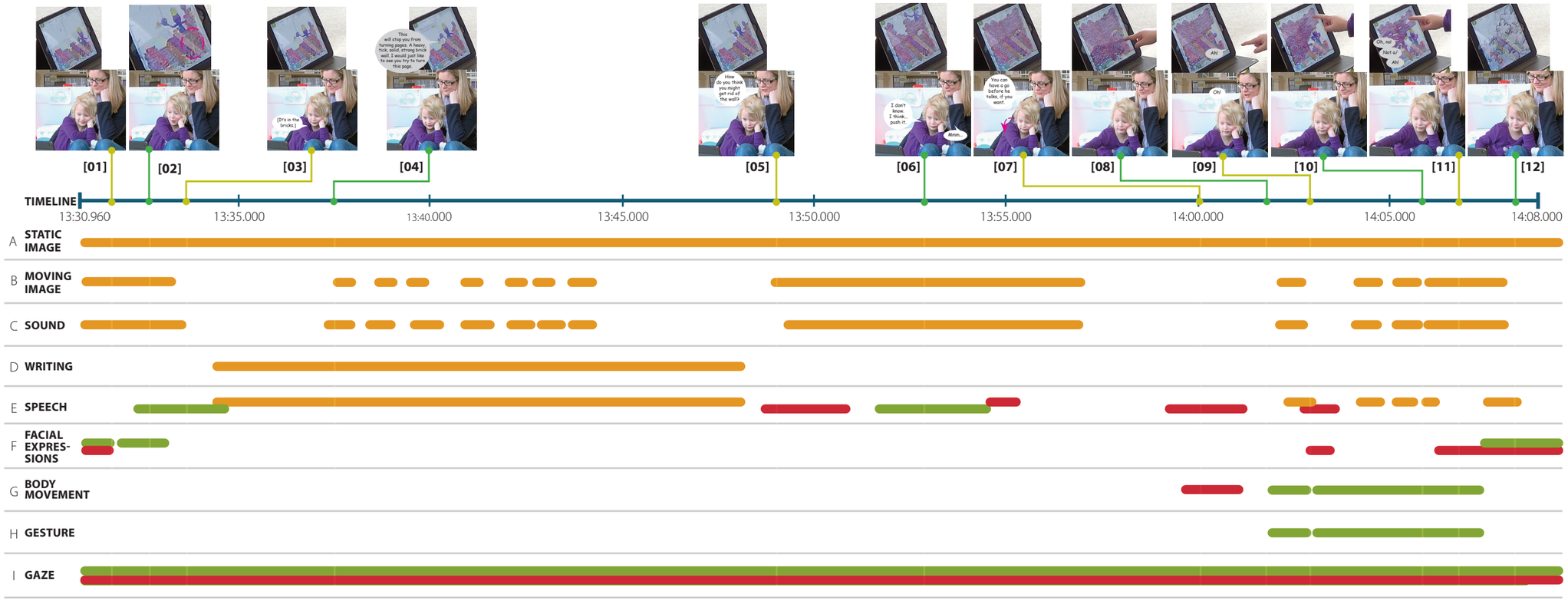


Figure 4.2: Transcript of the different modes engaged in the vignette across time.
This transcript is based on the annotations created with the software ELAN, as part of the fourth stage of multimodal analysis. At the centre of the transcript is the timeline of the event. Below the timeline are the different modes presented as tiers. The coloured lines indicate the moments in which these modes present medium or high intensity. The colours indicate who is performing that mode: the app (yellow), the child (green), or the parent (red). Above the timeline are the screenshots of the actions depicted in the previous transcript.

This transcript highlights the complex confluence of signs from multiple modes being orchestrated in alternation as well as in simultaneity during the reading event. Furthermore, the modes being used in the story at times pair with the modes used by the participants in some instances. With regards to the alternation of modes, the participants remain mostly silent as Grover speaks [04], and resume talking as he finishes [05]. As he

speaks (Tier E), certain words are highlighted by his movement and accompanying sound effects (Tiers B and C, respectively); therefore there is synchronicity between these modes. Moreover, the readers remain mostly static, paying attention to what is said (Tier E) and possibly looking at the words that appear simultaneously on the screen (Tier D). Pairing between participants and text is also occurring between the visual text (Tier A) and the gaze of the participants (Tier I): the visual text is continuous, and furthermore, the moving image presents a sequence of alterations in the visual text that require the reader's attention (Tier B); therefore, the gaze of the participants is continuously positioned towards the screen, as shown in the last tier. Stillness in the visual text (moments not marked in Tier B) indicates moments in which the reader is the one to move their bodies and engage in interaction. As Emme does not immediately understand this subtlety, Alex complements the text and further encourages her to participate [07]. Her participation ([09], Tier H) is acknowledged by the text, which responds with the resuming of movement, sound and speech (Tiers B, C and E, respectively).

The story can, therefore, be analysed as presenting two main systems of representation:

(1) The *app performance system*, in which reading, seeing and watching dominate, requiring reader's gaze as the main form of engagement, and the events taking place in the story serve as elicitation of responses from the readers. In this system, app performance dominates the event and the reader assumes the role of audience;

(2) The *reader performance system*, in which the reader is required to participate and interact, engaging their bodies through gestures and proxemics, and in which the text then responds to the reader's actions. In this system, reader performance is foregrounded, and the reader assumes the role of 'interactor.'

While the app performance system integrates forms of representation from art-forms like the picturebook (reading/viewing) and the animated film (watching), the reader performance system is typical of children's play and computer games, in which actions are foregrounded. The alternation of these modes generates a dynamic and unique form of reading that involves actions from both text and reader in fluid multimodal exchange. While both systems engage the reader's bodies, they do so differently, requiring different forms of cognition and possibly resulting in various kinds of affective engagement.

4.4.3 Embodiment and agency

The analysis of Vignette 4.1 reveals the protagonism of the reader's body in their meaning-making with literary apps and how the movement of their bodies also smoothly promotes the alternation between these different systems of representation available in literary apps. The reader's body not only reveals aspects of their meaning-making processes but participates in how these meanings are being made.

The analysis of embodiment in Vignette 4.1 also promotes insights into the negotiation of agency in the reading event. In the context of this narrative, in which, by breaking the wall, the reader contradicts Grover, the active engagement of the reader's body in interaction is a moment in which the reader experiences their agency. Yet, this experience is imposed by the text, because readers must perform the interaction to continue and the outcome of the interaction is always the same, contradictorily then, constraining readers' agency.

Furthermore, Emme does not immediately tap when the wall is finished, even though she had said she would be able to "push it" There were several ways Alex could have suggested Emme's participation, but the fact that she uses her own body to trigger Emme's movement, on top of telling her she can try, is significant. Delicately pushing Emme forward puts Emme as the main actor in this event, despite Alex enhanced power position as the most knowledgeable co-reader. Alex's knowledge gives her agency in the joint-reading event over Emme, and as she transfers this knowledge, she is transferring her agency as well. By letting Emme be the interactor, Alex indicates she understands or believes that there is a difference in being suggested a certain agential role to actually experiencing agency through interaction. Therefore, by performing the interactive gesture, Emme is at the same time being agential with regards to the narrative – she uses her power to contradict Grover – and in the reading event – she is given control by her mother, despite Alex's position of authority.

4.5 Summary

In this introduction to findings, the participants in the research and their profiles as readers and as technology users were presented. The children read picturebooks very frequently and had access to books and libraries. They also had access to touchscreen technology, but such access was highly mediated and, comparatively to print books, significantly more limited. They had little experience with literary apps before taking part in the research:

only Molly had read highly interactive literary apps. Moreover, in this chapter, the literary apps used in the project were also introduced with a summary of their plots, of their multimodal configurations and some other general relevant information.

Finally, one vignette from the data was explored as an example that demonstrates the complexity of the analysis undertaken by this project and provides a context for the findings chapters. While the main event is the reading of the text, embedded actions and their different significance indicate adult and child readers' different interests and motivations. While the children tended to focus on the aesthetic experience of the narrative, their parents were divided into their own aesthetic experience and their roles as mediators, supporting and extending children's reading experience. Moreover, the analysis of the different modes of communication orchestrated by the text, by the child reader and by the adult reader portrays the 'dance' (Bernstein, 2009), or the 'complex choreography' (Merchant, 2014) that takes place in meaning-making. The affordances of the text suggest certain forms of engagement, in which the performance of the app and that of the reader is frequently alternated. The multimodal analysis of the reading event reveals the significance of the reader's body in the process of meaning-making and the agential participation of the child reader both in relation to the text and in relation to the reading event. These two features of digital reading – embodiment and agency – were prominent in the data as well as in the academic literature and are the focus of the discussion in the next four chapters. Chapters 5 and 6 are dedicated to the analysis of embodiment, the former considering the affordances of the text that promote the engagement of the reader's body in reading literary apps, and the latter analysing how children used their bodies to respond to these affordances as well as to the narrative meanings more generally. Chapters 7 and 8 are dedicated to the relationships between agency and embodiment in the joint-reading of literary apps. The former examines the negotiation of agency between readers and the suggested meanings and affordances available in *Monster*, and the latter investigates the negotiation of agency between child and adult readers when reading *Little Red*.

FINDINGS: PART I
EMBODIMENT AND READING

One premise of this research is that meaning-making is multimodal, as semiotic artefacts are multimodal and children make sense of the world in multimodal ways. At the conceptualisation stage of this project, all semiotic modes were given equal importance. The analysis of the reading events foregrounded the reader's body central role in the process of reading literary apps. While most of the research on children's responses to picturebooks concentrates on their verbal expression, the data revealed the participant children were more engaged in the interactive gestures and other forms of embodied expression than in verbal engagement, even when prompted by the parents. The child reader's body significance in digital reading, and how embodiment differs in comparison to print reading, has also been highlighted by recent research on digital reading and literacy (Flewitt, Kucirkova, & Messer, 2014; Mangen, 2010; Merchant, 2014, 2015, 2017; Rowsell, 2014; Walsh & Simpson, 2013). This body of research, however, is only starting to theorise the role of the body in reading and meaning-making, especially with regards to reading literary apps. As Mangen and Schilhab (2012) propose, in parallel to the transformations promoted by the digitalisation of reading, a shift in the understanding of cognition through the paradigm of embodied cognition suggests that cognitive processes, amongst them language and reading are embodied. Hence, both the data and the emerging literature in the field converged during the research process suggesting that embodiment is a central aspect of meaning-making with digital texts.

Following the theoretical framework of this project, in this section, the role of embodiment is analysed through, on the one hand, the affordances of the apps, and on the other, the

responses from the participant readers. From a textual perspective, the literary apps make varied uses of the technical affordances of tablets to integrate embodied forms of participation, most typically through touchscreen activation, but also through other forms of embodied activation of the device. Chapter 5 discusses the affordances of the selected apps that suggest the reader's engagement of the body in reading the stories.

From the reader-response perspective, the responses of preschool children to reading literature are significantly embodied. When reading picturebooks, which do not necessarily foster an expressive use of the body while reading, younger children already tend to respond expressively in embodied ways (Adomat, 2010; Hickman, 1981; Sipe, 2002, 2008). Furthermore, young child readers involve their bodies in multiple ways when joint-reading literature. They engage their arms and hands to hold and stabilise the device (Merchant, 2014) and their eyes and ears to process visual and verbal texts (Mackey, 2017; McLaughlin, 2015). Readers also engage their bodies in sharing aspects of the story and of the reading experience with the co-reader (Mackey, 2007; Rohlfing, Grimminger, & Nachtigäller, 2015), and of course, in literary apps, to interact with the story (Merchant, 2014; Schwebs, 2014). In the reading events observed in this project, the participants' responses did not provide clear insights into the visual and aural aspects of embodiment. The observations revealed, however, through the analysis of the reader's gestures, posture, gaze, facial and body expressions, important insights into children's uses of their body for interacting, for expressing their responses to the literary texts, and in the sharing of the reading experience between child and adult readers. All these observed uses of the readers' bodies were therefore importantly involved in their meaning-making when joint-reading the literary apps. Chapter 6 considers the embodied responses from the participant readers and what they suggest about embodied meaning-making in digital reading.

5 EMBODIMENT AS AFFORDED BY THE SELECTED APPS

The body is essential in meaning-making more generally, and in reading in particular. When reading literary apps, two aspects alter how readers engage their bodies in reading, in comparison to reading a literary text in a codex, such as a picturebook. Firstly, the materiality of the medium is different, altering the physical relationship between reader and literary text. Furthermore, literary apps require the engagement of the reader's body for interaction.

This chapter aims to present and discuss these affordances and how they suggest specific embodied forms of meaning-making when reading literary apps. The materiality of the device is analysed, and next, the discussion focuses on how the proposed interactions in the selected apps afford embodiment in digital reading. Each interaction proposed by the text involves a suggestion of a particular performance, a gesture that needs to be executed to activate the texts' response (Zhao & Unsworth, 2017). Furthermore, each interaction, including the performative, embodied aspect of its realisation, establishes a semiotic relationship with the narrative, contributing to its suggested meaning. Accordingly, the discussion addresses the relationships between the form of the gesture and its meaning in the context of the narratives, and how it positions readers in relation to the stories through perspective and point of view.

5.1 Material affordances of the device

The materiality of the reading device has been suggested as an essential factor in the experience of reading literary apps (Henkel, 2016). While the texts presented through a digital device are intangible (Mangen, 2008, 2010), they are rendered material through the materiality of the device. As different devices present different material characteristics, these characteristics are transferred to the literary texts when they are read through that particular device; all apps read through that device are bound to such material characteristics. The iPad used in this research was an iPad Air, with dimensions of 238.8 mm × 167.6 mm × 7.5 mm and weight of 469g. It was covered by a black leather cover that offered extra protection for the fragile screen and worked as a stand, allowing the device to be still in a vertical position when sitting on a flat surface. The interactive touchscreen affords the sensorial aspect of the skin touching the glass. Touch tends to be related to intimacy and emotional connection and such relationships are likely to be extended to the act of reading through the constant tactile interactions typical of reading in touchscreen devices. The screen, however, is flat and does not – yet – respond with different textures and sensations according to what is represented.

As suggested by Merchant (2017), the iPad is a 'handy device,' as its dimensions and light weight bring a powerful computer into the hands of the reader. There is, however, some conflict between the use of the hands for holding and for interacting with the device. Finding some support for the device, therefore, is an issue to be solved during shared-reading with literary apps. Aliagas and Margallo (2015) observed that many families used the support from a table to operate the iPad in shared-reading at home, or used their legs as support when, for instance, sitting on a couch. In this research, readers were given two options: rest the iPad on a stool that would position it at arms distance, or they could hold the device. Whatever choice was made by a reader, it had implications for how they used their bodies in reading apps. Only Roza, in one session, chose to hold the device and had difficulty handling and interacting simultaneously; in the following sessions, she opted to use the support. Since this research is not focused on spontaneous reading events but instead consisted of the participants coming to the library to take part in the research, it cannot be said that their choice of handling the device reflects what they would usually do. Hence, the analysis focuses on their body engagements in relation to the affordances of the literary text, rather than on the affordances of the device.

5.2 Interactivity and suggested uses of the body in the selected apps

The affordances of the touchscreen presuppose that, to produce a response from the text, a gesture involving the reader's body and whose features are recognisable by the device is required. The gestures a reader uses to activate changes in a literary app are called 'interactive gestures' in this project. According to Flewitt et al., haptics "refer to the somatosensory system, which enables us to experience the environment through active exploration, typically with our hands, such as when palpating an object to gauge its shape and material properties" (2014, pp. 107–8). Therefore, interactive gestures can be 'haptic interactive gestures,' which involve the movements of the hand and limbs with the sense of touch as the form of activation (e.g., tapping, swiping, dragging), or 'non-haptic interactive gestures,' which involve the reader's body but whose activation is not made through touch, but through another form of input (e.g., shaking, tilting, or blowing into the device).

The two selected apps involve different ranges of interactive gestures. *Monster* has a limited number of interactions per scene, and all hotspots can be activated simply with a tap gesture. *Little Red*, contrastingly, present the possibility of multiple interactions in each scene, interactions which involved a varied vocabulary of gestures to be operated, including tapping, swiping and dragging, using one or two fingers. It also includes a few instances of non-haptic interactions, such as blowing into the device and tilting the screen, which do not operate under the affordances of the touchscreen. Instead, they make use of other technical features of tablet computers like the microphone, which captures sound, and the accelerometer and the gyroscope, which capture movements and changes in the orientation of the device.

5.2.1 Interactive possibilities and gesture suggestions in *Monster*

The interactions in *Monster* are only available to the reader after an initial animated sequence is played at the start of every scene. Therefore, any interactive gesture made by the readers while this sequence is played is not recognised by the app and does not produce any changes in the text.

In this app, turning the page is one crucial 'nuclei interaction' (Schwebs, 2014), or an interaction that is central to the narrative development; this interaction is repeated throughout the story, and the repetition itself is a cumulative narrative device that adds tension to the narrative. To turn the page in the app, readers only need to tap the bottom-

right corner of the screen, but a more prolonged swipe gesture is equally effective. When the scene ends, and it is time for readers to turn the page, the app provides a visuo-aural hint: the bottom of the right page moves slightly, and a sound of page turning is played. If readers do not understand this hint, the app provides an overt tip of what to do.

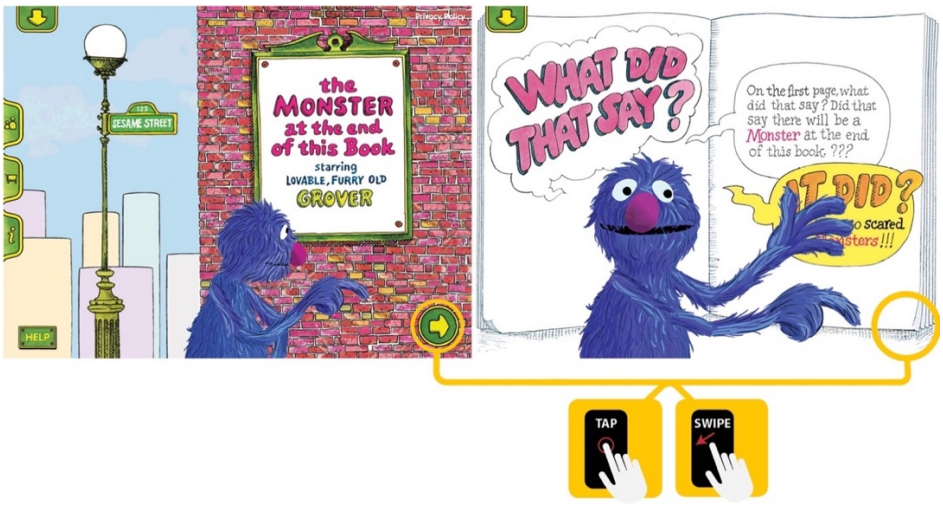


Figure 5.1: Annotated screenshots from Scenes 0 and 2 from *Monster*.
At the moments depicted, Grover indicates where readers should "touch" to continue. The icons indicate the gestures readers can do to activate the interaction, and the yellow dots indicate approximately the area of the hotspot

The hint is provided by Grover, who, in the first scenes, suggests they touch the bottom-right corner. When he realises there will be a monster, he changes his position and asks readers "not to touch that corner there." While the first clue is based on the conventions of the codex and therefore suggests a gesture more similar in form to the action of turning the page, such as swiping, the verbal clue suggests a gesture typical of the digital realm, touching or tapping. Furthermore, in the first scene of the app, the "home" screen, a big yellow and green button with an arrow suggests where to tap to continue the story. Also, relying on the conventions of digital reading, this button possibly emphasises the tapping gesture.

Turning the page is a crucial and unavoidable aspect of the phenomenal experience of reading a text in a codex format that is transposed in this app to the digital medium, a medium which does not necessarily involve such form of textual navigation. The affordances of digital media allow forms of navigation that are often more practical and/or promote different relationships between the various sections of a text, such as scrolling, or the automatic shift from one image to the next, which does not require an action from the reader. Aarseth (1997) considers the gesture of turning the page to be trivial in most print literature, in contrast to hypertext reading, where 'ergodic' choices impact readers'

traversals and the selected fragments of text they access along the way, creating individualised sequences and narratives. Although the reader can skip pages when reading a codex book, typically when reading a narrative, the turning of a page means the linear continuation of the text in the following page. In traditional literary texts like novels or short stories, the relationship between one page and the next is usually not explored as a narrative feature (therefore its triviality): when readers turn the page, they simply continue reading the text, but the gesture is not meaningful in the context of the narrative. In visual narratives like comics, picturebooks and story apps, however, this gap is often explored as a feature that impacts meaning-making and narrative construction, so that in picturebook theory, the so-called "drama of turning the page" is considered a defining characteristic of the picturebook as an artform (Bader, 1976). In *Monster*, the meaning of the act of turning the page goes beyond the trivial or the mere navigational function to become a form of contradicting Grover and getting closer to the monster.

The other nuclei interactions in *Monster* happen when Grover creates barriers to block the reader's access to the (represented) book, as seen in the images below:

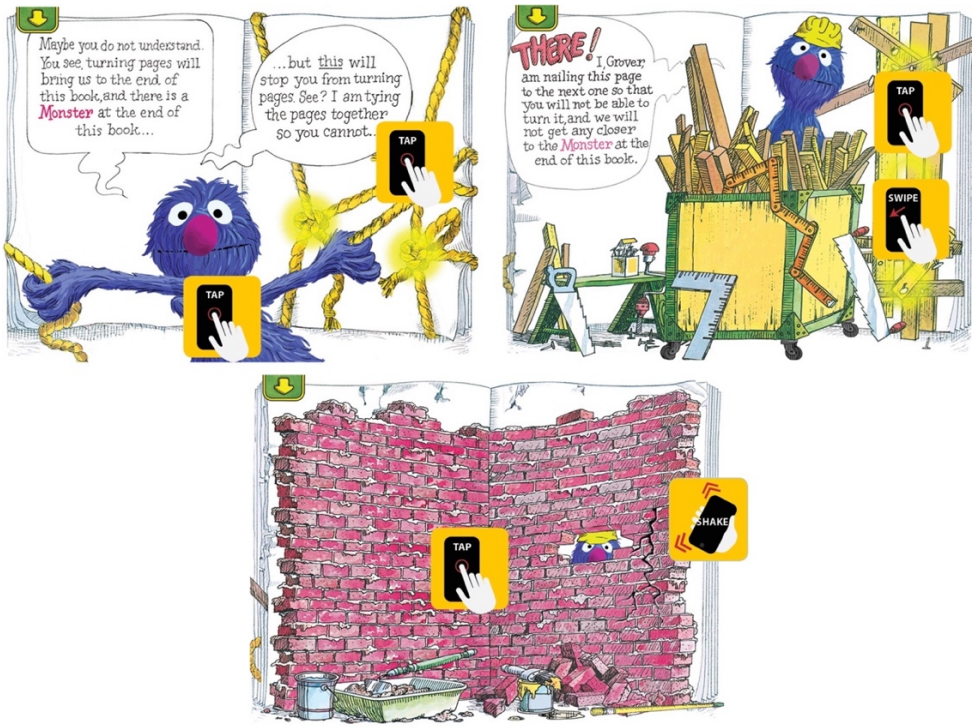


Figure 5.2: Annotated screenshots from Scenes 5, 7 and 9 from *Monster*.
The icons indicate the gestures available for interacting with the scene.

First, he ties the pages with ropes (Scene 5), and readers need to either untie the knots by "touching" them or to "tickle" Grover's tummy, which makes him laugh and release the ropes. For the first interaction, only one form of gesture is suggested. The term "tickling," however, is somewhat imprecise, as the actual gesture of ticking can be

applied to the screen. The sensitive area of the hotspot is wide enough that readers could use only one finger or multiple fingers to activate the interactions. Next, Grover fastens with nails some boards that hold the pages on the right side together (Scene 7). Readers are invited to "touch the nails" or "slide their fingers" on the boards to undo them. In this case, both actions are given precise movements, tapping and swiping, respectively. One of the comments made by Grover suggests the reader can "huff and puff," but the action of blowing is not recognised by the iPad as in the *Little Red Riding Hood* app and is used simply as an intertextual reference to the tale of *The Three Little Pigs*. On these first two undoing actions, the app provides a visual clue to the readers in the form of yellow blinking circles, indicating the hotspot. Finally, Grover builds a wall in front of the book (Scene 9). Two actions for the reader are also possible to "knock the wall down": "touching a brick," or tapping it multiple times at different parts of the wall, or moving the device sharply, for instance by shaking it. Grover suggests "tilting" the device, but only very energetic tilts effectively activate the knocking action on parts of the wall. The verbal language used by the app to describe the interactive gestures, therefore, is not technical (i.e., tapping, swiping, etc.) but tends to a simplified description of the sensorial aspects of the gesture (touching, sliding the finger, etc.) While the gestures to activate such interactions are simple, the fact that these actions are performed repeatedly in each scene is significant. At least three interactions are needed in each scene to destroy Grover's constructions completely, extending readers' participation in time. Furthermore, readers can guess what the effect of their action will be, but until the first interaction is performed, there is no certainty. In the second and third moves, however, they already know what the effect will be, and such knowledge can affect readers' intentionality in performing the actions.

In this app, the satellite interactions, which are not part of the main story arc but extend or enhance it, involve tapping Grover, which activates additional comments that extend the drama of the story or serve as hints regarding how readers can interact with the scene. The words that appear highlighted with different typography are also hotspots, and when tapped the word is repeated out loud, supporting the exploration of the verbal text.



Figure 5.3: Annotated screenshot from Scene 6 from *Monster*.
The icons indicate the gestures required to activate the satellite interactions in this scene.

Finally, every scene has a yellow arrow pointing down at the top-right corner. When tapped, readers can open the navigation menu which shows miniatures of all the scenes in the story; when a scene is tapped, readers jump to the scene in question.

Accordingly, *Monster* makes use of few possibilities of interaction and requires simple gestures from the reader to activate the interactions. The richness of its interactions to the narrative experience does not lie on the quantity or the variety of interactions in each scene, but in their meaningfulness to the narrative development, as the nuclei interactions are, as Turrión (2014) suggested, 'real' forms of participation, as they establish a cause and effect relationship to the story.

5.2.2 Interactive possibilities and gesture suggestions in *Little Red*

Little Red presents a significantly more complex set of interactions than *Monster*. The story is longer, presenting 25 scenes, while *Monster* only has 13. Some scenes also present alternatives, totalling 34 scenes that can be accessed through multiple readings. Furthermore, each scene presents several possibilities of interaction, and one form of interaction can have the value of nuclei in one scene and of satellite in another. Like in *Monster*, interaction is blocked at the beginning of each scene, while the animated sequence is played.

The navigational interactions in this app only required the tapping gesture to be operated and involve: (1) tapping a home button brings readers to the first screen of the app, in which they can access paratextual information and select the reading mode; (2) tapping a blue ribbon at the top right side of the screen opens the navigation menu, which gives

access to the main scenes of the app; (3) tapping the arrows at the left and right bottom of the screen to move the story, respectively, back and forth, one scene at a time. At the start of each scene, the arrows appear in semi-transparency, and when readers finish the critical actions of the scene, they become full-bodied and blue, and the right arrow starts blinking, calling the readers' attention.



Figure 5.4: Comparison of the navigational functions in both apps.
Both apps include a button that opens the navigation menu (yellow circles). To navigate from one scene to the next (pink circles), *Monster* has the default option of not having any indication of the hotspot; these can be activated in the navigation menu. *Little Red* has arrows that are transparent at the start of the scene and become opaque as suggestions that readers have explored all of the scene. Both have a Home button (blue circles), which leads to the start of the app. The navigation menu of *Monster* includes screenshots of every scene of the app. The ones not visible can be revealed by dragging or swiping from right to left. In *Little Red*, only the main scenes are available in the menu and are represented through icons.

A range of satellite interactions is available at every scene. The most significant is that of activating the characters' extended speech. Blue dots appear on top of the characters indicating readers can tap them. When they do, the character says something, and the verbal text also appears written on the screen in speech bubbles. These interactions, nonetheless, are not responsible for the crucial dialogues in the narrative, for instance when Mother tells Little Red to be careful in the forest (Scene3), when Little Red and Wolf meet in the forest (Scene 5), or classical dialogue in which the girl comments on the size of Grandma's/Wolf's eyes, ears and teeth

(Scene 16). These are presented as animated scenes and do not require the reader's action to unfold. In some scenes, the dialogue extensions become more relevant than others. For instance, in some scenes the dialogue is the main event taking place, therefore extending that dialogue is highly significant for the moment. One scene in which Little Red walks alone in the forest and Wolf hides under a bush is repeated four times in the narrative (Scenes 4, 8, 11 and 14), alternated with the mini-games. In these scenes, the extended speech interaction is used as hide-and-seek game. The ludic and aesthetic effect of finding Wolf, therefore, enhances the dialogue feature. Wolf's commentaries involve, among other themes, further threats to Little Red, but one in particular also positions readers as accomplices, when Wolf says "Don't tell her I'm here!" In others scenes in which non-verbal actions are central to the scene, the dialogue interaction becomes merely a commentary of that action or support for how readers should interact. The dialogue extension, therefore, although a satellite form of interaction, is highly significant for the aesthetic experience of this app. It does not affect the story, but it allows significant variations into how the story is told, that is, variations in discourse that can promote variation in the reading experience in ways that print stories cannot afford.

A group of interactions in this app can be understood as what Ryan (2015, p. 176) called 'peripheral interactivity,' whose role "is to make visible the signifiers, so as to render the text legible." In the case of children's literary apps, what is being made legible is not the written text, but aspects of the visual text. These are not, however, simply navigational features, such as changing scenes. They also allow new forms of control and manipulation of the text that aims to expand and contribute to the aesthetic experience of the narrative. In all scenes, readers can zoom in and out to see details of the illustrations, and the gestures required are, respectively, the typical spread and pinch with two fingers and these are the terms used by the app ("spread two fingers to zoom in"; "pinch with two fingers to zoom out"). Readers also can move the whole scene around by "dragging with two fingers." In most scenes, readers can also move the characters by dragging them left or right. In scenes in which the character is already in movement, readers can make them speed up or slow down by swiping the characters right or left, respectively. Swiping the character up makes them jump. Finally, the app makes use of a feature of Apple mobile devices called 'parallax effect.' The parallax effect moves different planes from the visual text at different speeds when readers slightly move the screen while holding the device, providing an

illusion of depth. The result in this app is that this movement can reveal hidden elements in the visual text. For instance, in Scene 1, Owl, which is a character that accompanies Little Red throughout her journey and makes comments when tapped, is outside the house. Slightly tilting the screen may hide or reveal Owl out of the window. The parallax effect is the only form of interactivity that is active while the animated sequences are played.

Not all scenes involve a nuclei interaction that affects the story development. The first nuclei interaction happens at Scene 2, in which the reader is invited to help Little Red fill up the basket with food for Grandma. The food is spread around the room and readers must select the correct items and drag them to the basket. Some of the food is hidden, and readers must move the scene around, either through the "drag with two fingers" gesture or by dragging the characters around the room. When all the food is packed, a sound effect is played indicating the completion of the task, and the blue arrow starts blinking. This scene is mirrored at the end of the app when readers must unpack the basket and serve the food to Grandma and Little Red. Other vital nuclei options take place when Little Red chooses between two different paths that lead to different scenes and mini-games (Scenes 6, 9 and 12). The choice itself is a decisive action, and to demonstrate their choice readers can drag Little Red through the selected road or tap the sign which indicates what they will find up ahead (e.g., flowers or feathers). The action leads them to the selected scene, where Little Red collects an item, and each scene involves unique forms of interactions and gestures, as summarised by the figure below:



Figure 5.5: Annotated screenshots from scenes 7, 8 and 13 from *Little Red*, in all their variations. The icons indicate the form of gesture required to operate the interactions and the dashed line, the direction of the gestures.

There is, therefore, a complex and varied vocabulary of gestures required to perform all the scenes. Some scenes involve a sequence of two gestures (8), and others offer two different ways to perform the same task (7), some involve finer motor dexterity (3 and second option in 7), while in others the challenge is memorizing where to tap and not how to do it (9).

The different objects collected will be used to attack Wolf. While most cases only require readers to tap Little Red (the blue dot blinks over her) to activate her attack action, if they have picked the dandelions or the whistle, the icon of a microphone with the word "Blow" appears on the screen, and alternatively readers can blow into the microphone of the device to activate Little Red's action (Scenes 19A and 20B). This form of activation involves a different form of embodiment that is not experienced through the haptic movement of the arms, hands and fingers, but involves moving the entire body towards the screen and using the power of the readers' lungs to participate.

The possibility of choosing different paths, collecting different objects and having different outcomes for Wolf fits into what Ryan (2015, p. 180) called "interactivity creating variations in a partly defined story." In this form of interactivity, "the system grants [the reader] some freedom of action, but the purpose of the user's agency is to progress along a fixed storyline, and the system remains in firm control of the narrative trajectory" (p. 180). In *Little Red*, this is precisely the case, as the reader can make choices but ultimately the result of their choices is already defined.

Another significant nuclei interaction happens when Little Red must find the key to unlock Grandma from the cupboard (Scene 22). At each reading, the key appears at a different place, at times visible and at times requiring readers to interact with the scene to reveal the key. To search for the key readers must either drag with two fingers or drag the character around, as in the Scene 2, in which they searched for the food to pack the basket. These forms of interactions, which are optional during most of the story and only affect the narrative discourse, are critical, however, for the completion of this nuclei interaction (drag the key to unlock grandma). The difference lies in that the readers do not need to find the food to continue the narrative, while in this scene they cannot continue without unlocking Grandma.

Help with regards to teaching readers how to interact is available throughout the story, through characters' additional dialogues. They appear, however, in random order, mixed with other comments that extend other aspects of the narrative. As far as my analysis could tell, as I did not have access to the app's code, there is no rule guiding the order in which they appear. The only form of interaction that seems to have been programmed to support readers when they do not perform the action at a reasonable time frame is the gesture of turning the page. When the primary actions of a scene are completed, the arrow button becomes opaque and blinks, and the characters usually say something about moving on with the story.

Taking Ryan's (2015) different levels of interactivity, (1) peripheral, (2) affecting discourse and the presentation of the story, and (3) creating variations in a partly defined story, the complexity of the interactive layers of this app become apparent. When Ryan considers each of these categories, she applies each level to a different type of text. In the *Little Red* app, however, all three types happen in the same narrative, resulting in a digital narrative that explores the features of the medium to promote innovative aesthetic experiences based on different levels of manipulation of the text.

5.3 The performativity spectrum

The classifications of interactivity discussed are important in considering the differences in their role in the story (nuclei/satellite) and whether the interaction allows readers to manipulate the story or the discourse (peripheral/discourse and presentation/variations in story). They do not, however, refer to the embodied dimension of interactivity, especially relevant for digital literature conveyed through touchscreen tablets. In my earlier work (Frederico, 2014), I have analysed interactive gestures as one of the sources of playfulness in literary apps. One of the outcomes of this research was the identification that interactive gestures presented varied levels of representation in relation to the action they activated in the narrative. They therefore could be considered under a spectrum, which was called the implicit-explicit spectrum of performativity. At one end of the spectrum, implicit performances referred to interactive gestures that were unrelated to the activated action performed by the character. At the other end, explicit performances referred to actions in which the reader performed the exact same action as that activated in the story. In the middle were gestures that only partially represented the action in the story. While in the original work this spectrum was only considered in terms of its playful potential – explicit gestures tending to generate more playful forms of interaction – this spectrum can also become an useful framework to consider how apps afford meaningful embodied connections between readers and apps.

Applying a more rigorous semiotic lens to classify different types of gestures in the spectrum can reveal the different levels of representations that the interactive gestures establish in relation to the narrative. Gestures have been previously considered through a semiotic lens, with regards to interpersonal communication, by Gullberg (1998), who similarly propose gestures may be classified under a continuum that ranges from no representation to representation of the meaning they aim to convey.

In apps, therefore, explicit interactive gestures establish a performative and mimetic relationship between the form of the gesture and its meaning. Conversely, in implicit gestures, this relationship is conventionalised and symbolic. In the middle of the spectrum lie gestures that present iconic relationships with the action activated in the story. The device does not entirely capture the iconicity and performativity of the gestures – only the material contact that activates the action, e.g., touch, sound, etc. Nonetheless, by performing certain gestures, the reader is using their bodies to represent

an aspect of the narrative, and by doing so they are assuming a perspective and a point of view in relation to it. Such aspects are part of the meaning-potential projected by the text and therefore affect children's meaning-making when reading these texts.

5.3.1 Relationships between form and meaning of interactive gestures in *Monster* and *Little Red*

To exemplify the relationships between the interactive gestures (signifier) and their meaning (signified), the action in which Little Red attacks Wolf by blowing the dandelion seeds into his eyes is analysed. There are two ways of activating this action in the story: (1) by tapping Little Red, and (2) by blowing into the microphone. These two actions are at the opposite extremes of the spectrum. Tapping is a conventionalised action, the most standardised form of interacting with touchscreen devices and has no meaningful connection with the act of blowing or more generally attacking[5]. Blowing into the device is the exact rendition of the action in the story, except that the dandelion is represented in the text, while the action is performed by the reader, outside the text; this is also the example of tilting the tablet to enact pouring the honey into the jar.

Many of the other story-level interactions in this app, however, lie in between these two extremes. For instance, to activate the action of picking up the flowers, readers are required first to drag the flowers up, and afterwards move them to the basket. Although there are differences in between the movement performed by the reader and the actual gesture of picking a flower, there is some level of representation in the gesture requested by the app. Similar cases are dragging the objects into the basket to represent collecting them (the food, the dandelions or the thistles) and dragging the jar into the water and moving it back and forth to represent filling it. In these gestures, the hand of the reader is directly representing the hand of the character. Tapping the instruments when playing the music in one of the mini-games is not, however, at the symbolic end of the spectrum, as tapping Little Red to activate the attack is. This is a case in which tapping is, to a certain extent, representing the playing of the instruments, which also involve using the hand to tap or manipulate, forging a relationship that stands between the iconic and the performative. Finally, dragging Little Red left and right to collect the leaves is in between the iconic and the symbolic gestures. There is some representation

[5] If the reader had to tap Wolf directly, tapping could present a meaningful connection with the action of "attacking," but as the action is performed towards Little Red, no meaningful relationship is forged.

of movement, but this representation is more abstract because it controls Little Red; the action performed by the character is walking, and the gesture of the reader only represents its direction. Therefore, based on the form-effect relationship, these interactions would be positioned in the spectrum as shown in the figure below:

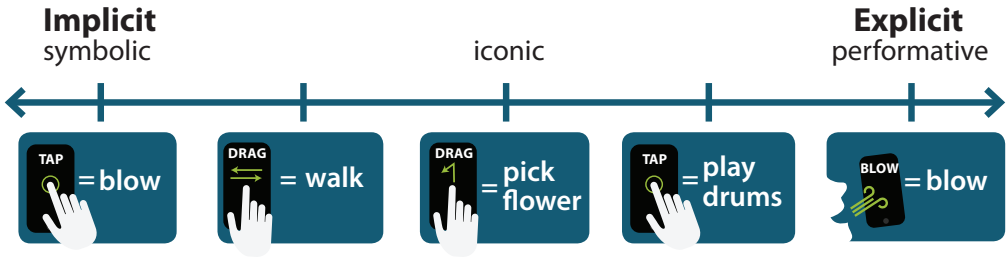


Figure 5.6: Visual representation of some of *Little Red*'s interactive gestures positioned in the implicit-explicit performativity spectrum.

Monster, on the other hand, presents less variety of gestures required to do the interactions, tapping being a gesture that works for most of the hotspots. Nonetheless, many of the interactions in *Monster* present an ambiguous indication of what the interactive gesture is or allow more than one way of activating a particular effect in the text. Therefore, the same action in *Monster* can be performed through a gesture that tends towards the explicit end or more towards the implicit end. Because all actions in *Monster* involve the use of the hand in one way or another, all present a certain level of iconicity, but for instance, tapping to turn the page is closer to the implicit end than swiping to turn the page. When an action has two possibilities of gesture, sometimes both have similar levels of iconicity: for instance, breaking the wall by shaking the device has an iconic element of the act of demolition, while tapping the wall has an iconic aspect of hammering it. Other actions carry a relationship that is subjective to the individual performing it: according to my experience, I would position tickling with one finger as an iconic while tickling with multiple fingers as an explicit interaction, but it can be argued that some people indeed tickle with only one finger.

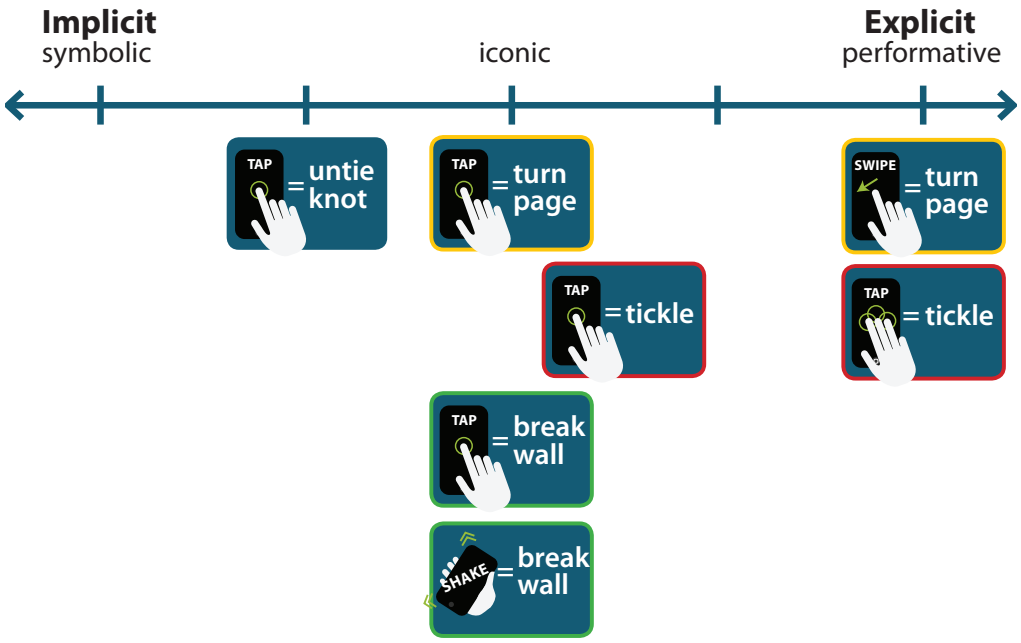


Figure 5.7: Visual representation of some of *Monster*'s interactive gestures positioned in the implicit-explicit performativity spectrum.

5.4 Perspective, point of view and interactive gestures

Another important aspect of the relationship between form and meaning of the interactive gesture in the context of the narrative regards gesture perspective and viewpoint. Because gestures involve the body of the reader for their realisation, they always involve the reader's viewpoint (Parrill, 2009); readers always experience the gesture in first person. In literary apps, interactive gestures can involve a representation of a process or an action performed by a character in the story, as suggested above. Therefore, these interactive gestures *represent* the viewpoint of the character but are *experienced* from the viewpoint of the reader. In gesture research, the viewpoint of gestures in narrative language (when people are telling or retelling a narrative) has been classified as 'observer viewpoint gestures' when the reader uses the gesture from an 'external perspective' to the narrative and 'character viewpoint gestures,' when the gesture is performed from an 'internal perspective' (McNeill, 1992, pp. 118–119). McNeill also proposes there are 'dual viewpoint gestures' (1992, pp. 122–125), in which people represent in a gesture simultaneously their viewpoint and that of the character.

In *Monster*'s metafictive narrative, all gestures are performed by the reader from the viewpoint of the reader (e.g., the reader destroys the wall). Hence, they present a single viewpoint, but the perspective is ambiguous and lies in between real and fictional worlds.

In *Little Red,* both viewpoint and perspective can vary from one gesture to another. When packing the basket, collecting flowers, acorns etc., readers are assuming their own viewpoint. The perspective, however, is ambiguous, as the gesture itself is performed from an external perspective, but the narrative calls readers "helpers," positioning them as characters that act from an internal perspective; the boundaries between real and fictional worlds are therefore ambiguous. When pouring the honey into the jar (Scene 13A), the gesture is performed through Bear's internal perspective and viewpoint (he is pouring the honey into the jar, and Little Red holds the jar). As readers hold the tablet and perform the simulated pouring action using their own body, their viewpoint is also indissociable from the gesture. Conversely, when readers drag Little Red back and forth to catch the feathers (Scene 7A), the perspective is external, and readers are controlling the character in a "godlike" perspective (Ryan, 2015), and the viewpoint remains that of the reader.

The action of blowing the dandelions (Scenes 19A) presents further complexity because of the sequential nature of the interaction, which involves the steps of gesture performance, activation and effect (Zhao & Unsworth, 2017). When readers blow, they assume the viewpoint of the character, while still experiencing the gesture through their own viewpoint. As Little Red does not act in simultaneity with the reader, nonetheless, there is a temporal gap between the two actions, and the reader's action ultimately has the role of activation, or control of the story, through an external perspective. Hence, in this interaction, the action is represented first by the reader's body, through the performance of the blow (reader's viewpoint, internal perspective). The noise that results from the blow activates the device, and only then, the action is represented in the story, as an effect of the activation (character's viewpoint, external perspective). In one interaction, therefore, the reader experiences both their own viewpoint and that of the character and both internal and external perspectives.

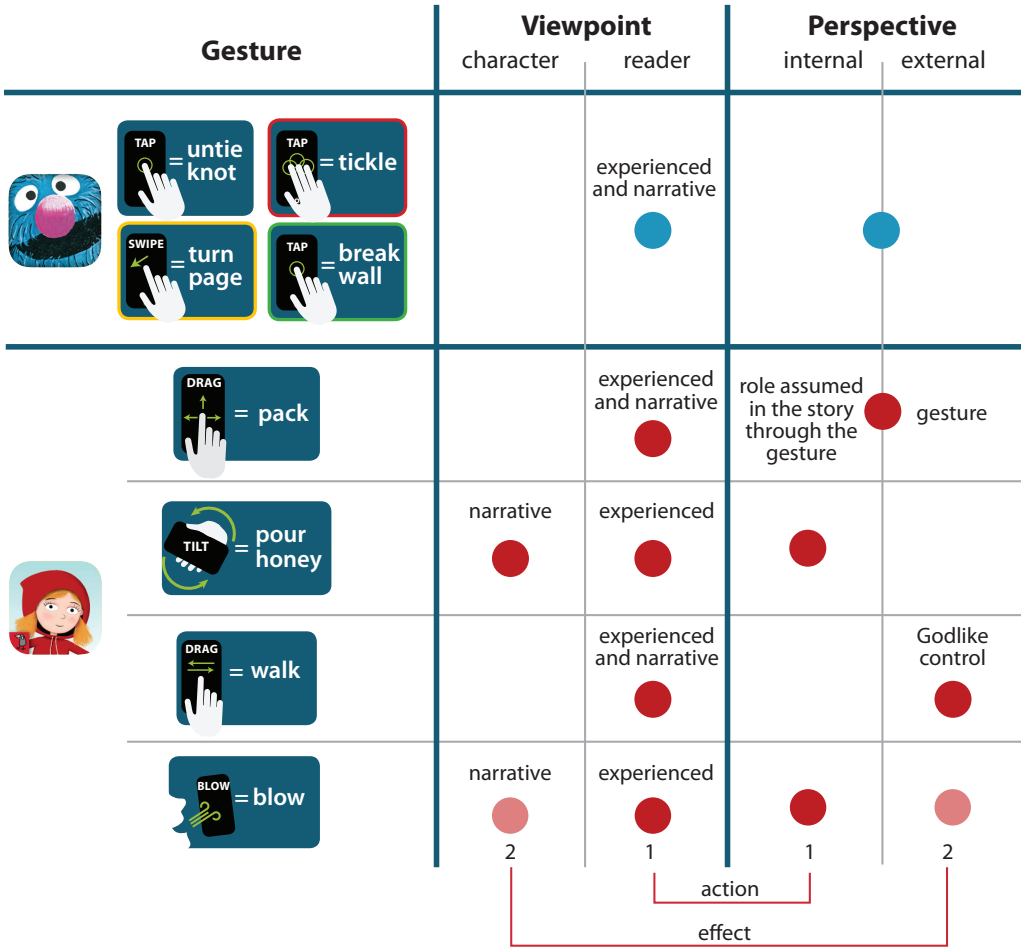


Figure 5.8: Visual summary of gesture perspective and viewpoint in both apps.
While most interactions in *Monster* show consistency in terms of viewpoint and perspective, the ones in *Little Red* show great variability.

There are, therefore, significant differences in how both apps position the reader, through their embodied interactive participation, in relation to the story. *Monster* presents a consistent role to the reader, in which he is always himself acting in relation to Grover. Conversely, *Little Red* presents, at each interaction, a different role and position to the reader, who at times acts internally, as a character or on behalf of a character, and at other times acts externally, as a controller. Because certain the interactive gestures are asynchronous regarding the action of the reader and the representation of the action in the narrative, they might involve an internal perspective at the time of the performance but ultimately represent an external perspective in relation to the effect generated in the story. Finally, during all actions the reader experiences their own viewpoint, which can coincide with the viewpoint they assume in the narrative or not, in which case the interactive gesture can be considered to present a double viewpoint.

5.5 Summary

This chapter has discussed the materiality of the device and how the selected apps suggest certain gestures that the reader must perform to interact. Through the proposed forms of interactivity, the apps afford certain forms of embodiment, which can establish symbolic, iconic or performative relationships with the action they represent in the narrative, proposing internal and/or external perspectives, readers' and/or characters' viewpoints.

Monster presents a smaller number of interactions and is also less prescriptive with regards to how the reader should interact, often presenting more than one gesture possibility for the same interaction. Tapping, as the most conventionalised interactive gesture for touchscreen devices, works in *Monster* to perform any of the required interactions. Usually the word "touch" is used to indicate the tapping gesture, but often the language used to describe the gestures refers to the meaning of the gesture (e.g., tickling, knocking the wall down) rather than towards its form, which gives readers flexibility to interpret how the form of the gesture might be. Because in *Monster* the metafictive narrative positions the reader as the actual actor of the gestures, as opposed to merely representing or activating a gesture that is performed by a character, there is always some level of iconicity in the form of the interactive gestures. In other words, the movements of approaching the screen and tapping, swiping, etc., are already a form of representation of processes that take place in the story, because they are gestures in which the arms/hands of the actor are necessary, always creating a direct relationship between the body of the reader and the story.

Little Red is a more complex text concerning interactivity. Interactivity in this app allows readers the manipulation of different layers of the text, affecting the display of the visual text (peripheral), how the story is told (discourse level), and the story level itself. It also presents a great variety of interactive gestures necessary for the completion of the story and in some cases the combination of interactions from different levels to accomplish a particular task. Generally, a specific form of gesture is required for the completion of the critical interaction (nuclei) of the scene. The characters may utter tips describing the form of the gesture, but this might not always coincide with the moment when readers have to figure out what to do. The interactive gestures range from a simple tap to the full-body engagement promoted by the blow action, but many actions present at least some level of iconicity. The ways in which the interactions position the readers in

relation to the text, whether by embodying a character or controlling it through the gesture are also varied and complex and change depending on the interaction. At times, readers are positioned at the same time in and out of the narrative and assuming at once their own viewpoint as well as the viewpoint of the character.

6 CHILDREN'S EMBODIED RESPONSES TO LITERARY APPS

This chapter is dedicated to the presentation and discussion of the children's embodied responses while reading literary apps. Such responses, according to the multimodal social semiotics framework, were made based on the preferences, interests and motivations, experiences and expectations of the readers, in response to the text's affordances and meaning potential, and were also mediated by their parents as co-readers. As discussed in the previous chapter, the different forms of interactivity, as well as the materiality of the device, afford specific forms of embodiment in the process of reading, but this chapter evidences that the children's embodied responses to literary apps were not limited to interacting with the apps. The participants' responses revealed a close connection between reader and text, establishing meaningful relationships that are coherent with the fictional framework proposed by the story.

The data analysis suggests the participant readers' embodied responses fall within one of the following three categories:

(1) The readers engaged their bodies in interactions with the app, with the aim of activating responses from the text. These interactive gestures also established symbolic, iconic or performative relationships with their meanings in the context of story, but the performed gestures not always coincided with the gesture suggested by the text.

(2) The readers also engaged in spontaneous performative responses to the apps that were not related to the text's interactive features. Even though these responses did not activate any changes in the text, they were an important aspect of the engagement of the readers' bodies in making-meaning with the apps. Although spontaneous, these responses were not automatic and involved the readers' intentionality in communicating with the text and/or the co-reader.

(3) The readers responded spontaneously to the story in unintentional facial and body expressions that indicated their emotional response to the narrative.

In this chapter, the focus lies on intentional forms of embodiment, that is, on the first two categories of embodied response. Spontaneous expressions of emotions are, nonetheless signs of children's meaning-making and also inform and influence the dynamics of meaning-making in joint-reading situations, because these responses are interpreted by the co-readers who might respond to the child reader's expressions of emotion. Therefore, facial and body expressions are considered throughout the findings chapters in moments in which they are relevant and that the context of analysis provides significant evidence with regards to what they mean.

6.1 Embodied meaning-making through interaction

Interactivity is an essential feature of literary apps, without which these narratives cannot unfold. To perform such interactions, however, readers must materially engage their bodies. Thus, this form of bodily engagement was frequent and essential to the reading of literary apps. The text's affordances and meaning potential significantly prompted such interactions. The text of literary apps suggests in various ways and usually through various modes of expression, which gesture should be used to perform such interactions but the observation of different children performing the same gestures revealed variability with regards to how they performed them. In this section, two types of scenes are analysed. One in which the reader was required to interact using their arms and hands primarily and activating the app through touch (haptic interaction), and another one in which the readers could use haptic as well as more expressive forms of interactivity, such as blowing into the device (non-haptic interaction). The vignettes and examples reported are from the participants' readings of *Little Red*, because this app requires the use of more varied interactive gestures and the app was more prescriptive in the ways with which the readers had to engage their bodies to perform the interactions. It is important to highlight that as the participants were new to literary app reading and

because the interactions in *Little Red* were many and varied from scene to scene, achieving an effective interactive gesture was often learned on sight, on a scene-by-scene basis. Furthermore, there were times in which the readers faced significant difficulty in performing the interaction, which disrupted the reading event.

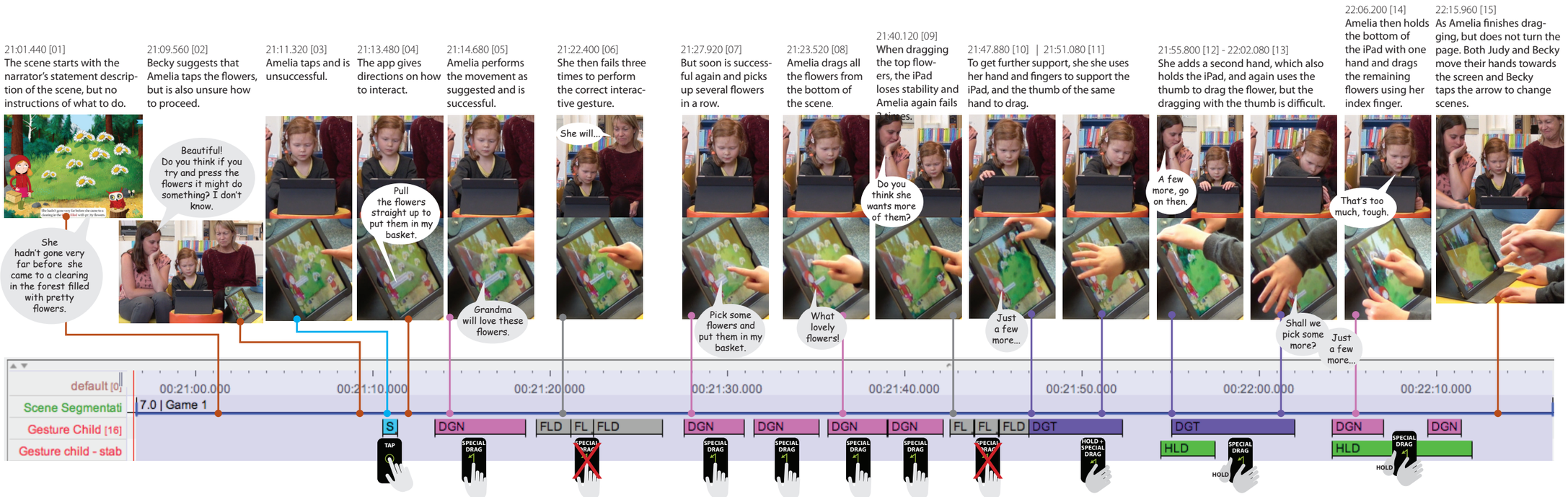
6.1.1 Haptic interaction and forms of embodiment

The scene in which readers help Little Red pick flowers for Grandma (Scene 7B) seems apt to begin this analysis because it requires from readers a particular form of gesture performance (see Figure 6.1). The app verbally instructs the reader to make this gesture: "Pull them straight up out of the ground to put them in my basket," says Little Red. During the interaction, the reader must touch the screen continuously; if they release the flower before it has reached the basket, it returns to the initial position.



Figure 6.1: Annotated screenshot of Scene 7B from *Little Red*.
At this moment, readers have not yet interacted. The annotations indicate the movements readers must perform to pick up the flowers and put them in the basket. The movement involves two steps: (1) The pink arrow indicates the mandatory direction of the first part of the gesture; with that movement, the flower is pulled out of the ground and released. (2) Without releasing their finger from the screen, readers can drag the flowers around the scene (yellow arrow); to complete the action they need to release it on top of the basket.

Vignette 6.1: Amelia picking up flowers: sequential bodily engagement and adjusting the micro-features of interactive gestures



Amelia, Becky and Judy's reading of the scene starts with an uncertainty of how to perform the interactive gesture of picking up the flowers. After Becky's suggestion [02], Amelia begins with some unsuccessful exploratory tapping [03]. When Little Red instructs the reader on the required gesture [04], Amelia adjusts it and performs as expected [05]. She then engages in a long sequence of gestures, and at times stumbles and is unable to perform the interactions [06]. Amelia repeats the gestures until she manages to perform them and continues to pick up the flowers one-by-one [07-08]. Amelia focuses on engaging her body in the action, and rarely makes a verbal comment. At every action, though, the app gives a verbal response, and these comments from the character are interpreted and commented upon by the adult participants, who extend the meaning of the narrative. Looking at the timeline and the amount of time Amelia spends performing the interactions, it is possible to see that during most of the duration of the scene, Amelia engages in embodied interaction, which suggests this form of interaction is likely to be experienced as central to app reading, becoming a defining feature of this form of reading. While Amelia experiences a deeply embodied form of meaning-making,

the adult participants' experiences are centred in the verbal expressions of meanings conveyed by the multimodal text [06]. As the three family generations represented in the story, grandmother, mother and child, are mirrored by the participants, the grandmother Judy establishes 'life-to-text'; and 'text-to-life' connections (Sipe, 2008), bringing her likes to comment upon the character's utterance about the fictional grandmother. The different focus of the child participant on the interactions and the adult on the verbal content suggest a distance between the adult and the child readers, and physical proximity and contact between the child and the text.

It seems, nonetheless, that at some point the repetitive gesture becomes meaningless, or at least less meaningful than it initially was. Becky asks a question that draws Amelia's attention to the fact that there might be no need to keep repeating the gesture until all the flowers are gone [09]. The app, however, in continuing to prompt the reader to pick more flowers, emphasises the need for repetition [20]. In response to the app, Becky changes her mind, telling Amelia to continue interacting [13]. Amelia performs a few extra interactive gestures [11-12], and as a response, the app repeats again that she should pick more flowers [13]. She does pick the flowers but says 'That's too much, though' showing disagreement with the character [14]. Despite the signs that indicate Amelia does not see the need for so many flowers, at the end of the scene she shows a wide smile [15], which signals a feeling of accomplishment for completing the "task" Little Red had set out to the reader.

During these exchanges, Amelia focuses on managing the performance of the gestures. After picking up all the flowers at the bottom part of the screen, the ones at the top pose a further challenge because there is less space for manoeuvre of the upwards movement, as the edge of the screen is closer [10-13]. Furthermore, the iPad being in a vertical position, pressing the top part of the iPad destabilises it, making the movement more difficult to control. That leads Amelia to adapt her gesture, adding 'stabilising movements' (Merchant, 2014), which were in general rare in the interactions [10; 12]. In the first two, she uses the same hand to stabilise and perform the interaction, which leads her to use her thumb to drag the flower. In the last two movements she adds her left hand, which stabilises the tablet while her right hand performs the interaction, and again she uses the thumb rather than the index finger to drag. However, there seems to be less motor control when she uses the thumb rather than the index finger, and Judy even makes a frowned face of apprehension when she sees the difficulty in controlling the movement that Amelia is experiencing.

This vignette illustrates the significance that interactive gestures have for the reading experience and meaning-making of literary apps. The interactions take most of the duration of the reading of the scene, and the readers are continually considering their meaning and relevance. The form of the gesture is a challenge that requires the readers to be attentive to their performance and to adapt to new conditions, even when the form of the gesture is repeated, because making the gesture at different areas of the screen results in different requisites of force and control of the hands. Only the child participant experiences the embodied interaction, even though the repetitive nature of the task would make the adults' participation possible.

Next, Molly's reading of the same scene is discussed, exemplifying the variability of children's performance of the same interactive gestures despite the app's specific guidance.

Vignette 6.2: Molly pinching flowers: bringing life experiences to embodied interactions

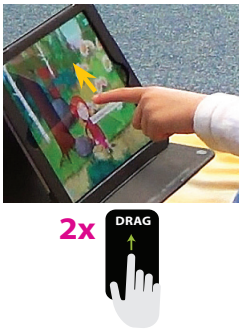
16:25.280 [01]
Little Red asks the reader's help.



16:25.880 [02]
Molly tries unsuccessfully to drag the flowers into the basket.



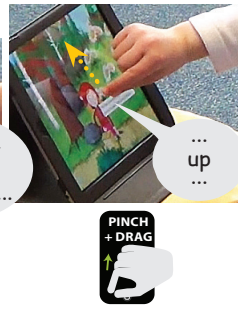
16:32.600 [03]
She then drags up, still unsuccessfully.



16:34.040 [04]
Molly makes a pinching shape with her hands. The app starts uttering a hint:



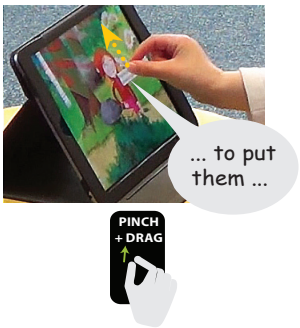
16:34.640 [05]
Molly moves towards the screen and turns her hand upside down.



16:36.080 [06]
Molly drags up with her hand in pinching form and upside down, but is still unsuccessful.



16:37.160 [07]
Holding the pinching shape, she turns her hand back up and tries again.



16:38.320 [08]
Molly moves her hand up, holding the shape, and this time the flower comes up.



16:39.400 [09]
Molly drags the flower into the basket.



Like Amelia, Molly starts interacting before the app explains how to. Initially, Molly tries tapping and dragging the flowers [02], but the gestures are ineffective. When she touches

the flowers at the beginning of her dragging gesture, however, the flower makes small pump movements up. This seems to encourage Molly to drag the flowers up [03], but she does not hold the movement long enough for them to be released. Molly then changes the shape of her hand as if she was going to pull a real flower from the ground, pinching it and then dragging it up [04]. First, she makes the gesture with her hand upside down [05-06], which would be optimal to direct the force up when picking up flowers in "real life," but in this case, as force is not necessary and the shape makes it more difficult to touch the screen as required, Molly is again unsuccessful. She holds the same hand shape, and tries again, this time dragging up with her hand also directed up [07-09] and is finally successful.

In this vignette, Molly starts with the dragging gesture. She is familiar with this gesture because in a previous scene of the app she used the same gesture to pack up some food for Grandma. When unsuccessful, Molly seems to interpret from the app's response that a different gesture is required, and resorts to a form of gesture that represents the actual act of pulling a flower from the ground. Maria made a similar gesture when trying to grab the dandelions, in another scene of the same app (Figure 6.2 below). Possibly not having experience with other apps that would require a similar interactive gesture, Molly seems to draw from her life rather than textual experience to figure a way out of this challenging form of interactive gesture.



Figure 6.2:
Maria's pinching gesture.
Maria makes a pinching gesture when trying to collect the dandelions on Scene 10A.

The comparison between Amelia's and Molly's gestures used to pick up the flowers in this scene indicate that both involve embodied representations of the actual gesture of picking up flowers. Amelia's gesture establishes an iconic relationship: while the upwards movement reflects the actual gesture, the fingers involved and their position differs significantly. Molly, on the other hand, adds to the gesture the shape of the fingers, approximating the gesture to the performative end of the scale. Even facing difficulty in performing the gesture this way, she insists on using this form of interactive gesture for a

while. When instructed by the app that the first part of the movement must follow a straight up direction, she corrects the direction but keeps the pinching hand form, instead of shifting back to dragging. Although the child's young age might influence the process of selecting the gesture and self-correcting it when necessary, it also indicates that using a shape with which she is familiar promoted a meaningful connection that seems significant to Molly.

In *Little Red*, the complex variety of interactive gestures and types of interaction, however, posed significant challenges to the readers at specific points, at times even disrupting the reading experience. One example is discussed next.

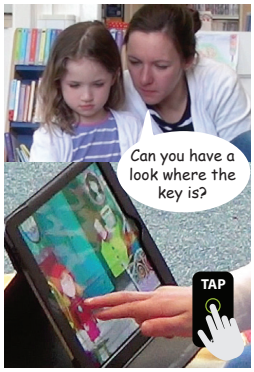
Vignette 6.3: Molly and Abby's struggle to perform the interactive gesture

This vignette shows a complex sequence of utterances from Molly and Abby in their effort to figure out how to participate in the narrative. In this scene, readers are expected to look around Grandma's cottage and find the key to the wardrobe, where she had been locked up by Wolf (Scene 22). After the narrator says "As soon as the wolf was gone, Little Red Riding Hood unlocked the cupboard," Little Red suggests, "The key must be around here somewhere," implying that the reader must look for the key. The key is large and highly decorated, and appears in different places at different readings, sometimes completely visible and other times, hidden, as in Molly's event (see Figure 6.3). When hidden, readers must move Little Red (dragging the character) or the scene around (dragging with two fingers) to find it, but the app does not overtly state these instructions. In this case, the key was under the bed, at the very bottom right corner. The bow and part of the stem of the key can be seen under the bed in Molly's screen, but they are not readily identifiable as parts of a key. The most recognisable part of the key, the cuts and the tip, are not visible.



Figure 6.3: Screenshot of Scene 22 from *Little Red*.
In Molly's reading, the key was under the bed, as in this image

25:45.320 [01]
Molly needs to find the key to unlock Gradma from the cupboard. She taps Little Red.



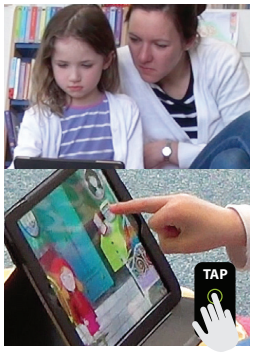
25:49.000 [02]
Little Red responds asking for help. Abby asks Molly about the key.



25:54.080 [03]
Molly looks at the screen for some time and looks confused. Abby repeats the question.



25:59.200 [04]
Looking for the key, Molly explores the scene, tapping a radio. Nothing changes.



26:03.280 [05]
Molly hovers her finger over the screen without tapping. Grandma talks and Abby laughs in response.



26:08.000 [06]
Abby repeats the question. Molly does not say anything but taps Little Red.



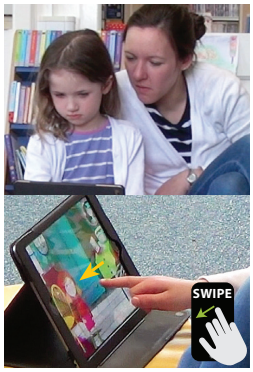
26:10.800 [07]
Little Red responds suggesting the key is "somewhere", but not giving any hints about how to find it.



26:13.400 [08]
Abby swipes the screen trying to move the scene around. The app does not respond.



26:15.560 [09]
Molly repeats her Mother's gesture and swipes the screen. The app still does not respond.



26:16.920 [10]
Unable to get a response from the app with her interactive gestures, Molly taps the arrow.



26:18.760 [11]
The scene changes and "The End" appears on the screen.



26:20.160 [12]
Abby suggests they find the key and taps the back arrow to return to the cottage scene.



26:24.120 [13]
Abby explores the scene, tapping and swiping multiple objects, without success.



26:29.960 [14]
Molly joins in. When both touch the screen at the same time, Molly tapping and Abby swiping, the image inadvertently zooms in.



26:31.000 [15]
Noticing the zoom effect, the Abby purposefully zooms in.



26:33.840 [16]
Abby swipes and taps multiple times across the screen, but the app does not offer any response.



26:34.520 [17]
Abby, looking puzzled, zooms the scene out again.



26:37.580 [18]
This movement reveals more of the scene on the right side and the key finally can be seen.



26:40.000 [19]
Abby swipes repeatedly trying to move the scene to make more of the key visible. Only when Molly taps, their combined movement causes the scene to move.



26:43.880 [20]
Molly finds the key and drags it towards the wardrobe.



This vignette exemplifies how the app's complex interactive design challenged the readers. Although the app was explicit in presenting the general task – find the key – in 1min19s of interaction it did not provide any clue regarding *how* to do it. Molly and Abby then come up with a series of strategies and some trial and error to finally perform the task. Although the hint, "Drag with two fingers to explore more of the scene," is one of the pre-set sentences that Little Red can speak when tapped, in this event it was never uttered, and instead, the app simply repeated the same information. Presenting random comments when the character is tapped, instead of interpreting the reader's behaviour and responding accordingly (which probably would involve more complex programming) is a significant downside of this app.

At the beginning of the vignette, Abby insists that Molly be the interactor, asking questions that could motivate her to actively participate [01; 03; 06; 08]. Molly never responds to these questions verbally but seems to be actively trying to answer them through the actions of searching for the key. Molly's initial exploration does not explore the interactive possibilities of the text: she gazes attentively, and although she does have her finger raised, she uses it as a guide to her gaze rather than exploring the haptic possibilities [03-07]. Molly does not seem to expect that she is required to interact with the text to search for the key and the app does not present any suggestion that contradicts her expectation. She appears to be drawing on her experience of traditional hidden object images and visual games, but possibly also on her own experience with this app: in previous scenes, the app presented visual games, but they did not involve moving the characters nor the scene around. When Molly realises looking is not enough to find the key, she seems again to draw on her experience with the app and uses the tapping gesture [06], which she has used throughout the reading, to search. Appearing to have exhausted her repertoire of both strategies and interactive gestures, she gives up trying to find the key. She taps the arrow to continue with the story despite not having finished the main interaction [10].

When they return to the scene, Abby's engagement in interactive gestures show that initially she also engages with a restricted variety of gestures – tapping and swiping [13] – and only inadvertently the spreading gesture becomes part of the interaction [14]. She shows awareness of the gesture, but without any suggestion from the app that this was a valid option, she did not try to use it. The actual gesture required by the app to drag the scene around, drag with two fingers, is unusual and unconventional, so the participants did not try to perform it at all.

This event shows Molly's and Abby's difficulty in figuring out every aspect of the interactive design. Two stages of action are required to perform the task of finding the key. The first is to move around in the spatial dimension of the scene, exploring it beyond what is initially visible. The next is to drag the key to unlock the cupboard. Their understanding of the task, however, seemed to encompass only the second part. Once they realise the key is not visible, they seem to figure out that an extra action is required of them, but yet do not seem to understand this means "moving around." They did not know what to do (move the scene) nor how to do it (drag with two fingers).

The three vignettes discussed in this section show reader's active participation in haptic interaction and also indicate that there was much variability and adaptation from the readers in performing the interactive gestures. The "messiness" of the actual interactions involve a more extensive vocabulary of gestures than what the analysis of the app had indicated. When faced with interactions they did not know or did not expect, there was a high level of improvisation, as they engaged in gestures that were part of their vocabulary of touchscreen interaction as well as gestures that were thematically connected with the action in question.

Reader's improvisation also involved extending the performance of haptic gestures that were meaningful to them, even when these additional moves were not required by the app nor in fact provoked any change in the text. Some examples are explored next.

6.1.2 Expanding haptic interactions that forge meaningful participation

The scenes in which Little Red attacks Wolf are a climactic moment in the story (Scenes 18, 19 and 20). In these scenes, which take place inside Grandma's house, Little Red faces Wolf and uses the items she has collected in the forest to attack him (see Figure 6.4). This is a moment in which Little Red's action, and by extension, the reader's interaction, is particularly meaningful because it represents the character's survival. It is, therefore, a moment of high tension, expectation and emotional connection with the story.



Figure 6.4: Screenshot of Scene 19C of *Little Red*.
In this scene, Little Red attacks Wolf with the acorns she has collected in the forest. The blue dot on top of Little Red is a suggestion for readers to tap, activating her actions.

Considering the form of the interactive gesture, the app suggests two types of activation, depending on which object is used to attack Wolf. In the majority of cases (using feathers, flowers, thistles, acorns, water, honey and spider) readers are only required to tap Little Red and she performs the attack (shake feathers or flowers towards Wolf, throw thistles or acorns on the floor, or throw water, honey or spider on Wolf). If readers choose the dandelions and whistle paths, however, alternative forms of activation are also proposed: readers can blow into the microphone of the device. These cases present different relationships between the form of the gesture and the effect generated in the app. In the first, form and meaning are dissociated, tending towards the symbolic end of the performative spectrum. In the second, they are directly related, putting the reader in the role of the character and engaging their whole body to activate the interaction, therefore falling towards the performative end of the spectrum.

The analysis of the reading events, however, revealed that in several of the scenes which required only haptic attack actions (tap to activate Little Red's actions), the participants did not necessarily follow the app's script of when and how to interact. Instead, the children insisted on forging a relationship between the form and the meaning of the actions and used modes of participation that were more active and embodied than the single tapping gesture allowed. In these attack scenes, one action which all participants performed was dragging or swiping with the objective of moving the character or the object towards Wolf. One vignette from Emme illustrates this case:

Vignette 6.4: Emme throwing the acorns: control over characters and objects

34:29.880 [01]
The scene starts, with the narrator telling what Little Red did to attack the Wolf.

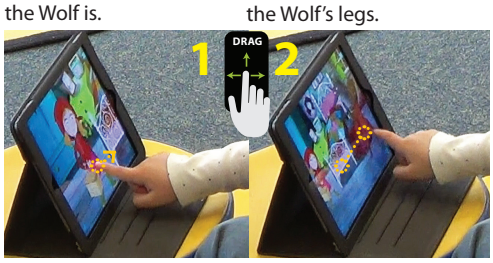


34:31.720 [02]
Emme touches the basket and drags up slightly.



34:32.200 [03]
She taps little Red again, and starts dragging toward the right, where the Wolf is.

34:32.920 [04]
While she drags, the scene zooms out automatically. She stops her dragging at the Wolf's legs.



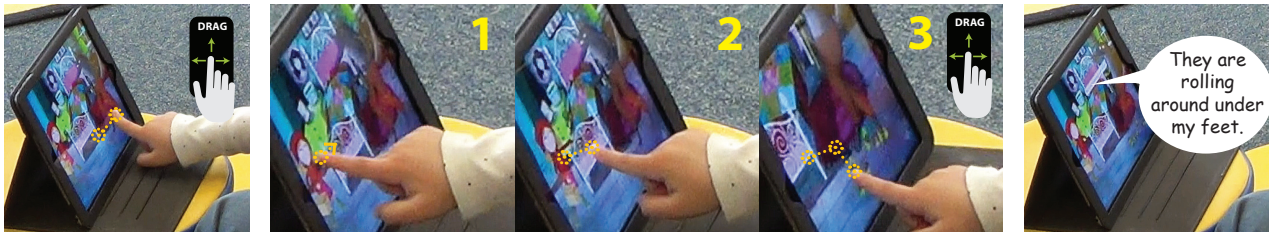
34:33.400 [05]
Emme repeats the gesture with a shorter dragging on the Wolf's legs.

34:33.800 [06]
The acorns were not yet released by Little Red, so Emme taps her again dragging towards the right.

34:34.640 [07]
Emme holds her dragging halfway through and waits for Little Red to throw the acorns.

34:35.960 [08]
When Little Red releases the acorns, Emme completes the gesture towards the floor.

34:37.720 [09]
The Wolf responds to the action.



The scene starts with Little Red facing Wolf (Scene 19C). The narrator explains that Little Red threw the acorns. After the narration ends, Little Red automatically takes them from the basket. At this point the reader is expected to act, tapping Little Red, who then throws the acorns. This vignette shows, however, a much more active role from Emme in the scene than what the app demanded. Emme performs a series of haptic gestures. Although the app does not recognise most of them – the only gesture to activate an effect in the app is the one in frame 06 – the meaningful relationship between the gestures and what happens in the screen indicate Emme's attentiveness to the scene's development.

This example shows Emme's eagerness to participate in this climactic moment and to control the actions being performed. The app only required the tap gesture, and the tap had

to be activated in a specific moment. Considering Emme's responses, it seems that the app's timing was too slow. Taking into account the gravity of the situation Little Red is in, it appears that Emme wants to throw the acorns in defence quickly. She also seems to want to control the direction and movement of the acorns in Wolf's direction, as possibly throwing the acorns to the wrong place could be ineffective. The app gives readers little possibility of engagement in this scene, which contrasts with other moments in the app, where readers could drag the characters, make them go faster or slower, drag objects around for specific purposes (e.g., packing the basket). It seems, therefore, that Emme expects that this form of participation would be available in this scene, as they indeed seem relevant to the situation, but the app restricts the possibilities of participation instead. Moreover, she performs these actions with attention and intention and her engagement seems to match the investment the situation requires.

The fact that the app does not register Emme's efforts to participate is not to be ignored and might have generated some frustration and sense of containment, but because the app indeed performs in parallel and in congruence to Emme's interactive gesturing, the meaning connection is maintained. In the next scene, which has a similar configuration – Little Red is also attacking, but with another "weapon" – Emme repeats this form of participation (Vignette 6.8). This form of interaction was often a step into figuring out the app's suggestions, but at the same time showed reader's preferences for performativity and the possibility of freedom and creativity within the constraints of the interactive features.

Vignette 6.5: Maria tickling Wolf: parent's encouragement of further performativity

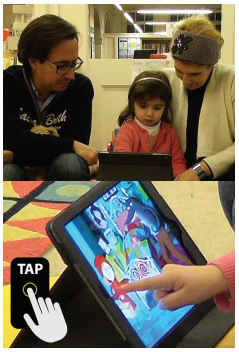
17:11.840 [01]
The narrator tells what Little Red did with the feathers. The parents laugh but Maria does not show any change in expression.



17:15.080 [02]
Little Red automatically gets the feathers from the basket. José suggests tickling the wolf.



17:16.640 [03]
Maria taps Little Red, and the character moves towards the Wolf to tickle him.



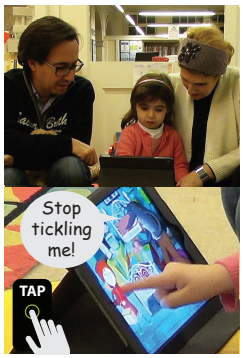
17:18.200 [04]
The father insists that Maria tickles the Wolf.



17:19.520 [05]
Maria taps the feathers and swipes her finger back and forth in the Wolf's direction.



17:21.280 [06]
Little Red stops tickling and retreats. Maria taps her again to restart the action.



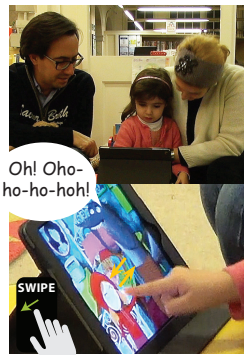
17:23.200 [07]
One more time, Maria swipes her finger back and forth, "tickling" the wolf.



17:25.640 [08]
For the 3rd time Maria taps to activate the action. Daniela mimics the wolf and tickles Maria but she does not respond.



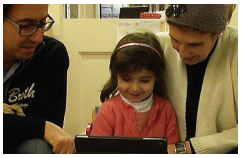
17:27.760 [09]
And again she complements the action with finger movements back and forth on the screen.



17:29.280 [10]
Daniela tickles Maria again.



17:30.480 [11]
This time she responds with a smile.



At first, Maria does not seem as eager to attack Wolf as Emme did. She waits for the animated sequence to finish and does not express willingness to interact, which might be a carry-on effect from the previous scene, in which there were signs that she feared Wolf. Maria engages in interaction only when José suggests that she tickles Wolf [02], and at first she simply taps Little Red [03], who moves towards Wolf. As Little Red moves, José insists that Maria tickle him, pointing at Wolf and briefly moving his finger back and forth [04]. Maria responds to the suggestion: she taps the feathers and moves them back and forth, simulating their movement towards Wolf [05]. Maria's tickling gesture here is very different from the tickling performed in *Monster*, in which some of the participant readers alternated two fingers mimicking a "real" tickling (e.g., Vignette 6.17). In *Monster*, the gesture perspective is first-person, that is, of a person directly tickling someone. Here, the gesture presents second-person perspective: Maria's finger controls the feathers and does not touch Wolf directly. She assumes then, Little Red's perspective, embodying the character.

This vignette indicates how the parents also make suggestions of forms of gestures, not only for the purposes of teaching children how to interact, but to extend the playfulness of the interactions with the story, enhancing their aesthetic experience. This is an example of a movement that was not suggested by the app, but that emerged in the socially situated event. It indicates that Maria's parents also see an opportunity for play and enjoy the possibilities of performance afforded by the interactive gestures.

After José's suggestion, Maria spontaneously repeats the action multiple times, always including the "tickling" element [07; 09]. Daniela, who seems to find the suggestion of Wolf being tickled amusing, laughing out loud at different moments [01; 05], also tries to extend the amusement of the situation by tickling Maria [08; 10]. With this playful

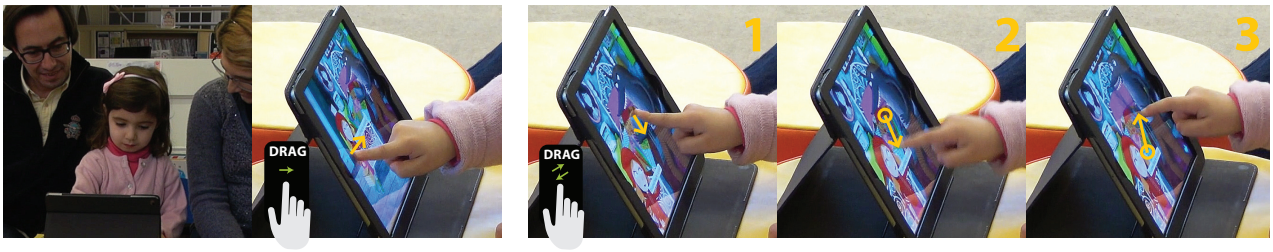
action, Daniela transfers the role of Wolf to Maria. Maria does not immediately respond, focused on the interactive gestures. When Daniela repeats the tickling at a time when Maria is not interacting, she responds, but only with a wide smile. Maria's concentration on the app's action and lack of immediate response suggest her involvement in the action. The disparity between the parents' response of amusement and Maria's, of close attention and investment, indicates their different perspectives, with Maria seeming to focus on the danger of the situation of fighting Wolf.

Maria reread this story twice more and all rereadings involved this scene. In both cases, she autonomously repeats the tickling of Wolf, as the vignettes below indicate:

Vignette 6.6: Maria expanding performativity in the second reading of Little Red

47:27.200 [01]
In her second reading of the app, Maria drags Little Red towards the wolf.

47:28.000 [02] 47:28.880 [03] 47:29.120 [04]
Maria performs the "tickling" action, dragging her finger back and forth towards the wolf, following the animation on the screen.



Vignette 6.7: Maria expanding performativity in the third reading of Little Red

56:13.794 [01]
In her third reading of the app, Maria drags Little Red towards the wolf.

56:16.105 [02] 56:16.239 [03] 56:16.373 [04]
Maria performs the "tickling" action, dragging her finger back and forth towards the wolf, following the animation on the screen.

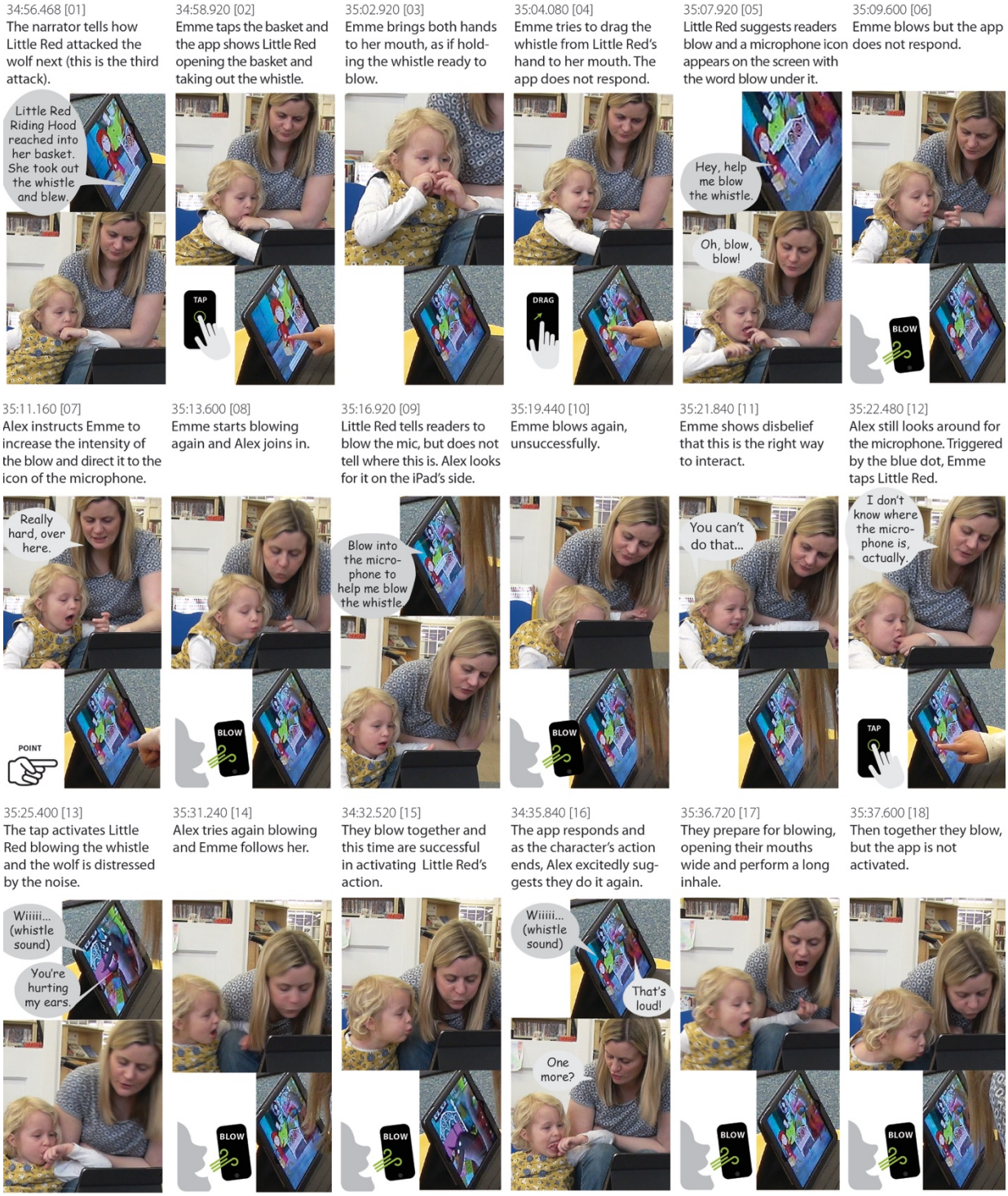


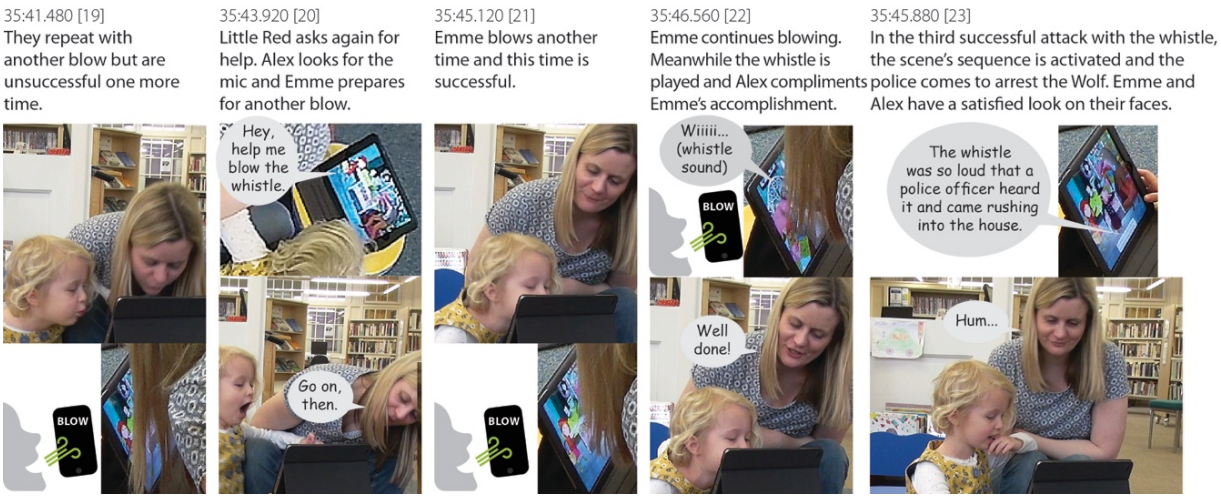
As Maria incorporates the "tickling" gesture into her subsequent readings, it appears that the meaningfulness of the gesture's form matters to her, and she remembers and repeats the gesture without prompt. In these interactions, she seems more eager to have Little Red attack Wolf, and she drags her towards the character before tickling [01]. Possibly her eagerness in the rereadings indicates less apprehension in this critical moment of tension in the story since she already knows the ending. In the third reading, her gesture is even more expressive and seems more relaxed, covering a wider area with her strikes, as the arrows represent.

6.1.3 Non-haptic forms of interaction

Non-haptic form of activation are interactive moves that require activating the device through means alternative to touch – in this case, by sound, through the action of blowing into the microphone (Scene 20B).

Vignette 6.8: Emme blows the whistle: non-haptic forms of interaction





In this scene, the app provides readers two ways of activating Little Red's attack on Wolf. They can tap the character, and then the character blows the dandelions, or they can blow into the microphone of the device, which also activates the action from the character. While tapping is a form of activation that readers have repeatedly performed during the reading of this app, it is the first time that Emme faces the possibility of blowing, and it is the first non-haptic form of interaction with which she is presented.

After performing a few gestures while the interactivity was still turned off [01-04], Emme tries to start engaging in the blowing interactive gesture suggested by the app. Alex correctly interprets the icon and the word "blow" as a sign that actual blowing is required to interact with the scene, but at first, she thinks that the blow must be towards the icon [07] instead of towards the iPad's microphone, which is the actual sensor[6]. Emme interprets the lack of response from the app is a result of a wrong form of interaction [11] despite her mother having told her to blow and she being able to read the word on the screen. She seems to be using her previous experience and expectations of reading apps to determine the expected form of participation, and blowing is apparently not part of it. Alex, nonetheless, appears to have realised at this point that they must blow into the device's microphone instead, but does not know where it is located [12]. In fact, the device's microphone is a tiny and almost imperceptible hole, located at the right side of the screen (landscape mode). As the iPad has a protective cover, it is even harder to see the microphone. Hence, it would have been useful if the app indicated where the microphone is located. Emme however, following the app's suggestion to tap Little Red

[6] Daniela was similarly confused in Maria's first reading of the app.

(through the blue blinking dot), manages to activate the character's action, returning to the use of haptic gestures [12].

In the third row of the transcript, Alex insists on repeating the blow gesture, and Emme immediately joins her. They blow into the device together, and on the second blow, they manage to activate the app. Seemingly excited by their accomplishment, Alex suggests they try it once more, and Emme immediately agrees. Alex's tone indicates an eagerness to perform the blowing and Emme's prompt response also indicates enthusiasm. Their preparation for the blow also suggests engagement, excitement and investment in the action, as well as a desire that the blow is effective. Yet, this blow, as well as the following ones, are unsuccessful. With Little Red's insistence and Alex's support, Emme blows once more and is finally successful – although it is possible that Alex's voice is responsible for the activation. Regardless, the participants seem to express satisfaction and accomplishment.

As in the previous vignette, the reading of the scene is dominated by the interactive forms of embodiment, firstly through haptic interaction, as Emme tries to participate using hand gestures, and next through the repeated acts of blowing. The repetition here is initiated and controlled by the participants, and does not seem to wind down as seen in Amelia's experience with the flowers (Vignette 6.1), but also fewer repetitions are performed in this case. Furthermore, contrastingly to Amelia's vignette, the adult reader joins the interaction, and this personal and affective connection could be a further motive for enjoyment and a source of additional motivation for the child reader. While this form of interaction is more performative than the haptic interactions presented in the previous scene analysed, the fact that both participants can activate the interaction at the same time seems to be perceived as an invitation for collaboration for Emme and Alex. Maria and Amelia also read scenes that involved blowing and likewise adult and child participants seemed engaged in blowing. Despite the difficulty in figuring out where to blow, they repeatedly blew until finding the answer. It seems, therefore, that the blowing interaction afforded collaboration, while the haptic forms of interaction were less perceived as collaborative opportunities by the readers, even though some of them afforded collaboration as well. The possibility for *simultaneous* participation seemed to afford such collaboration, while in other scenes, for multiple participants to engage, they had to interact in alternation (e.g., scenes that involved collecting objects – 7A and B, 10 A, B, C and D, and 13A).

This vignette suggests that, despite the technical difficulties, the act of blowing seems to be meaningful, pleasant and rewarding to Emme and Alex. In this case, the difficulty of blowing into the right place motivates them to blow repeatedly and with more strength, therefore engaging their bodies with further intensity. At the same time, this form of embodied participation seems to be pleasurable enough, so they want to continue trying, instead of skipping the scene as some participants did when their interactions did not work.

This scene was also present in Maria's readings of *Little Red* and, in her rereadings, Maria expanded the performativity of the blowing action even further.

Vignette 6.9: Maria mimicking the whistle sound: new forms of expressive embodiment

57:12.195 [01]
After the narrator speaks, Little Red gets the whistle from the basket and holds it in the air.



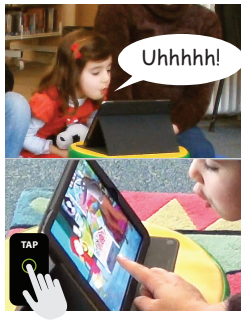
57:14.699 [02]
Maria taps the whistle and drags it towards Little Red, but that does not activate the action.



57:17.200 [03]
Maria gets ready to blow, and Daniela taps the microphone icon, but that is not a hotspot.



57:18.401 [04]
Maria cries out loud, mimicking the sound of a whistle. The microphone captures the sound of Maria's cry and activates Little Red's action.



57:20.070 [05]
Little Red blows the whistle and the wolf is disturbed by the loud sound.



In her third reading of *Little Red*, Maria reaches the scene in which Little Red blows the whistle, whose sound scares Wolf and is heard by the police (Scene 20B). In her first reading of the story, Maria blew the whistle when reading this scene, but faced severe difficulty in doing so, not knowing where exactly to blow into (similar to Emme in Vignette 6.8).

In this event, Maria starts her interaction by dragging the whistle towards Little Red's mouth [02]. Noticing Maria's ineffective interactive gesture, José suggests that she blows. He insists she "[has] to blow" [03], and Maria seems to prepare for blowing [04], but instead of doing so, she cries out loud mimicking the sound of the whistle [04]. Her body moves towards the screen, and the sound is long and loud, activating the microphone [05] (as the blow would). Hence, her alternative performance is effective in triggering Little Red's action. With José's encouragement, Maria repeats this gesture two more times, activating the arrival of the police, who arrest Wolf.

In this app, the reader can choose among the different paths available. The various combinations result in stories with different levels of complexity and variety of interactive gestures. Maria's choices while reading the story resulted in the performance of two different forms of participation with the same action-call: blowing the dandelion and blowing the whistle. There was sufficient information for Maria to know that blowing was the expected gesture for activating that action and she had performed the blow in her first reading of the story. It is likely, therefore, that she intentionally chooses an alternative form of performativity, one that appears to be more meaningful to her. In the rereading, Maria already knows that the noise of the whistle calls the police, therefore it is possible that this strong meaning relationship guided her choice of performance. Also, despite not including the powerful use of the lungs that blowing involves, her performance was extremely dramatic. Besides her exaggerated facial expression, similar to the one made for blowing, with her lips protruded and her mouth open, her representation allowed her to choose the volume and duration of the cry, which was loud and long, exploring further aspects of embodied participation. In this vignette, Maria seems to be integrating interactive and spontaneous forms of embodiment.

6.1.4 Congruent and alternative interactive gestures: a tendency towards performativity

The apps selected in this research suggest meaningful forms of participation in the stories through interaction. Such affordances of these texts require that the body of the reader be continuously engaged in the process of reading. In most cases of interaction in *Little Red*, an essential part of the reading experience consisted in performing such interactions, which involved specific ways of engaging the body, either through haptic or non-haptic interactive gestures. The vignettes presented above show that, despite an (at times) precise indication from the app on how to perform the interactive moves, the participants often executed the gestures differently from the prescription. Each suggestion of embodied interaction made by the app, therefore, resulted in a multiplicity of realised forms of embodied interaction.

In the first vignette (6.1), in which Amelia picks up flowers, the app proposed that the conventionalised gesture of dragging be made more iconic by the requirement that readers first drag upwards before they are free to move the flower around and into the basket. The app, however, uses the word "pull" instead of "drag," which indicates the meaning connection between the interactive gesture and the actual gesture of picking up a flower. This adds ambiguity to how the gesture can be performed, and Amelia and

Maria, therefore, seem to explore such ambiguity with their gestures. Haptic interaction with the touchscreen, in general, seems to rely on a particular basic vocabulary of gestures through which users can perform most of the interactions: tapping, swiping, dragging, and variations of these adding more fingers, etc. (e.g., divergent dragging performing the function of zooming out) (Fróes & Tosca, 2017). *Little Red*, however, makes use of an extended vocabulary of gestures that goes beyond what is conventional in touchscreen interaction, requiring the adaptation of these gestures.

Amelia (Vignette 6.1) tried unsuccessfully to drag the flowers directly to the basket, and after the verbal indication of the app that she should "pull straight up," she merely adjusted the direction of dragging, retaining the shape of her hands (raised index finger). Not all the participants, however, used this strategy. Molly (Vignette 6.2), despite being the child with most exposure to touchscreen devices, was not limited to the standard touchscreen vocabulary of gestures and used a gesture, pinching, that was related to the fictional situation that contextualises her participation – picking up flowers. In Sipe's (2008) categorisation of children's (verbal) responses to picturebook read-aloud sessions, 'personal responses' are responses in which children make 'life-to-text' and 'text-to-life' connections with the text. Hence, in literary app reading, such form of life-to-text connection also seemed to take place in children's gestural responses, including those promoted by interactivity. Therefore, as children's verbal connections indicate strategies for makings sense of the text, in a more performative form of reading like the one promoted by this literary app, life-to-text connections involve children's embodied experienced with the world and their embodied forms of knowledge. The children draw on their previous knowledge and experience, which includes their knowledge of literary conventions, of conventions of touchscreen devices but also their life experience more broadly, especially when some of the tasks incorporate real-life activities into the digital world, like picking up flowers, blowing and whistling. When the app makes use of iconic and performative forms of interaction, it establishes that these relationships are valid and conventional in literary app reading, possibly eliciting children to explore these possibilities.

Based on these observed differences between multiple readers' performances of a same interactive gesture, readers' embodied interactions can be organized into two categories: (1) *congruent* performances of interaction, in which readers performed the 'most plausible' form of interactive gesture, and (2) *alternative* performances of interaction, in which readers diverged from the most plausible gesture in their interaction.

Before going into the detail of these categories, the notion of a 'most plausible' interactive gesture must be clarified. The plausibility of an interactive gesture is not determined by strict rules, but on a case-by-case basis, considering the suggestions present in the app's text on how to perform the interaction in question, either through verbal or visual clues, but also taking into consideration the most conventionalized form of touchscreen interaction that could be used to perform such interaction, even if with some adaptations. The plausibility of a gesture takes into consideration the represented nature of the narrative, therefore not the most plausible gesture that would be used in the real world to perform that same action. The notion of the 'most plausible interactive gesture' is needed because the way apps suggest how the interaction should be performed is often ambiguous. The choice of signs in the selected apps often focuses on representing the meaning of the interaction rather than describing the form of the gesture. For instance, instead of saying drag the flowers up, the app says "pull" the flowers up, when the action of pulling is, in fact, impossible to be executed. It constitutes a metaphor that indicates the actual gesture, dragging. Because of such ambiguity, it is not possible to say that the gestures the participants performed diverge from the app's suggestion. All participants are responding to the meanings suggested by the apps, despite them often performing gestures that are unusual, or alternative, as they are called here. Pinching the flowers up is a valid and possible response to the request of "pulling" the flowers up, but it is unlikely that an adult experienced user of touchscreen technology would ever interact with the device in this manner, even when encountering an app for the first time. The idea of 'plausibility' considers the invisible conventions of touchscreen technology, as well as the meaning suggestions present in the app's text, to establish the most likely gesture regarding a particular interaction. The various vignettes presented above indicate that children often did not seem to master these conventions.

Amelia dragging the flowers (Vignette 6.1) and Emme blowing into the device (Vignette 6.8) are examples of *congruent* interactions. In these vignettes, the participants performed the most plausible interactive gesture, dragging up and blowing into the device, respectively, despite both presenting certain difficulty and needing to adjust their performance to complete the interaction. These examples attest, therefore, that the congruence of an interactive performance is unrelated to the type of performance the app suggested. The performance of symbolic, iconic or performative gestures can be either congruent or alternative.

The *alternative* forms of embodied interaction indicate the cases in which readers performed interactive gestures that diverged from the most plausible form of gestural interaction. Four of the vignettes discussed above show examples in which the readers used alternative interactive gestures:

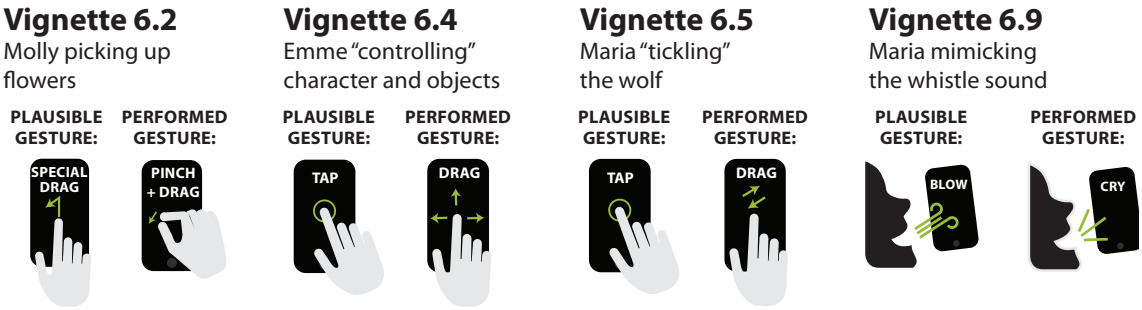


Figure 6.5: Visual comparison of plausible and performed interactive gestures.

These vignettes not only show that readers did not opt for the most plausible interactive gesture, but that they opted for a more expressive form of gesture than the plausible performance of that interaction, tending more towards the performative end of the scale than the plausible gesture. This indicates the participants' choices were motivated by the meaning of the action and their understanding of the scene in question. Even in the case of blowing, in Vignette 6.9, which is already a performative form of interaction, Maria seemed to be experimenting with other forms of performativity and was unusually expansive in her representation of the whistle sound. These gestures suggest the readers' engagement in the narrative, their attention to the details and active interpretation of the meaning of interactivity, while also indicating their limited experience with the conventions of touchscreen interaction. When the readers in these examples interpreted the suggestions from the app, they did not seem to depart from the conventional basic vocabulary of gestures, but brought gestures from other contexts to fill the gaps in their experience with these forms of interaction.

Besides, when the app makes use of interactive gestures which present a direct relationship between form and meaning, such as packing the basket or blowing the dandelion, the app is suggesting that this is a valid form of participation and encouraging readers' further efforts in this direction. There seems to be reciprocity with regards to the use of performativity in literary app reading. On the one hand, these novice readers tend to make use of gestures they already know and that represent the action in the context of the narrative when they are faced with a new form of interactivity in a new context. Simultaneously, when the apps make use of iconic and performative forms of interaction, they validate the readers' inclination towards performativity and incorporate them as a

(defining) feature of literary app reading. Vignette 6.3, which shows the challenges Molly and Abby faced in figuring out how to navigate through the scene to find the key, indicate that, when the readers could not figure out what was expected of them, despite them experimenting with the basic vocabulary of taps, swipes and drags, a disruption in the reading event happened. In this case, there was only one particular form of gesture that needed to be performed, but the app did not state it at any point. Therefore, through the performance of alternative gestures and only inadvertently, Molly and Abby managed to perform the expected gesture. The app seems to assume that the gesture would be part of readers' vocabulary of gestures, and that readers would have the expectation of engaging with the text through spatial exploration, both of which are not in fact conventional aspects of the reading experience of literary apps nor are taught by the app in the process of reading. The differentiation between congruent and alternative forms of interactive performance is useful to highlight how there is an essential element of choice and personal expression when reading literary apps, even when readers are performing an interaction that has delimited parameters with regards to how it must be operated.

In the next section, the personal nature of embodied responses to literary apps are expanded through the analysis of performative responses from the readers that do not serve an interactive function.

6.2 Spontaneous performativity in the transactions between readers and texts

While most of the intentional embodied responses from the readers were related to interactive gestures, the participants also engaged in spontaneous performative responses to the apps. These responses did not aim to activate the text in any way, and are a form of response that has already been categorised and discussed with regards to children's responses to picturebooks (Adomat, 2010; Crago, 2014; Hickman, 1981; Sipe, 2002, 2008). In this type of response, readers engage verbally and physically to express their meaning-making, indicating their immersion into the story and making the narrative their own.

There was a significant difference regarding the frequency and expressiveness of the participants' responses while reading the two apps. In *Little Red*, there were mostly two types of expressive responses. The most common were emotional responses to critical moments in the narrative, involving Wolf's attack or merely the imminence of it. Less frequently, the readers engaged in responses that aimed at representing, through their bodies, an aspect of the narrative.

Little Red Riding Hood was a story that belonged to the repertoire of all child and adult participants, and often they would manifest such recognition immediately when they saw the icon of the app. Children's previous knowledge of the story generated anticipation of the moment when Wolf attacks Little Red and the readers manifested tension through facial and body expression during the development of the story.

6.2.1 Emotional expressive responses

This version of the story explores the imminence of an attack by repeating the scene in which Little Red walks alone into the woods (Scenes 4, 8, 11, 14). In these scenes, Little Red is seen walking into the forest and Wolf is hidden.

It was common for the participant children to show some apprehension in this scene. Roza was a child who was generally very expressive and seemed to be particularly affected emotionally by the possibility of Wolf's attack. In the first scenes of the app, she had already mentioned being scared of Wolf as Little Red's mother warned her to be careful in the forest. The vignette below shows Roza's response at the first scene in which Little Red walks alone in the forest (Scene 4). Roza had (inadvertently) chosen the 'read by myself' option, so Bea was reading aloud all the written text from the app (this was the only event in the research when this option was made):

Vignette 6.10: Roza enacts The Big Bad Wolf



While analysing this passage to create this transcript, this vignette was revised several times because Roza's response suggests she saw Wolf hidden in the bushes, but in fact, Wolf is not present in the scene up to this point. Therefore, Roza is scared by the *possibility* of Wolf appearing rather than by seeing Wolf. When she mentions Wolf, she pronounces it in a dramatic tone that works as a representation of the character. The way she says it seems to justify the clear apprehension that she expresses through her facial expressions. The paused and dramatised uttering of "The Big Bad Wolf" was also used by Maria and by Molly's little sister Elsie, showing the widespread of this representation. Wolf is THE Big Bad Wolf, a character that pervades many children's tales and whose wickedness is part of these readers' repertoires. The character of Wolf seems to carry many signifiers, and one of them is this dramatic form of uttering his name that indicates his gruesome nature. The form of pronouncing the name is as much a signifier as the name itself and Roza uses the form even though she is scared.

Another scene in which the participants expressed their emotional response was the scene where Little Red and Wolf are face-to-face, and she asks him about his eyes, ears and teeth (Scene 16). The scene is the highest moment of tension in the story, but again the participants seemed to have different experiences and expectations concerning the story. To illustrate this, Molly's and Maria's contrasting responses to this scene are compared.

Vignette 6:11: Molly's contained and expressed emotions

22:01.720 [01]
Molly and Abby reach the story's pivotal moment. Molly is serious but does not express strong emotions.



22:02.440 [02]
Abby tries to draw on Molly's previous knowledge of the story, but as she speaks to her, her emotional response seems to escalate and she covers her mouth with her hands. Molly replies something but the audio is inaudible.



Molly looks tense as the dialogue unfolds, but does not express her fear overtly. As Abby talks to her, Molly seems to be triggered to move out of her frozen state, and she changes her expression, covering her mouth with both hands crossed on top of the other. Such reaction seems not only to indicate apprehension, surprise and fear but, in the context of this scene, might reflect a wish to close Wolf's mouth and impede the attack; her crossed arms in front of her body also evoke a need for protection.

While Molly's expression of fear seems authentic, Maria does not seem particularly apprehensive in this scene:

Vignette 6.12: Maria enacting fear

15:53.280 [01]
Maria, José and Daniela reach the pivotal point in the story. Maria does not demonstrate being particularly scared.



16:00.160 [02]
After the wolf threatens Little Red, Daniela and José make exclamations reinforcing the seriousness of the situation.



16:02.960 [03]
The wolf moves his arms in a menacing movement and a threatening music plays. José and Daniela repeat the exclamations.



16:13.240 [04]
After they activate the dialogue options, the wolf responds with further and more overt threats.



16:13.600 [05]
Daniela and José again add some exclamations, suggesting the danger Little Red is in. Maria's facial expression is neutral.



16:14.360 [06]
With such emphasis from the parents, Maria herself engages in an exclamation, looking directly at her mother and making a scared face. Daniela joins in and repeats the exclamation, echoing Maria. José repeats the wolf's words.



Maria seems relaxed while the scene unfolds. In the reading of other apps, such as *Monster*, there were indications in Maria's facial and body expressions that she was at least tense and apprehensive. Here, these signs are not present. Daniela and José, nonetheless, expand the tension of the scene with repetitive exclamations. Maria initially does not respond to such exclamations, but towards the end of the scene, when Wolf announces overtly he will "gobble Little Red up," and Daniela and José again repeat the exclamations, Maria joins them and make an expressive "Ahh!," which she says looking at Daniela and making an expressive facial expression. In this case, Maria seems to be representing the emotional response from the story. Her parents are representing their emotional response, in an effort to create an ambience that matches the tension in the story and expands it. Maria seems to interpret that this is the expected behaviour and similarly represents her response. She seems to be performing this response *to her parents*, as she overtly faces her mother as she utters the response. Adomat (2010) suggests that, in classroom read-aloud sessions, "performative responses worked to strengthen the social fabric and meaning-making possibilities of the group" (p. 216). Maria's performed emotional response mirrors those of the parents and strengthens the ties between participants and the social cohesion of the reading event.

These two examples highlight the difference between an unintentional embodied expression of emotion and a performative response. While both are expressions of children's meaning-making with the narrative, the former is an automatic response, while the latter is an intentional response through which the reader uses their body, verbal language and vocalizations to explicitly express their meanings in front of an "audience," which can be the parents, the text or even themselves. The difference between them is not

always easy to tell, but usually, the knowledge of the participant's style of response in combination with contextual information of the moment in which the expression took place leads to a strong suggestion of the presence or absence of intentionality in their response. It was important, therefore, that the sessions of data collection involved multiple reading events, including the reading of the picturebook, and other activities such as the drawing and finger puppets. These observations provided valuable information about the readers and their styles, which informed the interpretation of these micro-elements of the reading events.

6.2.2 Enacting elements from the story

The participants also engaged in expressive performativity while reading *Little Red* by using their bodies to represent aspects or actions from the narrative.

Vignette 6.13: Maria knocks at the door: performance and interactive gesture

In the scene in question, Little Red arrives at Grandma's door (Scene 15). A big door is seen in the middle of the scene, with Little Red in front of it.

14:47.080 [01]
The narrator describes the scene.



14:49.320 [02]
Daniela whispers to Maria, suggesting that she knocks.



14:50.440 [03]
Maria raises her hand. At the same time, Daniela mimics the sound of the door being knocked.



14:51.380 [04]
Maria completes the knocking gesture with her hand in the air, accompanied by the sound effect.



14:52.580 [05]
The blue dot blinks on top of Little Red and Maria taps the character in response.



14:54.360 [06]
Little Red responds asking the reader to knock.



14:54.880 [07]
José performs a tapping gesture in the air, and Daniela repeats the question, indicating how Maria should "knock." The blue dot blinks on top of the wall.



14:57.480 [08]
Maria taps the door represented on the screen and Daniela repeats the sound effects, this time in Portuguese.



In this vignette, when prompted by Daniela, Maria's spontaneous response is to represent, using her body, the action of knocking at the door. She knocks an invisible door, blurring the boundaries between real and fictional worlds [03]. Continuing the scene, Little Red asks readers to knock the door on her behalf, and Maria repeats the gesture, this time tapping the door [08]. This example shows the difference in intentionality in both "knocks." In the first case, Maria is performing and has no interactive aim, she is immersed in the fictional world and becomes Little Red. It is unlikely that Maria believes that this gesture will generate a response from the text, but she does it regardless, using this familiar gesture to embody the character's role in the story. When the app asks that she interact, her parents, who probably meant in the first place that she tapped the door represented in the text, are more explicit, and José represents the interactive gesture of tapping as a demonstration. This gesture has the intent of communicating with the app.

Amelia and Emme, on the other hand (see Figure 6.6), use the closed fist knock as part of their interactive gesture, therefore performing an alternative interactive gesture, and not a spontaneous performance. As this example suggests, there is strong proximity between most of the alternative interactive gestures children performed and spontaneous performance, but the difference is that in the first, there is a communicative aim towards the app; the reader expects a response from the app to the gesture performed and therefore is aiming to change the text. In the spontaneous performance, the aim is in the performance itself. These performances happen outside the text, in the realm of the reader experience.

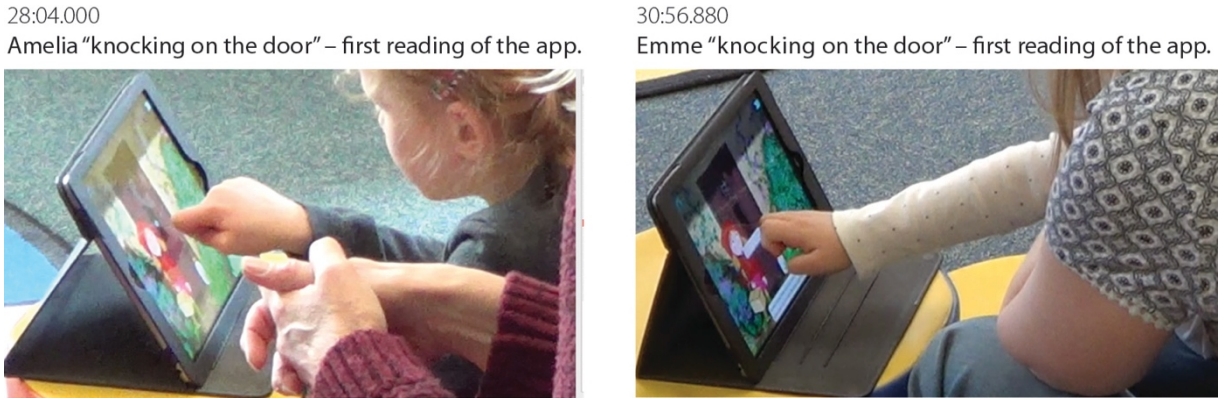
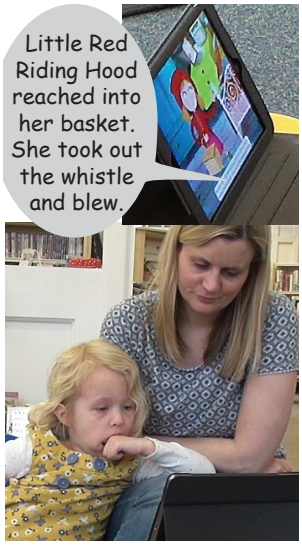


Figure 6.6: Participants "knocking" represented door.
In the first image at the left, Amelia knocks at the door. In the image at the right, it is Emme who knocks. Both participants perform an alternative interactive gesture.

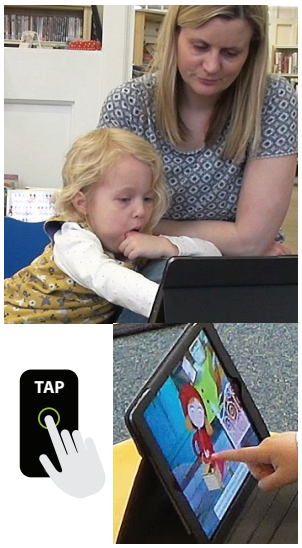
Another example of the reader using her body to represent an action in the story was present in Vignette 6.8. In this scene, Emme blew the whistle:

Vignette 6.14: Emme brings the fictional whistle to her mouth

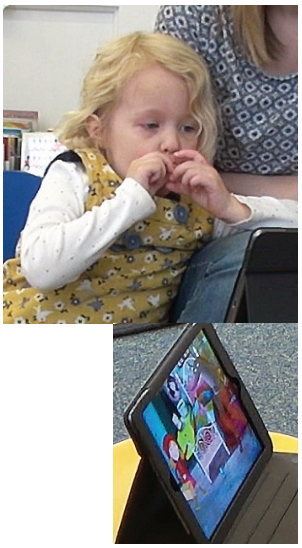
34:56.468 [01]
The narrator tells how Little Red attacked the wolf next (this is the third attack).



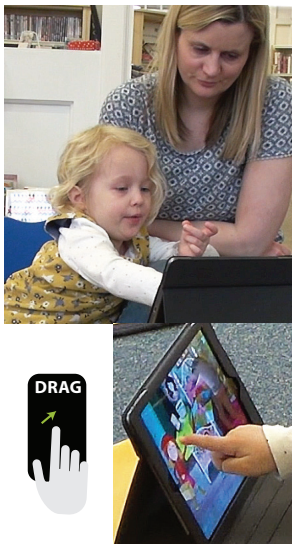
34:58.920 [02]
Emme taps the basket and the app shows Little Red opening the basket and taking out the whistle.



35:02.920 [03]
Emme brings both hands to her mouth, as if holding the whistle ready to blow.



35:04.080 [04]
Emme tries to drag the whistle from Little Red's hand to her mouth. The app does not respond.



Emme hears the narrator who describes the action, and she taps the character possibly with the intention of activating the action described and immediately brings both hands to the mouth as if she was holding a real whistle. Emme uses her body to enact the action, assuming Little Red's perspective in the story. She does not blow or make any sound, though, possibly interrupted by the realisation that she needs to tap the character again to activate a response.

Although silent, Maria's (Vignette 6.13) and Emme's (above) spontaneous performative responses indicate their immersion in the narrative world. Sipe (2008) called 'transparent' the responses in which children present "the ability to position [themselves] in (or indeed, inside) the dynamics of the narrative to such an extent that the story and one's own life, for an evanescent moment, merge with and are transparent to each other" (pp. 272–273). Sipe, however, only identified verbal responses that indicated such immersion in the narrative, while the multimodal methods of this project also allowed the identification of silent transparent responses. A verbal utterance that indicates readers are inside the fictional world is equivalent to the reader performing a gesture as if he was in the fictional world; therefore, transparent responses can be non-verbal and embodied. Such embodied transparent responses were also identified in children's responses to picturebooks by Adomat (2010), which for instance observed a child that rolled on the floor and curled her body after being read that the character curled up. Furthermore, it can be argued that, if children spontaneously express their immersion through such

embodied transparent responses, it is possible that the rendition of performative interactive responses might contribute to children's immersion in the narrative.

The performative responses to *Little Red* were mostly punctual and contained. The vignettes presented in this section were examples taken from the first readings of the apps, and in the rereadings, children responded differently. Knowing the outcome of the story, Molly did not show such empathic connection to Little Red and showed a relaxed attitude. Maria also did not perform spontaneous gestures that represent elements from the story.

Conversely, the readers' performative responses to *Monster* were significantly more frequent in the rereadings and, in some cases, also more elaborate concerning both performativity and content. Lukas, Maria and Roza engaged in multiple readings of the *Monster* app and all participants engaged in rereading the story in the picturebook version and such rereadings proved to be a fertile opportunity for the readers to perform their responses to the narrative.

6.2.3 Performative responses in *Monster*: dramatisation and mischief

When reading *Monster*, the participants tended to engage more often in transparent responses that involved talking back at the story. Such responses tended to be multimodal and involve embodied expressions as well as verbal language:

Vignette 6.15: Lukas responds to Grover

05:34.367 [01]
Lukas and Silvia watch the scene unfold.



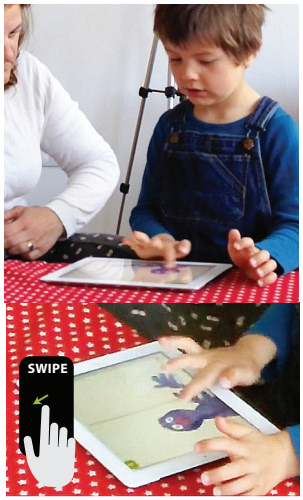
05:42.146 [02]
Lukas talks and points at Grover.



05:43.453 [03]
Lukas expresses a light smile of disdain towards Grover.



05:48.714 [04]
Lukas swipes the page to turn it.



In this vignette, Lukas and Silvia read the scene in which Grover realises that there will be a monster at the end of the book (Scene 2). Lukas talks back at Grover, but meaning is

not only expressed through his verbal utterances and also through his gestures, body and facial expressions. Roza and Lukas engaged in transparent responses in their first reading of the app, and they were the two children that immediately recognised that Grover was himself a monster and did not show signs of being scared by the possibility of a monster.

The participants also expressed transparent responses when rereading *Monster* in picturebook version, as Amelia's vignette below exemplify:

Vignette 6.16: Amelia's transparent responses when reading the picturebook

58:38.000 [01]
Becky reads Grover begging the reader not to turn the page.



58:39.720 [02]
Amelia enthusiastically repeats 3 times in a row:



58:41.360 [03]



58:41.760 [04]



Towards the end of *Monster*, just before the monster is revealed (Scene 11), Amelia does not seem satisfied in asserting her empowered position in the narrative through the act of turning the page. She performs by repeatedly stating that she will turn the page. She uses repetition, which echoes the repetition in Grover's supplicates, as well as body expression to create emphasis. She opens her mouth widely to say the words, and moves both hands in fists slightly down in beat movements that accompany her speech, giving it intensity and representing the "imposition" of her will over Grover's.

Since transparent responses happened similarly in the readings of the picturebook and the app versions of the story, there is the indication that the extended interactivity of the app was not the primary trigger for children's performative responses to this story. Yet, the fact that the app offered further possibilities of engaging with Grover through interactivity influenced Lukas' spontaneous performance at the very end of his first reading of the story. The following vignette takes place after Grover is revealed to be the monster at the end of the book (Scene 12) and Grover makes a joke about himself being the monster.

Vignette 6.17: Lukas integrating performative gestures into spontaneous performativity

12:16.612 [01]
Grover tries to play a prank on readers, pretending there is a Monster.



12:18.170 [02]
Lukas and Silvia laugh at his hysteria.



12:20.773 [03]
Grover reveals (again) that he is the only Monster there.



12:23.442 [04]
Lukas condemns Grover's foolishness again.



12:23.577 [05]
Lukas tickles Grover.



12:24.977 [06]
Grover leaves the screen in an automatic movement. Lukas, thinking he was the responsible for Grover leaving the screen, comments:



12:26.712 [07]
Grover reappears and Lukas tickles him again.



12:30.049 [08]
Grover leaves the scene again and Lukas mocks him.



In his first reading of the story, Lukas seemed to have a preferred style of response, in which he would repeatedly mock Grover and point his hand at his face, as also seen in Vignette 6.15. Furthermore, Lukas re-signifies the tickling gesture, which he learned in a previous scene to be a way of interacting with Grover, and uses it as part of his transparent responses, even though the app is not programmed to respond to the tickling at this point. His interactive gesture, therefore, does not generate a response from the text. Lukas' immersion in the fictional world is such that he does not seem to notice the fact that interaction is not possible at this point. He, however, probably had the intention of interaction and hoped for a response from Grover, so this response is simultaneously an interactive and a spontaneous performative response. This example suggests that there might be significant similarities in children's experience of performance when engaging in interactive performances and spontaneous performances, so that here Lukas, immersed in the fictional world, uses both with the same purpose of appropriating the story. However, the primary motivation for interactive performances tends to be triggered by the text, which generates a situation in which the reader is expected to engage

performatively, while children's inner worlds are likely the primary motivation for spontaneous performances, even if the overarching guidance of the text is also in place.

Performative responses tend to have a subversive and even mischievous inclination (Sipe, 2008), and this is visible in the vignettes presented above. Nonetheless, such mischief to contradict Grover's pleads is incited and promoted by the story's narrative and interactive features.

6.2.4 Children's spontaneous performativity: personal and textual influences

Various authors have discussed children's transparent and performative responses to literature with regards to print texts (Adomat, 2010; Crago, 2014; Hickman, 1981; Sipe, 2002, 2008). In the analysis of children's responses to picturebook read-aloud sessions in the classroom, Sipe (2002) has called these forms of responses 'expressive engagement,' which he sub-classified in the categories of: 'dramatizing'; 'talking back' or 'transparent responses'; 'critiquing/controlling'; 'inserting (oneself and others into the story)'; and 'taking over.' In his later work, Sipe (2008) reconsidered the classification of these responses into two main categories: 'transparent responses', in which readers are immersed and talk back at the story, talking either to a character or on behalf of a character; and 'performative responses', in which readers creatively manipulate the story according to their own purposes. Although Sipe (2008) has managed to delimit the difference between transparent and performative responses clearly, the findings from this thesis suggest the terminology was inadequate because the transparent responses can also be significantly performative. Because when reading literary apps readers also engage in performance through the interactive gestures, in this project the term *spontaneous* performance was preferred, while the interactive performances are a response to explicit demands for embodied participation from the text for the purposes of interaction. Therefore, in this work, the category of spontaneous performances works as an umbrella term that encompasses the transparent responses.

Sipe (2002) also suggests that a combination of factors influences children to perform, or not, expressive responses. The cultural context can be an influence, as different cultures might have incorporated more or less such forms of response as part of their reading practices. Children's individual characteristics, which include the readers' previous experiences with certain types of texts, like digital or post-modern texts, can also be a factor. The texts' characteristics might also play a role in such responses, and certain texts

might elicit more expressive responses than others. Finally, the characteristics of the teacher and classroom can influence children's expressive responses. In this project, textual and personal characteristics were foregrounded as important influences in children's performative responses. Crago (2014) and Adomat (2010) suggest that some children seem to have a preference for embodied responses while others engage more rarely in expressing their meaning-making performatively. Crago makes a bold statement suggesting that preschoolers can be classified according to their response to literature as interrogators, or readers that remain distanced from the story and question it from an outside position, or performers, who immerse themselves in the story and become one with it. He attributes such differences to the dominance of one or another hemisphere of the brain: "What we can say with some certainty is that our performers are showing right-hemisphere dominance; in interrogators the left hemisphere seems more prominent" (p. 56).

The findings from this research do not seem to align with Crago's theory, because all children engaged in performative responses. There was, however, some difference in the frequency and intensity with which readers engaged in these forms of responses. Lukas and Roza stood out as children that spontaneously performed from the first reading of the *Monster* app. Amelia, Maria, and Molly tended to be quieter in the first reading and more playful and theatrical in the rereadings. Such differences in response seemed to be more related to the children's emotional engagement and sense of agency rather than with individual predispositions. Roza did not believe there would be a monster and Lukas was not afraid of monsters, while Amelia, Maria, and Molly seemed tense by the possibility of a monster. Emme was the only child who did not show fear of a possible monster, nor she engaged frequently in performative responses. Hickman (1981) suggests that preschool children tend to engage more often in performative responses than older children and this theory seems more plausible according to the findings of this project. Although all the participants were 4-years-old, Emme was the child that showed signs of being the most mature of the participants. She was the only child who knew how to decode the verbal text and was confident in reading the words as well as performing the interactions.

The data suggest, however, that the characteristics of the texts were the most influential in children's performative responses. *Monster* is a metafictive story built upon the dialogue between Grover and the reader. Therefore, it was not completely surprising that the children would talk back at Grover. The fact that they did talk back with fully embodied expressions seemed to mirror Grover's multimedial representation, through a fully animated character that externalises dramatically his emotions through facial and

body expressions; Alex even called him "a drama-queen." Conversely, *Little Red* was a much more static narrative regarding the embodied expression of the characters. These were not fully animated, and the characters did not change facial expressions within a scene according to the flow of events. However, readers were constantly invited to perform the actions through interactivity, acting as Little Red or on her behalf, and this feature of the text seems to be mirrored in children's embodied transparent responses, in which Maria "knocked" an invisible door (Vignette 6.13) and Emme "held" in her mouth an invisible whistle (Vignette 6.14).

6.3 Interactive and spontaneous performance: embodiment and immersion

In this chapter, various examples of how children engaged their bodies when making-meaning from literary apps were discussed. The first broad category of children's interactive performances indicated that performance through interactivity was a requirement of the text to the continuation of the reading experience, and not being able to figure out the correct form of interactive gesture resulted in the disruption of the reading event (Vignette 6.3). In the second category, of spontaneous performances, children were elicited by the narrative, which provided a context, a fictional world with which they engaged, but it was up to the readers to perform such responses. Yet, when required to perform interactive gestures, performativity was highlighted as the readers often engaged, through 'alternative interactive gestures,' more performatively than what was required to operate the interaction, or what was called here the interactivity's 'most plausible form.' There was some difficulty for the readers to understand how to operate some of the interactions in *Little Red* but, generally, both interactive and spontaneous performances seemed to promote an engaged and joyful experience of reading. Furthermore, the transparent and subversive spontaneous responses from children suggest they were immersed in the narrative despite the need to be continuously active performing the interactions.

The observations of children's spontaneous performative responses bring the discussion of immersion to the fore in the analysis of children's meaning-making with literary apps. Being immersed, or "being lost in the web and flow of a familiar narrative schema" (Douglas & Hargadon, 2000, p. 154) is ultimately an objective of reading literature and therefore a possible and desired outcome of the processes of meaning-making with a literary text. Mackey (2008) discusses immersion in terms of 'stepping into the

subjunctive world', or a space of possibilities generated by fiction. The spontaneous performative responses of children, as unsolicited forms of participation into the fictional world, are a strong indication of the readers' immersion. Because the text overtly demands interactive responses, it is unclear whether readers are in a state of immersion or not when they perform such actions, even if they search for meaningful connections with the text, as the vignettes in this chapter attest.

Furthermore, the notion of literary immersion has been widely debated and gained new attention with the emergence of electronic literature. The participatory nature of interactive narratives raises the question of whether the active engagement of the reader towards the text could disrupt or deepen their immersion in the narrative. Ryan (2013) posits interactive narratives can create ludic and/or narrative immersion. 'Ludic immersion' refers to "a deep absorption in the performance of a task, comparable to the intensity with which a violinist performs a concerto" (p. 26). The participant children showed signs of ludic immersion when they repeatedly engaged in the interactions and seemed absorbed by them (e.g., Amelia in Vignette 6.1). Roza and Lukas, furthermore, tended to celebrate their interactive achievements when they overcome some interactive challenge. 'Narrative immersion' is the "engagement of the imagination in the mental construction and contemplation of a storyworld" (p. 26), an engagement which can be related to the spatial, temporal and emotional aspects of the narrative. Children's spontaneous performative responses indicate that they have achieved spatial and temporal immersion as they seem to position themselves spatially inside the narrative (or bring an imagined spatiality of the narrative into the real world), e.g., in vignettes 6.13 and 6.14. Furthermore, there were signs of the participants having reached emotional immersion when they expressed their emotions unintentionally through gestures and facial expressions. These findings seem in accordance with the emerging research on children reading literary apps (Aliagas & Margallo, 2017), which have also suggested young children were emotionally immersed when reading literary apps.

Douglas and Hargadon (2000) differentiate 'immersion' from 'engagement.' The former means the reader's involvement inside the fictional world, while the latter means their involvement from outside the text, considering the textual structure and possibilities in contrast with other stories, genres, possibilities that are part of the reader's repertoire and schemas. Although they propose immersion and engagement can happen simultaneously in the reading of interactive narratives – which would lead to a state of 'flow,' they also posit interactivity forces readers taking a step out of the fictional world to analyse the situation,

make a decision and take action, therefore shifting reader's experience from immersion into engagement. Similarly, Mangen (2008) moves Ryan's discussion one step further and argues that the ludic immersion, which she calls 'technological immersion,' is incompatible with narrative immersion, which she calls 'phenomenological immersion.' In the same line of argumentation, Mial (2012) argues that the disruptive nature of hypertext novels affects the temporal experience of literary reading in ways that are irremediable and that do not support the aesthetic experience of literature.

The observations in this project, nonetheless, indicate that, at times, there were signs of the readers achieving simultaneously ludic and narrative immersion. Such dual immersion often happened with *Monster*, when readers showed emotional investment in contradicting Grover through the interactions. In *Little Red*, such involvement was explicit in scenes 18, 19 and 20, in which Little Red attacks Wolf. As Vignette 6.4 indicates, at times, readers' emotional engagement led them to act in the narrative to protect Little Red. While the narrative design limited their participation to a simple and distanced tap, the readers searched for meaningful and involved ways of interacting, forging their participation and performing the action despite these gestures not activating the text. In this example, narrative and ludic immersion seem to complement each other, leading to a state of 'flow,' which involves readers' effortless performance and a sense that their participation is "virtually unlimited" (Douglas & Hargadon, 2000, p. 158). Hence, there seems to exist a contrast between the literature on adult's electronic literature and the findings from this project regarding the possibility of a complete state of immersion.

There might exist two reasons for such discrepancy. On the one hand, there are significant differences in the textuality of hypertext novels and that of literary apps, and the narratives of literary apps for young children tend to be significantly less disruptive, if showing any disruption at all. *Little Red*, which is arguably a simple form of hypertext fiction, when read by the participants converted into a significant linear experience like that of a picturebook. Such features might maintain the essential qualities that promote aesthetic pleasure in the reading of literature. Furthermore, the difference may be explained by the fact that children's meaning-making with literary texts tends to combine ludic and narrative immersion. Children's spontaneous performative responses are part of their natural meaning-making processes, and they involve very active and embodied relationships with the stories. The performative layer is intrinsically ludic, and it is also a form of expression of narrative immersion. Moreover, if reader's performance is a way of children making sense of the narrative, it can be considered to contribute to children's

narrative immersion, as long as there is no disruption in the reading flow caused by the difficulty of figuring out what to do (as in Vignette 6.3). In the early years, therefore, narrative and ludic immersion seem to come hand-in-hand.

Finally, when reading the selected apps, which present high literary quality and interactions that are significantly meaningful to narrative development, the participants did not show a will to tap randomly to make things change in the text. Hirsh-Pasek et al. (2015) talk about "minds-on" interaction with apps, where being physically active is accompanied by "thinking and intellectual manipulation" (p. 8). Therefore, these apps seemed to promote very "minds-on" physical participation from the readers. The narrative context provided in these apps seemed to guide readers to interact only when they felt it meaningful, and even to act at times when interaction was not part of the app's design, because readers had an urge to participate in the scenes they felt emotionally connected to.

6.4 Summary of the categories of children's embodied responses

The analysis of the data has highlighted that children used their bodies in meaning-making through their expression of three forms of intentional response:

(1) **Congruent interactive performance**: children engage their bodies in the most plausible interactive gesture, that is, they use gestures to interact with the app that are in agreement with the text suggestions and with the conventions of touchscreen interaction.

(2) **Alternative interactive performance:** children engage their bodies in gestures that diverge from the most plausible interactive gesture, that is, readers use a gesture instead that is often more complex and performative, drawing on their life experience and enhancing the embodied dimension involved in reading literary apps.

Either congruent or alternative interactive performances might take place when the readers perform haptic interactions, that is, when they activate the text through touch, and non-haptic interactions, in which the reader must engage their body more intensely to activate the text, such as through blowing into the device.

(3) **Spontaneous performativity**: children voluntarily add a performative layer to their reading experience in which they represent aspects of the story using their body but without engaging in interactivity with the text. This form of performance, therefore, does not provoke the activation of and consequently the change in the text, but they affect the experience of reading and affect the making of meaning from the text. Spontaneous

performativity involved children's embodied transparent responses, that is, responses that indicate children were immersed in the fictional world but that are not necessarily accompanied by verbal utterances. It also involved fully-fetched performative scenes, in which the children playfully engaged with the narrative from the inside, expressing their immersion multimodally through words as well as body and facial expressions and vocalisations. In *Little Red*, these responses were present only in the first reading, while in *Monster*, rereading allowed the participants to engage more often in spontaneous performativity, incorporating the structure and dynamics of the text, so they were confident and knowledgeable enough to manipulate the text according to their interests.

These three categories of embodied response do not apply to an entire reading event, and not even to an entire scene. Because both the text and the participants are dynamic in their utterances, these relationships varied continuously. Vignette 6.8 is an example in which Emme used all the categories of response during her participation in the attack scene: Emme blows the device to activate Little Red's action (congruent interactive response); she "drags" the whistle to the character's mouth (alternative interactive response); and she mimics the action of holding a whistle into her mouth (spontaneous performative response). Hence, all forms of response can be integrated into children's embodied flow of meaning-making with literary apps.

FINDINGS: PART II
AGENCY IN THE READING OF LITERARY APPS

The assumption that readers are agents in their processes of meaning-making is a premise of the social-semiotics perspective, but the agency of the reader is always constrained by the affordances of the text and by actions of other sign-makers (Bezemer & Kress, 2015). Agency, therefore, is negotiated at the moment-by-moment of the transaction. A defining affordance of literary apps is interactivity, which, as argued previously, involves the active participation of the reader's body in the process of meaning-making. Furthermore, in the joint-reading event, children have to negotiate their agency with the adult reader, a meaning-maker who has their personal agenda and interests when taking part in shared-reading.

This section comprises two chapters. Chapter 7 discusses the participant children's negotiation of agency when reading *Monster*. Chapter 8 explores children's negotiation of agency with their parents as co-readers when reading *Little Red*. *Monster* is a literary app that foregrounds the agency of the reader, transforming it into a theme that is critical to the metafictive and interactive nature of the story. Hence, children tended to express their sense of agency often when reading this app, making this complex process that tends to be invisible, material through their interactions, verbal and embodied responses. *Little Red* is a literary app with a complex interactive structure that demanded the parents constant 'scaffolding' (Wood, Bruner, & Ross, 1976) of the children's reading experience. This structure resulted in more participation from the parents, and such

participation tended to make more salient the negotiation of agency between child and adult readers. At other times, interactivity and its material, embodied nature, also made explicit the dynamics of agency negotiation between readers.

7 CHILDREN'S NEGOTIATION OF AGENCY WITH THE TEXTUAL CONSTRAINTS

The negotiation of agency between reader and text is often neglected or overlooked in the analysis of meaning-making because it is difficult to determine when observing the reading process from an external perspective. This negotiation happens in the very intimate, iterative flow of meaning that takes place in a literary transaction. In literary apps, however, aspects of this negotiation become materialised through the readers' interactions, offering new opportunities for the study of their agency. Furthermore, *Monster* is a metafictive narrative that thematises the agency of the reader through the represented power struggle between Grover, who does not want to get to the end of the book, and the readers, who do. The story overtly reminds readers that they are in control of the reading process. Such features contributed to making the negotiation of agency between readers and text salient in children's responses to this story.

The analysis of children's negotiation of agency with *Monster*'s textual constraints, as established in the theoretical framework, involves two layers: the first layer involves an analysis of the meanings suggested by the text, and the second layer, of the children's responses. The semiotic analysis of *Monster*'s metafunctions aims to foreground how the narrative suggests, through its multimodal and interactive configuration, an agentive and empowered identity to the reader. This analysis considers the reader as it is implied by the text, a theorised reader who not necessarily matches an actual reader or with the

experience of agency of the readers in the study. The analysis continues by considering the children's responses to these suggested meanings projected by the narrative. The analysis of the children's responses also considers the embodied nature of children's expressions of agency. Here, therefore, there is a shift from the implied reader considered in the analysis of the text to a consideration of the readers in the study and their experiences of agency. Agency emerges in the transaction between reader and text and this two-layered process of analysis aims to provide insights into this dynamic process.

7.1 Representing an agentive reader: metafunctional analysis of *Monster*

The analysis that follows is structured according to the ideational and interpersonal meaning functions determined by Halliday (1978). Because of the crucial role of the visual mode in structuring the narrative and its relationships with readers in this app, the realisation of these metafunctions is discussed mostly in respect to Kress and van Leeuwen's (2006) "grammar" of visual design. The analysis of the metafunctions examines how readers' agency is suggested through their representation in the text: the ideational metafunction explores the representation of the reader as a character in this story, and the analysis of the interpersonal metafunction discusses the representation of power relationships between the reader and the fictional world. Because narrative and picturebook theories have widely discussed some of the literary devices used in this app, these theories complement the social semiotics framework, providing a fuller picture of how the text suggests readers as empowered, agentive participants in the story, and in the reading process more generally.

7.1.1 Ideational Meanings, or representing the fictional world

The essential elements of the analysis of the representation of the fictional world under a visual narrative social semiotics perspective are the participants, the processes and the circumstances (locative circumstances and circumstances of means) (Kress & van Leeuwen, 2006). As a theory of communication being applied to literary analysis, the major categories that describe participants are the 'interactive participants' – the producers of the text at one end, and readers at the other – and the 'represented participants,' the characters (Kress & van Leeuwen, 2006). While the visual text of *Monster* only represents one character, Grover, another character is also central to the story: the implied reader, represented through the verbal text and active through the

narrative's interactive features. The narrative is built upon the interaction between Grover and the reader, which is represented through the pronoun "you" in almost every sentence. Therefore, readers are simultaneously *interactive* and *depicted* participants, contributing to the story's participatory and metafictive features.

The construction of Grover as a character is fundamental to the story because the relationship between readers and the text depends on how they see this character and establish communication with him. The characterization of Grover starts on the first scene, where, through 'explicit qualification' (Bal, 2004), he is described as "lovable, furry, old Grover," but 'implicit qualification' requires readers to interpret signs from other modes and Grover's actions and discourse, to confirm or contradict what is said and develop a full picture of the character. His visual representation shows him as a furry creature, confirming the verbal description. Grover can be recognised as a monster, but the suggestion that he is lovable, (his big nose and sometimes sad, sometimes scared big, popped eyes, in addition to his (initially) friendly tone of voice) create the image of a good-hearted and somewhat clumsy creature. His dialogue with the reader also shows that he is frightened by the possibility of facing a monster. Finally, Grover is never explicitly *said* to be a monster, and this is a critical aspect that might generate – at least to some readers – surprise and humour at the end of the story.

Grover is a 'flat' character (Forster, 1927): cowardice, or the fact that he is afraid of monsters, is the quality that defines him, and this fear motivates all his actions. Also, his multimedial performance is exaggerated and caricatured. The app, however, differently from the picturebook version, adds some complexity to Grover's representation through the inclusion of clues to guide readers' interactions; these clues are in the form of ironic comments in which Grover, despite being scared, "slips" the correct form of touch interaction required to proceed. This addition suggests a conflictive personality: Grover is scared, but he might also be intrigued and curious to know who is the monster, adding complexity to his representation. The clues, however, are only presented if readers do not interact when they are expected to, and therefore are not revealed to all readers, generating different characterisations depending on the reading event.

The implied reader, on the other hand, is represented only through the verbal text, identified by the general pronoun "you" and without any explicit qualification. The implied reader can then be considered a 'character in relationship' (Nikolajeva & Scott, 2006) because their characterisation is suggested in relation to Grover's. The narrative is

built upon the expectation of readers' participation in opposition to Grover's requests: while Grover is afraid, readers are urged to be brave and keep moving the pages forward. Chatman (1978) proposes an open theory of character that understands that "character is *reconstructed by the audience* from evidence announced or implicit in an original construction and communicated by the discourse, through whatever medium" (p. 119, emphasis added). The emphasis on readers' interpretations of the text in the construction of character is particularly relevant in this case, in which the characterisation of the reader-as-character depends significantly on the readers' emotional status, maturity and connection with the story. The story then plays with the possibility that readers might also be afraid of monsters. The level of empathy and identification between readers and Grover depend on their personal and emotional connection with the possibility of facing a monster, and how this is counterbalanced by the constant indirect request that readers reject any possible fears to continue turning the pages and reading the story.

The 'locative circumstance' (Kress & van Leeuwen, 2006) or setting is represented primarily through the visual mode showing an open book with blank pages, complemented by the mode of sound, through the sound effect of page turning, which marks the end of a scene and the beginning of another. In the verbal mode, the setting is represented by the words "this book." The borders of the book show how many pages have passed and how many remain, serving as a clue that may allow readers to anticipate how much is left to get to the monster, generating expectation. Although minimal, the setting is essential to this narrative, which depends, referentially and interactively, on the act of turning pages. Within the fictional world, the setting transforms the iPad screen into a print book. The time and space in which the story unfolds are here and now, with readers holding this (fictional, represented) "book." The fact that this story was made available digitally to mobile devices is significant, because the format, sizes, and handling of touchscreen tablets are more similar to those of a book rather than, for instance, a desktop computer, contributing to the material experience of the book/tablet as an object.

Regarding the processes taking place in this scene, while in the codex one process dominated each spread in terms of visual representation, the transformation of the still image into moving image – accompanied by diegetic and non-diegetic sound effects – in the digital version, added temporality to each scene. Therefore, a series of sub-processes that had to be imagined by readers in 'filling the gaps' (Iser, 1974) between one spread and another, now unfolds in front of them. The scenes are organised in a dialogic action-

reaction structure, in which the initial animated scene shows Grover involved in processes that aim to stop readers, thus requiring responsive processes from them in return. In most scenes, the process involved is a 'speech/verbal process' (Kress and van Leeuwen, 2006): Grover is talking, providing information, making a request or arguing and demanding an attitude from readers. This process is realised orally and also represented visually as the words he speaks appear one by one, synchronised with his voice, inside two speech bubbles. The 'goal,' or the participant being addressed by this action, are readers themselves, and this is emphasised by the verbal text that repeats the pronoun "you" throughout the narrative and often several times at the same scene. In scene 5, for instance, it is repeated five times: "you do not understand," "you see," "this will stop you," "[You] See?," "so you cannot." These verbal processes represent Grover's efforts to manipulate readers, but in the broader context of the multimodal narrative, they are made ironic and their credibility is low.

Unable to stop readers with his verbal artifices, Grover moves into 'action processes,' in which he most overtly tries to restrain reader's agency in turning the page. Grover ties the pages with ropes, nails them with boards and finally builds a brick wall in front of the book. The ropes/boards/wall are 'circumstances of means' (Kress & van Leeuwen, 2006), or the tool used by Grover to perform the action. Until this point in the narrative, there has been a disproportional power relation between Grover and the readers. Grover made verbal requests, while readers did not have to counter-argue because their actions had the effective power of exceeding Grover's requests. Although both processes are agential, action processes represent a higher level of agency. By shifting from verbal processes into action processes, Grover tries to equalise forces. These action processes are realised in unified multimodal ensembles. The visual and the kineikonic modes play a major role, but sound effects are used to create auditory representations of certain actions. For instance, when the ropes fall from the top of the book in this scene, the sound of a hanging rope is easily identifiable and works in relationship with the moving image, complementing it. This app makes use of several realistic sound effects in this way. There are, however, non-diegetic sound effects that work as a representation of Grover's accomplishments and agency in building these barriers. At the end of each action process, Grover positions himself again facing readers. His actions trigger readers to interact with the narrative and Grover's gaze, addressed towards them, is also an invitation for participation.

The discussion of the ideational meanings indicates readers' role in the narrative, simultaneously as interactive and represented participants, and their (implicit) characterisation in relation/opposition to Grover. It also revealed the duality of the open book functioning both as setting and as medium, and the processes structured in an action-reaction structure. All such representational devices work to craft an ambiguous representation of the fictional world that supports the metafictive and interactive features of the text. The analysis of the ideational meanings is important in understanding the dynamics of agency between reader and text because it establishes the elements in the narrative and how they relate to readers and suggest (or not) their empowerment.

The moment readers step into the story through interactivity, the reader-text relationship is materialised. These processes, therefore, realise both ideational and interpersonal metafunctions simultaneously. For rhetorical purposes, these processes are discussed next.

7.1.2 Interpersonal Meanings, or enacting the relationship between readers and fictional world

The interpersonal metafunction refers to the relationships established through the text between represented participants and readers. Although all texts present interpersonal meanings, in this metafictive story, unlike most texts where the fictional world is presented as external to readers, the communication between characters and readers is overtly addressed. Therefore, interpersonal meanings gain particular importance in the reading experience of this text and the suggestion of an agentive reader identity.

'Metalepsis' conceptualises one central aspect of this relationship in *Monster*. It refers to the shifting of boundaries between "the world in which one tells [the world of the reader], [and] the world of which one tells [the fictional world]" (Genette, 1980, p. 236). The verbal text is presented as a dialogue between Grover and readers, using informal language and a conversational tone. The use of questions – for instance, "See?" – establishes this direct communication and demands readers' participation. The mode of speech, or the fact that the text is truly spoken out loud by the character, contributes in positioning Grover in the real world, engaging in a simulated conversation with readers. In the visual text of this app, Grover and the book are represented by different styles of illustration. Grover, in the foreground, is depicted with more realism, his colours are brighter, he does not have an outline, while the book, in the background, has a flatter representation, with a thick outline and pale colours. This contrast is emphasised by the

fact that Grover is in constant motion while the book is depicted as mostly static. Grover is tellingly positioned outside the book, in front of it, and during this scene he moves from the front to the back of the book, always remaining outside it. Through the ensemble of verbal and visual modes, Grover is represented as jumping outside the fictional world into the readers' world, in an 'ascending metalepsis' (Bell & Alber, 2012).

Readers' participation in the narrative through interaction, nevertheless, constitutes another layer of metalepsis in this app, and this time the movement occurs in the inverse direction, as they step down (or have the illusion of stepping down) into the fictional world through their interactive gestures, in a 'descending' (Bell & Alber, 2012) type of 'interactional metalepsis.' Interactional metalepsis may be said to occur when "the ontological boundary between the reader (in the actual world) and the storyworld is crossed" (Bell, 2016, p. 296). The presence of a book inside the screen repositions the boundaries of the fictional world, transforming the screen into a paradoxical 'fourth dimension' (Goldstone, 2008), a place where readers and character meet and share the same existential plane – or at least its illusion. At the end of the story, Grover's fictional status is re-established, as he is revealed as the monster at the end of the book. At this point, the boundaries of the screen return to be the frame that separates real and fictional worlds.

This movement between real and fictional worlds inevitably affects the power relations between character and readers, and other representational devices contribute to that. For instance, in Scene 5, Grover is positioned most of the time in a medium shot, at the centre of the image, in front of the book, looking directly at readers. By pointing his gaze towards them, Grover is demanding their attention and response. The combination of this resource with the other aspects of the text – the visual representation described above, plus the dialogic format of the verbal text, and the realistic kinetic and sound effects – contribute to the depiction of a personal, even close relationship between the participants. By its frontal representation at an eye-level angle, the text suggests, as proposed by Kress and van Leeuwen (2006), involvement and power equality between readers and character. Although the multimodal ensemble described above suggests something closer to a partnership, the balance is upset through the active participation of the readers, as they ignore Grover's claims, untying ropes and turning the page, positioning themselves as authorities. Interactivity, then, delivers a decisive impact on the power dynamics of the narrative. No matter what the character does, it is assumed that readers will contradict his suggestions and overcome his protections. While in Scene 5 the readers' action is performed towards Grover (tickling) or the knots (untying), in

most scenes of the app it is simply through the act of turning the page that readers manifest their power in relation to Grover and the narrative. At this point, the readers' role as interactive participants is highlighted.

Finally, 'modality,' or the credibility of what is presented in the text in the eyes of the reader, affects the relationship between text and readers (Kress and van Leeuwen, 2006). Grover's multimodal representation suggests that he is not a reliable character. As discussed above, his characterisation indicates contradiction, a monster who is frightened, one who although trying insistently to convince readers, contradicts himself and ends up teaching them how to turn the page or break his barriers, generating irony and humour. His manners and gestures also seem clumsy, and he loses emotional control as readers keep turning the pages. These attitudes disqualify him and result in further empowering readers to keep moving the story forward. They discredit Grover's verbal requests and invite readers to continue acting against his will.

7.2 Children's expressions of agency

The analysis of the negotiation of agency between the participant readers and the text in this section examines children's responses to the meanings suggested by the narrative. Overall, the children's responses can fall under two fundamental attitudes. In most cases, children's responses indicated that the readers accepted the meanings suggested by the narrative, and they express their agency in the story within the story's framework. Yet, at the rereadings, children manifested their understanding of the framework proposed by the story and at times overtly resisted it.

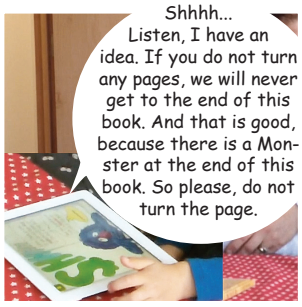
7.2.1 Scripted agency: experiencing and expressing agency within the textual framework

Monster, as indicated by the previous analysis of its meaning suggestions, generates a fictional space in which the participation of the reader and the reader's agency in the process of reading, are foregrounded. The text suggests that readers be brave and not scared of the possible monster, that they are in control through the turning of the pages and the interactions that undo Grover's extensive efforts to stop them from moving the story forward. The responses from the children indicate that such fictional relationship was effective in approaching reader and text to the same ontological level and to giving them control of the story's development. In the participants' responses, there were overt signs that indicated they experienced a sense of agency when reading the narrative.

Vignette 7.1: Lukas transparent and interactive responses

Lukas was amongst the children who expressed most overtly his empowerment in relation to the narrative in his first reading, through both his body expressions and spoken utterances. There were no signs of him being scared by the possibility of a monster, and he recognised that Grover was also a monster at the very beginning of the story, information which he used to mock Grover (Vignette 6.15). Lukas looked fully immersed in the fictional space created by the narrative and talked directly at Grover several times. In Scene 3, Grover suggests the reader do not turn the page as a solution for his issue of facing the monster:

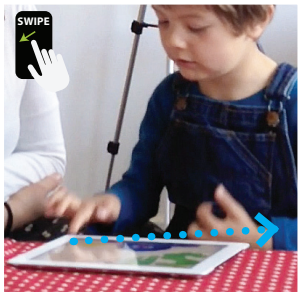
06:09.379 [01]
Grover asks the reader not to turn the page.



06:11.371 [02]
Lukas responds to Grover's request.



06:13.071 [03]
Lukas begins swiping to turn the page.



06:13.471 [04]
End of Lukas' first swipe.



06:13.971 [05]
Lukas starts swiping again.



06:14.173 [06]
He slides his finger on top of the screen all the way to the other side.



05:14.371 [07]
He then finishes the second, successful, swipe.



06:15.471 [08]
Lukas concludes with a statement.



Lukas and his mother quietly watch Grover pleading, but Lukas seems unmoved by Grover's emotional request. He points at Grover's face and mocks him [02]. Next, he moves to interact. He makes a first long and energetic swipe [03-04], but he does not seem to touch the screen adequately, and the page does not turn. He repeats the gesture, this time sliding his finger in contact with the screen all the way to its left edge and is successful in activating the turn of the page [05-07]. Lukas concludes in an authoritative tone: "I said, turn the page!"

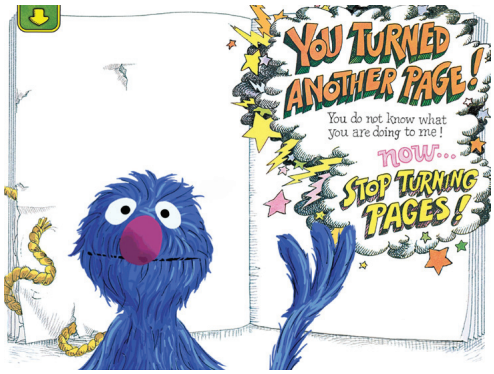
Vignette 7.2: Lukas expressive demonstrations of empowerment

Similarly, a few scenes on (Scene 6), Grover is desperate, but Lukas does not show any sign of empathising with him and continues responding firmly from his position of authority:

07:33.052 [01] 07:35.755 [02] 07:39.384 [03] 07:46.575 [04]
Grover dramatically shouts at the reader to stop turning pages.



07:49.537 [05]



07:51.671 [06]
Silvia and Lukas laugh out loud and she makes a comment about Grover.



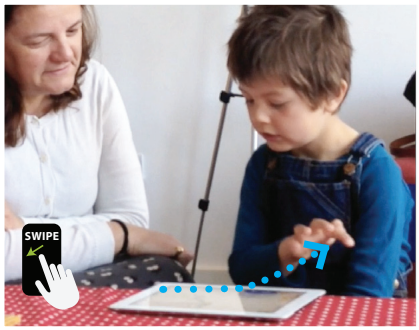
07:55.241 [07]
Lukas talks back at Grover.



07:56.756 [08]
He starts swipping the screen.



07:57.056 [09]
And finishes the gesture.



07:58.056 [10]
Lukas concludes the scene by shouting at Grover.



Grover's representation is exaggerated and caricatured, so that, his suffering may sound even amusing to empowered readers like Lukas, who expresses his responses in similarly expressive ways. Lukas' responses seem to mirror Grover's expressivity in several ways. The repetition of the same utterances is one of them, which can be noticed in these two vignettes, but happened in fact throughout the reading. Lukas talks back at Grover often, and the content of what he says is just one way in which he expresses his empowerment in relation to the narrative. His tone of voice is authoritative, and often he points at

Grover on the screen, in an accusatory fashion that expresses his disdain towards Grover's pleadings. In the first reading, Lukas expressed through facial and embodied expressions his empowerment in the narrative significantly more overtly than other participant children. In the second vignette, in which both Silvia and Lukas laugh at Grover's dramatic demand, there is a noticeable difference in tone between the adult's and the child's laughter, which is confirmed by their verbal utterances. Lukas' laughter presents a mocking tone, confirmed when he calls Grover "silly." The differences in immersion between adult and child are also expressed as Silvia addresses Grover as "he," therefore her question is addressed at Lukas and positions both in an ontological plane which is different from Grover's. Lukas, conversely, talks directly at Grover through the pronoun "you," indicating his immersion into the fictional world.

Ultimately, the gesture of turning the page is the realisation of Lukas' power over Grover and the manifestation of his agency in the narrative. The meaning of the gesture is crucial, but the performance of the interactive gesture seems to also play an important role in Lukas' experience of the narrative. Through the form of his swipe, long, firm and intentional, Lukas is "communicating" to Grover that he is in control, just as he does verbally. The sharpness and precision expressed in the spontaneous performance are mirrored in the interactive gesture through the length of his swipes.

Yet, performing the gesture does not seem enough of an affirmation of power to Lukas, and he adds a verbal response that restates his position of authority as the reader, who can turn the page despite Grover's requests. Furthermore, his verbal responses, "I said, turn the page" and "Turn the page," express the ambiguity of the boundaries of the fictional world. Lukas is giving an order, which affirms his authority, but the one to execute the order is also himself. These responses, therefore, seem to incorporate the reader's dual role as represented and interactive participant in the story. The represented participant, positioned inside the narrative, orders the interactive participant, in control of the reading event and outside of it, to turn the page. Reader's movement back and forth the 'diegetic border' (Mackey, 2007) is therefore ambiguously expressed in one single utterance, which reflects the blurred boundary between real and fictional worlds represented in the text. Both the interactive gesture of turning the page and the transparent, spontaneous performance are expressions of Lukas' sense of agency, indicating how he feels in control of the narrative. His interactive and spontaneous responses, verbal and embodied forms of expression, all indicate that he completely adhered to the agentive role suggested by the narrative.

Not all children, however, were as empowered as Lukas while reading the narrative. In fact, Lukas was the only child who did not show any sign of hesitation or doubt about the possibility of a monster appearing. Conversations with his mother revealed that he loves monsters and this aspect of his interest seemed to dilute the mystery of who would be the monster at the end of the book.

Maria, Molly and Amelia, nonetheless, expressed tension in their facial expressions while reading the story. The agential identity proposed by the reader's representation in the text seemed to be fundamental to balancing their personal fears, counterposing the doubt of the possibility of the monster with the suggestions of empowerment from the text. While they seemed to share Grover's fear to a certain extent, they continued turning the pages and undoing Grover's protections. In Maria's case, especially, there were signs in her facial and embodied expressions that the actual performance of the interactive gestures altered her sense of agency momentarily boosting her self-confidence and easing her fears:

Vignette 7.3: Maria empowered by the gesture of turning the page

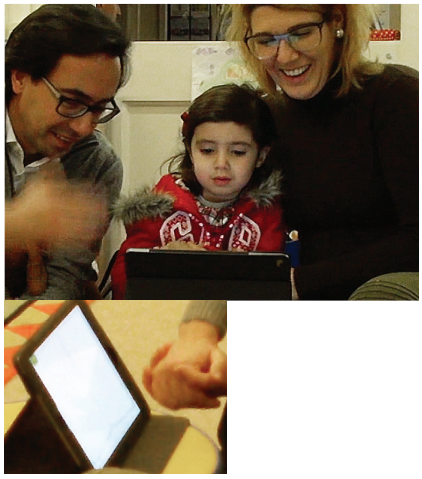
07:47.847 [01]
Maria watches the scene with a distressed expression on her face.



07:55.567 [02]
Despite looking scared, Maria turns the page without any sign of hesitation.



07:57.767 [03]
Maria's facial expression immediately relaxes after swiping. Daniela laughs at her lack of hesitation in turning the page.



In this vignette, Maria is reading the same scene as Lukas in Vignette 7.1. The comparison reveals the very distinct emotional states of each child to the proposition of a monster. Maria displays a distressed expression in response to Grover's verbal statement [01], which was also seen when he mentioned a monster in the previous scene. As Grover is requesting readers not to turn the page for the first time, Daniela is unsure whether Maria will turn the page, and asks her what is it that she wants to do [02]. While she is posing the question, nonetheless, Maria already has her index finger pointing

towards the screen and, without hesitation, she swipes it firmly[7] [03]. Although still not completely relaxed and not moving her eyes from the screen, Maria's facial expression relaxes as soon as she swipes.

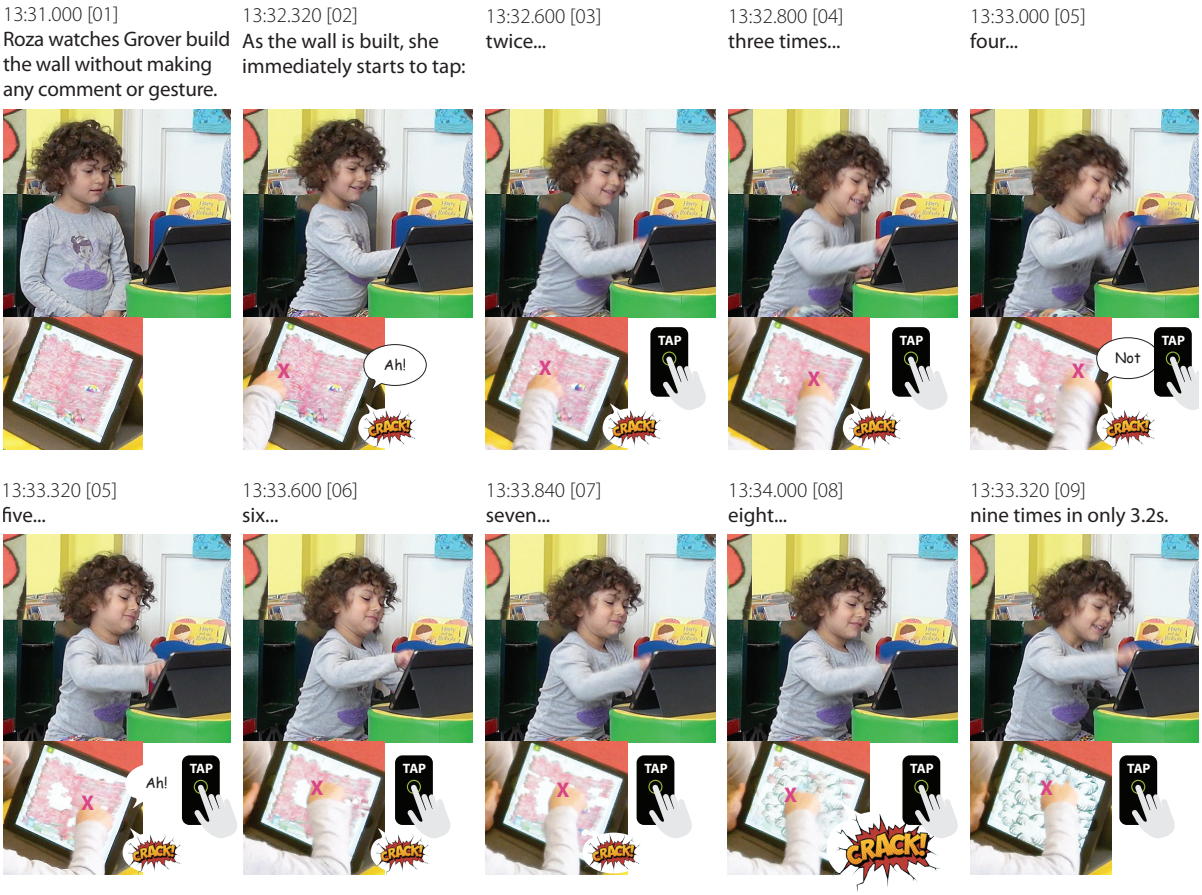
This vignette indicates the relationship between reader's agency and the embodied actions they perform. Executing the action puts the reader in consonance and agreement with the empowered identity the narrative suggest they possess, constraining the fear of monsters they might bring to the reading event from their personal experience. Furthermore, performing the interactions seems to allow them to embody such identity temporarily, to act as empowered readers. The act of turning the pages also represents the moment in which the reader assumes his role as an interactive participant rather than as a character, and therefore it is an action that positions the reader as outside of the fictional world as it is possible within the diegetic ambiguity of the representation. Moreover, the experiences and emotions that emerged for Maria, Amelia and Molly, who expressed discomfort and possibly fear when presented with the possibility of a monster, worked as a form of constraint to their agency. Such constraint is triggered by the text, but ultimately emerges from the readers' psychology. Interactivity, operating as a narrative device in this app, works in counterbalancing these constraints and offering the readers an agentive way out of such feelings.

Rereading allowed the participants to reflect on the narrative, its structure and their roles in it, so that Roza not only manifested her agency while performing the interactions more overtly, but also reflected on the relationship between interaction and agency and between real and represented strength:

Vignette 7.4: Roza's expressive tapping to break the wall

In the rereading session, when participants could choose which apps to read, Roza immediately chose *Monster* to start, saying, "Oh, this was the funny one!" Scene 9, in which readers destroy the brick wall, was Roza's favourite, and amongst several complete and partial rereadings, Roza is reading this scene for the fifth time (third in that session) in the vignette below:

[7] It is unclear if she does it as a response to Daniela or if she was already moving forward when her mother asked.



Already knowing that she needs to wait until the wall is built to interact, Roza sits still while Grover constructs it [01]. As he finishes, she immediately starts tapping. She taps nine times in a row; her taps are quick and strong, so strong that she needs to use the other hand to hold the iPad after the fifth tap [06]. When watching the video recording, it became difficult to count how many taps she did and to understand the response from the app in terms of sound effects and comments by Grover, which overlap. Roza's facial expressions, that start smiley, also change indicating the force and intent of her actions. Agency seems to manifest in the pleasure of the embodied action through her physical engagement. Although the type of gesture is the same from her previous readings (tapping), their speed and intensity are altered. The meaning of the action – breaking a wall – seems to guide the form of interaction – strong, repeated, intentional. Roza did not need to add force to the other scenes, for instance when untying the knots or tickling, because these actions did not involve an association with physical strength. Here, however, she needs to break a "heavy, thick, solid, strong, brick wall," and the vignette indicates she represents such strength through the features of this sequence of tapping. This embodied expression indicates Roza feels empowered in relation to Grover and the wall. It is, therefore, a sign of her sense of agency. Simultaneously, similarly to Maria's

experience in the previous vignette but more explicitly, performing the interaction seems to increase even further Roza's sense of agency. Such relationship is strong to the point that Roza spontaneously reflects on her experience:

Vignette 7.5: Roza's reflections on *physical and represented strength*

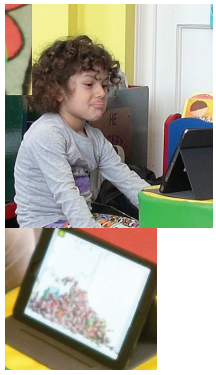
13:35.520 [01]
After destroying the wall, Roza pulls her hand up and holds it, performing a victory celebration.



13:36.240 [02]
She smiles widely and makes dramatic body expressions that suggest her satisfaction with the outcome.



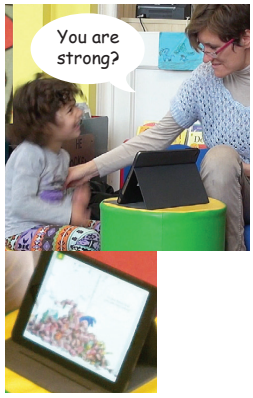
13:39.920 [03]
Roza looks at the screen, with her mouth closed and part of her tongue showing between her lips.



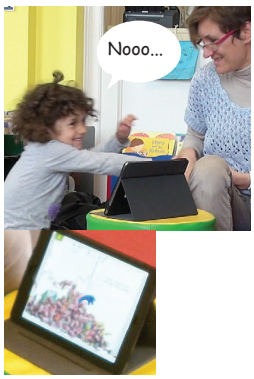
13:42.240 [04]
Roza starts talking about the tapping and is interrupted by the app, that asks her a question.



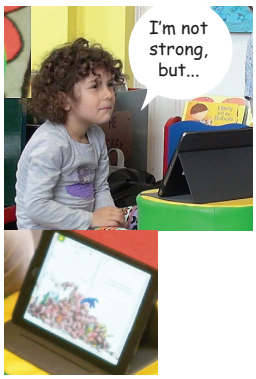
13:46.760 [05]
Bea touches Roza's upper arm and asks whether she is as strong as the app suggests.



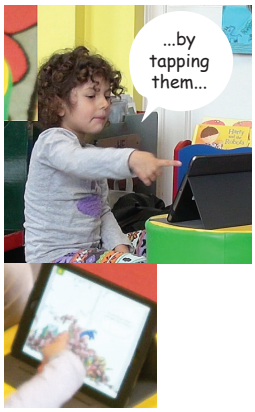
13:48.520 [06]
Roza denies it, pushing Bea away.



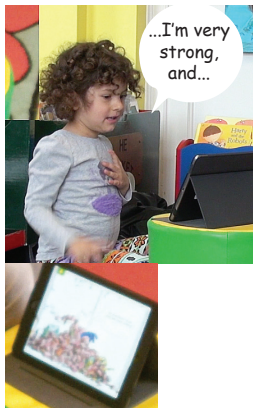
13:51.720 [07]
And explains, using words as well as gestures:



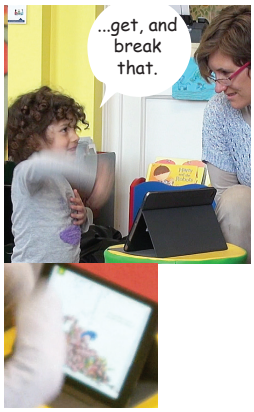
13:53.480 [08]



13:57.000 [09]



14:00.320 [10]



After breaking the wall, Roza celebrates the result of her actions embodying a gesture of victory [01], then laughs out loud, sharing the satisfaction with her mother [02]. Roza starts commenting on the interactions before Grover suggests that she is strong and it is possible that she is anticipating the question, because she had just read this scene for the third time in a row and this is the only sentence Grover says at this scene (Scene 10). Bea makes an association between the strength suggested by the text and Roza's physical strength when she touches her upper arm [05], but Roza refutes such association [06]. Roza then explains why, in a complex orchestration of words and embodied expressions: she says she is not strong and represents her lack of strength using her own body, bending her shoulders and making a sad facial expression of weakness; she refers to

herself outside the fictional world. Roza then moves back into the fictional world, saying that, when she taps them (pointing at the screen) [08], she is very strong. Now Roza refers to her fictional self, her representation as a character in the story. A change in her posture accompanies this statement, she rows her shoulders back, and her chest is upright, with her open hand touching it [09]. This fictional, represented strength is the one responsible for her being able to break the wall [10].

Roza's reference to her fictional strength seems, in fact, a reference to her *agency*, the "satisfying power to take meaningful action," as defined by Murray (1997, p. 126). Such power, as Roza explains, is attributed to her by the interactive features of the app. In her statement, Roza's representation of her agency, through embodied expressions, highlight the deep connection between the sense of agency and the body of the reader. Roza differentiates physical strength from agency, and yet indicates the embodied nature of agency when she straightens her body and puts her hand on her chest. Because the possibility of taking action is essential to the concept of agency, and "our bodily sensations form the basis for reflective thought and action" (Frie, 2008, p. 374), Roza expresses through her response this intrinsic connection between embodiment and agency.

Aspects of the relationship between interactivity and agency also emerged in the secondary data of this project, that is, children's re-enactments and drawings in response to the story. The gesture of turning the page, so essential to children manifesting their power over the narrative, was incorporated into all children's re-enactment, while Maria has represented her intimate struggle between fear and empowerment in her drawing. These two vignettes are discussed next.

Vignette 7.6: Amelia re-enacting the turning of the pages

In the re-enactment, the children had the opportunity to select which aspects were most important to them to include in their representation. The gesture of turning the page was afforded by the props made available for the re-enactment, which included a little book (see Figure 7.1) with three blank spreads and a fourth spread with the words "THE END," as they appeared on the last scene of the app. The developments in Amelia's re-enactment resulted in her expressing most overtly her understanding of the meaningfulness of the act of turning the page in *Monster*'s narrative, as the vignette below indicates.



Figure 7.1: Images of the props and Amelia re-enacting *Monster*.
The image on the left shows some of the props available for re-enacting *Monster's* story, showing the codex book, here with the ropes and Grover positioned on top of them. The image on the right shows Amelia investigating the props before she started re-enacting.

As I bring the props, Amelia's first action is to explore the pages of the book. She turns each page carefully, even though the three first pages are blank. Amelia has difficulty understanding what the re-enactment entails and does not engage fully at first. She is encouraged by her mother, who does a few demonstrations. Together, they re-enact the scene with the ropes (Scene 5) and the one with the wall (Scene 9), performing Grover's words as well as the interactive gestures, accompanied by sound effects. At this point, Amelia is starting to take the lead in the performance, and enacts the scene in which Grover fastens the pages with boards and nails:

37:46.400 [01]
Amelia is retelling the story of Monster.



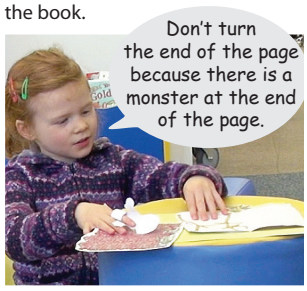
37:48.800 [02]
She suddenly stops her retelling.



37:56.600 [03]
Amelia arranges the props to start over.



38:00.640 [04]
She positions the ropes on top of the book.



38:05.280 [05]
Amelia taps the knots on the ropes, making sound effects.



38:09.360 [06]



38:13.360 [07]



As Amelia enacts the scene, moving Grover in the air and repeating his words [01], she suddenly realises that in the performance of the previous scenes, they were not turning the pages between one scene and the next. The realisation leads Amelia to start the

performance over. She returns to the first scene in which Grover blocks the pages with rope, sets up the ropes on top of the book and says the words approximately, as she remembers them. She then performs the interactive gestures, tapping each of the knots and making accompanying sound effects, as she had learned from her mother's earlier demonstrations. She removes the ropes and, with dramatic emphasis ("Now what? What?" [06]) and a wide smile, she turns the page.

This vignette highlights Amelia's awareness of the role of the act of turning the pages in *Monster*'s narrative. Despite the gesture not being as performative as undoing the knots or breaking the wall, which she re-enacted with enthusiasm, she knows that turning the page is an essential aspect of the story and that not turning the page between scenes means a failure in her re-enactment of the narrative. By representing the different interactive gestures in the re-enactment, Amelia shows understanding and recognition of their importance to the development of the story. Furthermore, through the performance of these gestures, Amelia represents herself and her role as an agentive participant in the story.

Vignette 7.7: Maria's visual response to Monster

Most explicitly, Maria depicted herself as a character in the narrative in her graphic response:

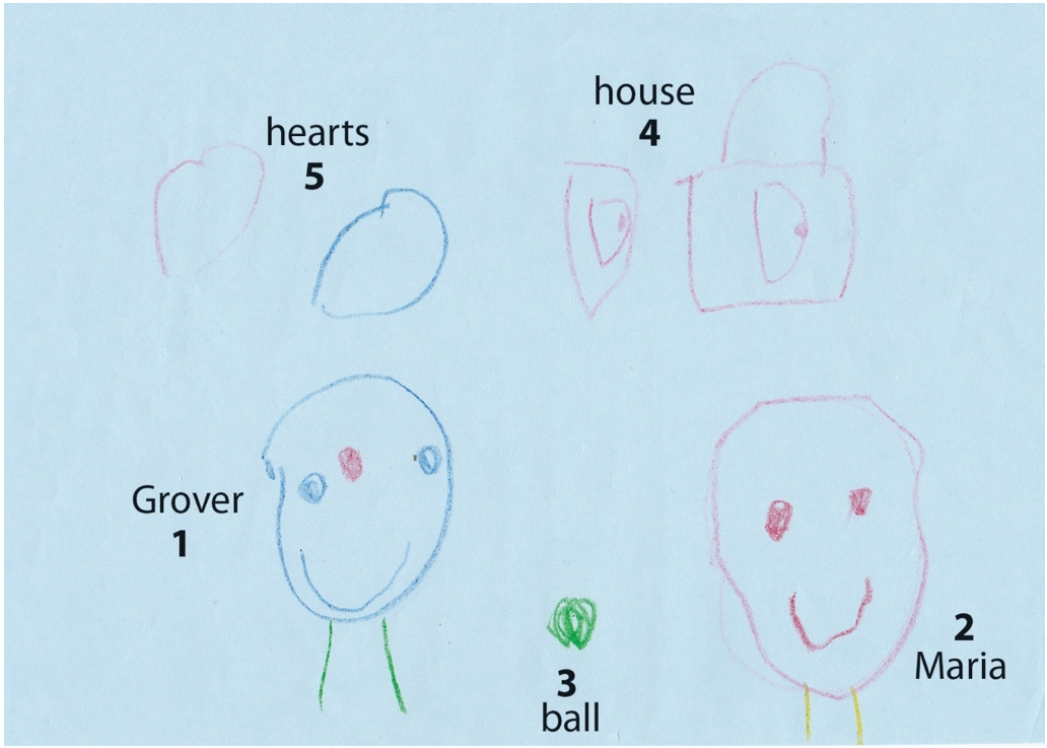


Figure 7.2: Drawing created by Maria in response to *Monster*.

The numbers indicate the sequence in which they were drawn, and the elements were named according to Maria's description of the picture at the time of creation.

In Maria's drawing in response to *Monster*[8], she draws Grover, on the left, and a green ball at the centre of the sheet. Next, she draws another figure on the right, playing ball with Grover. Initially, Maria suggests the second figure is a friend, and after some discussion with her father, mother and me about who this person would be, Maria says the name of this friend is Maria. The father suggests that she is drawing a friend because Grover is afraid, and Maria confirms, saying: "It is so he is not afraid of the monsters."[9] When she identifies herself as the character in the drawing, Maria says, "And I am not afraid of this![10]", pointing at Grover's representation in her drawing. Maria continues drawing, and next she creates a house. She has difficulty in drawing the house and is supported by her parents. When asked why she was making a house, Maria explains that the house is for herself and Grover to go inside and escape from the monsters.

This drawing seems to be not only a response to Maria's reading of *Monster* and also includes important intertextual references to the story of *The Three Little Pigs* (Nosy Crow, 2011), which Maria had read as app version in the previous session. This story ends with the three pigs playing ball, which is also the action the characters in the drawing are doing. Moreover, fear of a persecutory beast seems a thematic thread which ties both narratives together, and which seems to guide Maria's drawing. In both stories, the characters are afraid and depend on someone who is not to help them. In *The Three Little Pigs*, the resourceful brother is also depicted as an agentive character and ultimately saves them all from Wolf. Such relations of friendship and support are extended in the last element Maria adds to her drawing: two hearts. "One for him [Grover] and one for me [Maria]," she says as she draws them.

It is important to highlight that her parents' comments influenced Maria's drawing and the ongoing interpretation of the drawing. Ultimately, however, she did not contradict them and accepted the meanings they had suggested, indicating that they were likely not in contradiction with her intentions. This is supported by the fact that she seemed at ease to refute her parents' suggestions when she disagreed with them. For instance, when her father suggested that she should draw hair in her representation as a character, Maria

[8] As Maria drew her response, her parents and I were constantly interrogating what she was drawing and why.
[9] "É pra ele não ter medo dos monstros," in Portuguese.
[10] "E eu não tenho medo deste," in Portuguese.

refused, saying that monsters do not have hair, and therefore positioning herself as an equal to Grover, possibly tied by the underlying fear that she seemed to want to suppress.

The complexity of the metafictional story and the irony that Grover is a monster and yet is afraid of monsters is interwoven in Maria's drawing. Maria positions herself in the story in a very complex way and seems to negotiate her own role and emotions as she explains her choices. Following the textual suggestion, Maria puts herself as a character in the narrative, a character that is not afraid of monsters and that guides Grover through the narrative. Maria's drawing seems to evoke several aspects of the relationship between Grover and the reader, as represented in the story. The equality suggested by the eye level representation of Grover in the app is represented in her picture through the friendship ties she establishes between the characters. As she draws herself as a monster, without the hair, she also reinforces this equality. Yet, she states that she is not afraid of monsters and that she can help Grover, which puts her in a superior power position in relation to him. Such response seems to mirror the relationship enacted through the interactions in the app, through which the reader is put in control. Her emotional response to the story and internal negotiation of fear (as seen in Vignette 7.3), seems to be reflected in the fact that, although she claims she is not afraid of monsters, she draws a house so *both* characters could escape in case a real monster appears.

This drawing, therefore, suggests that this 4-year-old reader grasped the multilayer metafictional meanings of this story and experienced a sense of agency through her participation in the narrative, despite possible her fears and uncertainties regarding of the possibility of a monster. The drawing seems to confirm in many ways the assumptions made by the metafictional analysis and indicate how the reader's agency works as a central theme in this story, projecting a sense of empowerment and agency towards the reader, who might, as the drawing indicates, have experienced fear during the reading.

7.2.2 Agency as resistance: Subversive improvisation of the narrative meanings

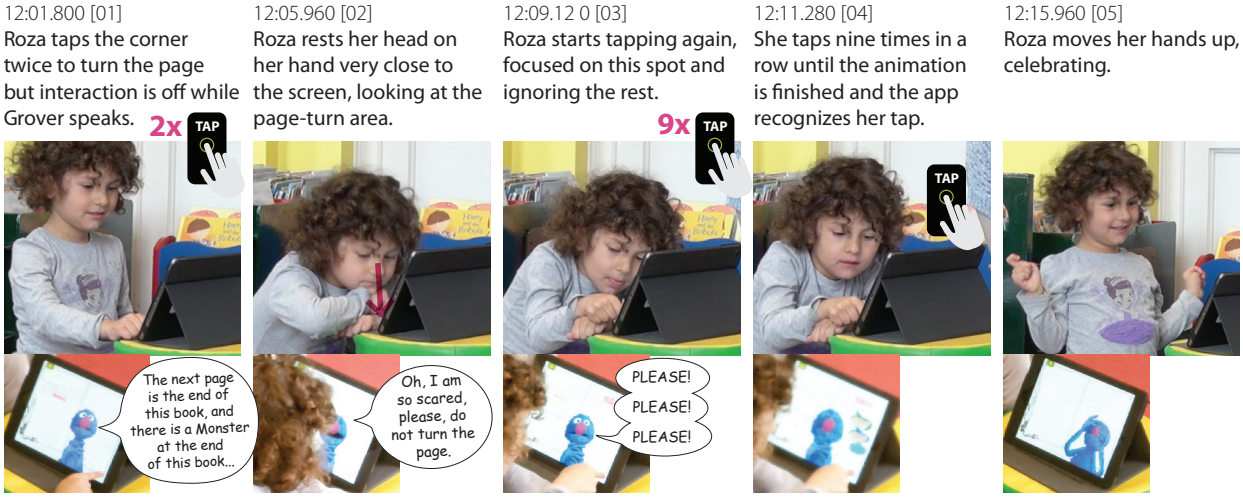
So far, the examples discussed showed how the children used their bodies in interactive and spontaneous gestures to express, extend and perform their agency. Such expressions of embodied agency and participation took place within the framework set by the narrative, and in accordance with the meanings it suggests. In many of these snapshots, there is a strong suggestion of a mischievous intent on the part of the readers, who

purposefully deny Grover's requests at their own pleasure. Such playfulness, however, is suggested by the narrative. Readers are encouraged to contradict Grover, and therefore certain mischievousness and subversion is an expected response to the text.

The following vignettes show moments when the children stepped outside the framework of the text to truly and overtly subvert its meanings through spontaneous responses. Roza, Maria and Lukas were the children who reread *Monster* repeatedly, and such rereadings provided opportunities for them to reflect on the text's frame and playfully subvert it.

Vignette 7.8: Roza subverting the app's design

Roza's rereadings seemed to have one fundamental aim: re-experiencing the great pleasure she felt in outperforming Grover, as Vignette 7.4 exemplified. In her rereadings, therefore, listening to Grover's long and repetitive verbal statements worked against her interests. The vignette below shows the last scene before the end of the book, on her third reading (first in that session):



This scene shows Roza focused on the act of turning the page. Having read the story several times, she already knows what Grover says and is not interested in his pleadings. Roza taps twice, insisting on trying to turn the page while Grover speaks, but as this is her rereading, she probably knows this is not going to work and stops. Next, she moves her body forward, very close to the screen and rests her head on her arms a few centimetres away from it. Roza fixes her gaze towards the area of page turning, waits for a few seconds and resumes tapping, repeating the gesture until the page turns. She raises her hands in fists in the air and celebrates her achievement. At this point, therefore, Roza approaches the app like a game. The story, which provides the pleasurable context for

her actions, is already internalised and she does not need to hear Grover's words repeatedly, but the app's design constitutes a formal constraint to her agency. Hence, she seems to transform the frustration into an aspect of her play. Roza subversively taps repeatedly, despite knowing this is not effective. She retains the central meaning of the scene and converts it into a mini-game, turning her wait into something active, playful and pleasurable. Furthermore, the features of Roza's game resemble some of the features of the app's textual configuration: both involve the repetition of the tapping gesture that ultimately results in overcoming Grover and turning the page.

Comparing the reading of *Monster* as app and picturebook versions, this vignette indicates that, if on the one hand the app has afforded readers more ways of participating than the picturebook, on the other hand, the act of turning the page, which is key to readers' assertion of power in this story, is constrained by the app's design, which only activates this function when the animations finish. As Pennac (2008) points out in *The Rights of the Reader*, readers have 'the right to skip,' but this app denies them, temporarily, such right. Therefore, in the matter of page turning, the codex affords more agency than the app because in the codex, turning the pages is unconstrained and always available. This example highlights how interactivity, while promoting the participation of the reader in the narrative, comes with a set of rules with which readers must conform. In both selected apps, these rules involve restraining when readers can interact, as in this case, and also how they should interact. Yet, this vignette indicates how children can find their own ways of exerting agency when facing such limitations. Children's alternative interactive gestures are another way in which readers find a way around what at times seem very delimited ways of performing an interaction.

The narrative itself, however, constitutes a significant frame to reader's agency in reading. This app frames reader's agency by projecting an agential identity towards them. Moreover, as the vignettes above have indicated, independently of children showing, or not, signs of fear when presented with the possibility of a monster at the end of the book, the participants embraced, since their first reading of the story, at least certain aspects of this suggested agential identity. All of them performed as expected and continued interacting and turning the pages until they reached the end and the monster was revealed. In the rereadings, however, Lukas and Maria seemed to rebel against this framework, as the following two vignettes exemplify.

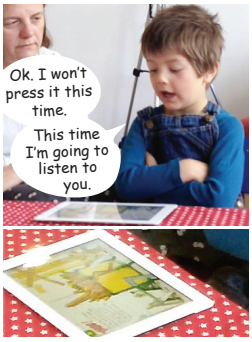
Vignette 7.9: Lukas refusing to interact

Lukas is reading *Monster* for the third time in a row. He reaches scene 7, in which Grover nails the page with boards. It is time for Lukas to interact, but differently from the previous reading, he refuses:

33:05.243 [01]
Lukas watches the animation unfold.



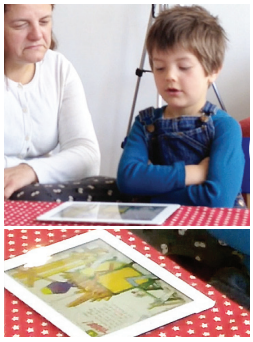
33:09.654 [02]
When it is time for Lukas to interact, he crosses his arms and says:



33:13.725 [03]
The mother does not seem to understand Lukas' behaviour immediately.



33:22.143 [04]
There is a long moment of silence (11.5s), Lukas firmly holding his position.



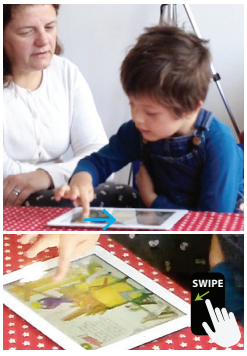
33:27.939 [05]
Grover teases the reader to interact. Lukas laughs but does not move.



33:44.747 [06]
Grover uses another strategy to try to elicit reader's response.



33:48.793 [07]
This time Lukas decides to stop resisting and in silence he slides his finger on the boards repeatedly.



33:55.633 [08]
Lukas then taps some of the last nails a few times, saying:



33:58.136 [09]
The scene collapses.



34:00.105 [10]
Lukas swipes the page 3 times, eager to turn it before Grover appears, but the app does not respond.



After watching Grover put up the boards to hold the pages, instead of eagerly moving towards the screen to interact and undo them, Lukas crosses his arms and says, "this time," he is not going to act against Grover but "listen to him" [02]. His mother does not seem to understand at first and suggests Lukas stops speaking, so he can hear the clues for interaction, a comment she had made in previous moments of the reading, when Lukas did not know what to do. Here, Lukas acts purposefully, however. He keeps his position still, his arms crossed and his head up, looking down at the screen. Furthermore, Lukas' bodily expression of refusal does not indicate signs of empathy and of truly sharing Grover's perspective; it indicates Lukas' distance from the character, as well as his confidence. He maintains his attitude of superiority in relation to Grover. There is a long pause and silence until Grover starts talking again. Grover teases the reader to interact, and Lukas maintains his refusal and does not move. After some time, Grover

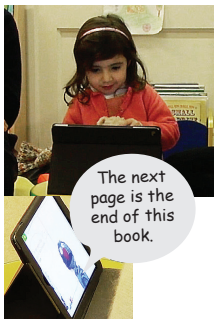
speaks again, this time ironically suggesting to the reader how to interact. There are no signs of a trigger that might have led to Lukas' change in attitude, except that he seems to have played this role long enough and decides to resume the normal reading course. Lukas slides his fingers on the top boards and taps the nails. When he performed the latter, he repeats the rules, indicating he does know what to do, again he constructs his comment using the pronoun you – "you have to" – as if the person performing the interaction was someone else. The scene collapses, and Lukas is eager to turn the page, but like Roza, is restrained by the app's design.

This vignette indicates that Lukas uses his knowledge of the narrative to manipulate it according to his interests and pleasure, making the narrative his own. Unable to manipulate the meanings through the interactions, which are prescribed, Lukas subverts them by refusing to participate. His refusal seems to embed playfulness and protest simultaneously. Before discussing this vignette in further detail, Maria's subversive participation, which shares many similarities with the example above, is presented:

Vignette 7.10: Maria threatening not to interact (but doing it regardless)

In Maria's fifth reading of the story (second on that session), she reaches Scene 11. Turning the page of this scene reveals the monster:

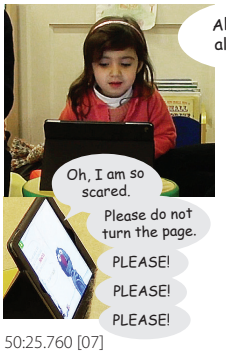
50:07.540 [01]
Maria watches Grover speak while holding her Teddy.



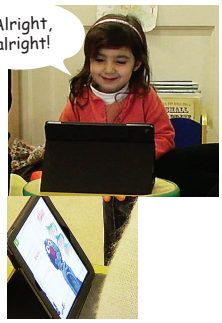
50:09.800 [02]
When the word "monster" is pronouced, she makes a scared face and looks at her mother.



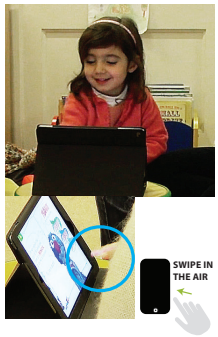
50:12.880 [03]
Grover then begs her not to turn the page.



50:19.800 [04]
And Maria initially agrees.



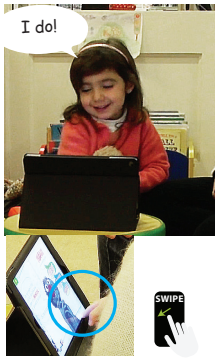
50:21.520 [05]
She moves and makes the swipe movement, but without touching the screen.



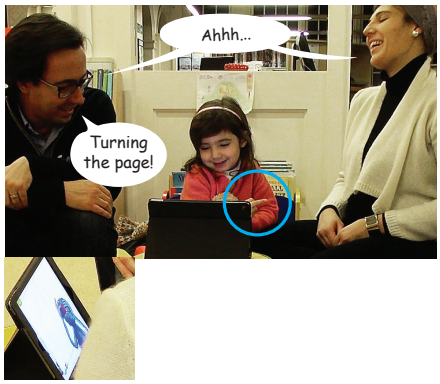
50:24.000 [06]
She says again that she is not going to do it, which makes her mother suprised and doubtful.



50:25.760 [07]
Maria then "changes her mind" and in a coordinated action she swipes and says:



50:26.600 [08]
She holds her arm in the air for a while, and her parents laugh.



Like Lukas, Maria makes a little scene in which she pretends she is going to follow Grover's request of not turning the page, to finally turn it regardless. Both children use a similar strategy to subvert the narrative, but their realisation of this subversion differs in certain aspects.

Their performances have in common that both act out their resistance through irony. They announce, orchestrating their bodies in synchronicity with their verbal statements, that they are going to act differently this time and not contradict Grover, when in fact they want to. Lukas, keeps a position of superiority, even if he suggests he is going to listen to Grover. In fact, when saying he will do so, he reaffirms his superiority as he is the one in charge, making an exception ("this time"). Lukas then uses silence, stillness and body posture as a form of resistance. By making his body static, Lukas performs an strong opposition to the narrative's configuration. In the text, Grover is very live, dramatic, moving all the time and in his previous reading Lukas was also very active, talking to Grover and interacting with the text eagerly. At a certain moment, however, Lukas' eagerness to participate overcomes his eagerness to subvert and he "succumbs" into interacting.

Maria's subversive transaction is performative in a different way. She is much more playful in her approach and embodies the discourse from the narrative, using elements from the text to subvert it. She repeats: "All right, all right," which are words used by Grover when he seems to be accepting the reader's position for an instant (Scene 8). She also uses facial expressions in dramatic and intentional ways to respond to the story, while in her first reading her reactions were significantly more contained, indicating that her emotional state, possibly fearful, restrained her participation (comparison of her body and facial expressions in Figure 7.3). The irony generated by her verbal utterance, which says she will not interact, and her false move towards the screen, share a resemblance with Grover's ironic comments in which he asks readers not to interact, while at the same time teaching them how to do it. While Maria's approach looks much less authoritative than Lukas', ultimately the game being played is the same.



Figure 7.3: Comparison between Maria's first and fifth reading of Scene 11.
Each column shows the same moment in the app's performance and Maria's response in the different readings.

7.2.3 Reflections on children's negotiation of agency with the text

The vignettes discussed in this chapter indicate that the participant readers experienced an enhanced sense of agency when reading *Monster*, in accordance with the meaning suggestions from the fictional text. Children's sense of agency was explicit when, for instance, Lukas talked back at Grover, authoritatively, often mocking him for being scared, but could also be inferred through analysis of children's body language and through their active participation in the interactions, whose form and intensity often provided signs of their empowerment. Furthermore, the performance of the interactions represented the moment in which readers acted towards the narrative, therefore, through the interactions readers are effectively exerting their agency in relation to the text. Therefore, interactions seem to perform a dual role in reader's experience of agency in reading literary apps: (1) they are the manifestation of children's agency, and (2) they express children's sense of agency while reading. Readers need to feel agentive to act, at the same time that, through their actions, they enhance their sense of agency. Both aspects highlight the embodied nature of agency, the deeply embodied sensation of feeling empowered and then using one's own body to act into the (fictional) world. Nonetheless, this iterative process between agentive action and sense of agency is only successful because they are immersed in meaning. Merely performing actions towards the screen is unlikely to be sufficient to generate agency in relation to the narrative – although it might generate children's agency in the social event of joint-reading.

A meaningful context for such actions is provided by the story, which positions the reader simultaneously as a reader and as a character, and establishes cause and effect relationships

between the actions of the reader and the story's development. In *Monster*, each interaction performed is an event in the story's development, so they are always meaningful. The possibilities of interaction and the causal relationship, however, are determined by the app, as well as the moment in which the interactions can be performed, forming a tight framework for readers' participation. The relationship between interactivity and agency is therefore paradoxical: interactivity enhances and constrains reader's agency simultaneously. Both the story and the discourse, including the interactive design of the app, operate as important constraints to children's agency when reading *Monster*. *Monster* is, nonetheless, more flexible than *Little Red* in terms of prescribing the form of the interactive gesture.

The materiality of the relationship between readers and apps relates to Bernstein's concept of 'scriptive things,' especially with regards to what she calls 'enscription,' which she defines as an "interpellation through a scriptive thing that *combines narrative with materiality* to structure behavior" (2009, p. 73, emphasis added). Literary apps can be considered a form of enscription, in which the material relationship between reader and text operates within a narrative. The agency of the reader in relation to the text when reading literary apps is, therefore, 'scripted.' Both the story and how it is told, including its interactive possibilities, form a script which frames readers' agency.

The observations also foreground that either when the children followed the script most closely or when they improvised subversively, they incorporated features and devices from the narrative into their responses. These findings seem to match Pantaleo's (2006, 2007, 2011), who has explored how school-aged children incorporate elements from metafictive and Radical Change (Dresang, 1999) literature into their traditional and multimodal writing after having been exposed to literature with these features. The vignettes highlight that, despite being very young, the children seemed to identify, even if unconsciously, features such as repetition, irony and exaggerated embodied expressions and use them in their performative responses.

According to Bernstein, the flexible nature of the script invites improvisation and is open to resistance. Such playful resistance was performed overtly and intentionally in Lukas', Maria's and Roza's rereadings. Research on children's responses to literature (Sipe, 2006, 2008) and children's play (Marsh, Plowman, Yamada-Rice, Bishop, & Scott, 2016) have identified children's playful transgressions and subversions are part of children's engagement with material artefacts and with the world more broadly. Ahearn

(2001) identifies 'agency as resistance' as an important perspective in the understanding of the relationships between agency and language, but also asserts that this is "only one of many forms of agency" (p. 115). In the children's reading of *Monster*, subversion can be in itself a manifestation of the script, as contradicting Grover, as well as the use of irony, were both narrative features. Yet, they reveal the children's awareness of the constraints and their wish to explore the scripts' boundaries through pay. Incorporating such narrative features is part of what makes such performances subversive, but is also an important connection that guarantees the meaningfulness of the children's performances, hence, necessary for this form of agency to unfold. As "children's play performances revise rather than only reify narratives" (Bernstein, 2011, p. 163), they are an essential manifestation of children's agency.

In conclusion, the agency of the reader when reading literary apps can be considered authentic for three, interrelated, reasons: (1) because agency is *always* constrained (Bezemer & Kress, 2014); (2) because the "surrender" often experienced by the reader in relation to the text is voluntary and sought-after (Ryan, 2015); (3) because reader's agency is personalized through their embodiment of the text and their performance of the narrative (as evidenced by this project).

The idea of constraint is central to positive views of agency as expressed by social semiotics and by some scholars in children's literature (e.g., Bernstein, 2009, 2011; Gubar, 2013) and game studies (J. Tanenbaum, 2011; K. Tanenbaum & Tanenbaum, 2010), as the agency of the reader always operates in relation to the world, and in reading literature, in relation to the fictional world represented in the text. From that perspective, the constraints posed by interactivity are not fundamentally different from other constraints posed by representational choices made by the authors. When a particular word is chosen in the verbal text, a shape or a colour in the visual text, etc. certain meanings are put forward as suggestions, and that excludes other meanings. Similarly, the authors choose which action in the narrative will be embodied through interaction. As Tanenbaum and Tanenbaum (2010) suggest, understanding agency under the frame of a "commitment to meaning," results in "[shifting] the emphasis in an interaction away from the *outcome* of a choice and towards the *intent* which underlies that choice" (p. 14). Despite readers not being able to choose how they want to affect the narrative in these kinds of interactions, the fact that the action affects the story and is meaningful to its development instigates readers to act and enhance their sense of participation and agency. Hence, interactivity operates as a textual affordance and in conjunction with other affordances and modes to tell the story, working

as part of the "blueprint" that guides the reader's literary journey, as discussed by Rosenblatt (1994/1978).

The metaphor of the text as a blueprint leads to the second point: the reader *wants* to be guided by the text. Ultimately, even if constrained by the text, the reader is in control of the reading experience: they are there voluntarily and in search for the pleasure of being immersed in a fictional narrative (Mangen & van der Weel, 2017; Ryan, 2015). If such pleasure is not achieved, they can resume their control over the reading event and stop reading. It is this possibility, which causes complete disruption in *Monster*'s narrative flow as there is the expectation that readers will continue reading, that Lukas and Maria subversively play with. In this study, too, Roza refused to continue reading *Little Red* when she felt overwhelmed emotionally by the possibility of Wolf appearing. However, that is not to say that meaning-making which happens as readers process meaning through symbolic means such as language is equal to when they process meaning through action or performance.

The embodied nature of reading literary apps adds an important dimension to reader's agency in this form of meaning-making. As discussed previously, young readers tend to express their agency in very performative ways, and interactivity promotes further possibilities for using the body to make meaning from the narrative. The performative layers of meaning-making with literary apps generate another critical form of agency. This aspect of reader's agency converses with, but at the same time is different from, the layer of agency that exists in processing the signs from the text. Such performance materialises and makes explicit the usually invisible choices made by the reader in meaning-making. At the same time, because the body of the reader also becomes a sign to be interpreted, it provides an inside-out and outside-in experience of meaning-making. The reader transacts with the text and transacts with their own body as part of the text. Such embodied representation of the narrative also influences the dynamics with the co-reader.

Finally, spontaneous performance, even when subversive, is also framed by the story. Therefore "commitment to meaning" is equally relevant and a form of reader's agency. The performance prompted by the need to interact, despite being guided by the app's suggestions, is also personal and unique through the choice of form, intensity, and frequency of gestures. Nonetheless, any form of performance, interactive or spontaneous, is an authentic form of agency because it is expressed through the unique body of the

reader. As the readers use their bodies to interact, the embodied nature of interaction constitutes another form in which the reader is in control and remain agentive, even when performing an interaction which is prescribed and which ultimately does not offer them a choice regarding the narrative outcomes.

7.3 Summary

This chapter has discussed children's negotiation of agency within the constraints posed by *Monster*'s app. *Monster* is a well-crafted narrative which frames readers into a metafictive story in which their participation is essential. A reader's dual participation occurs as they are, simultaneously, a represented participant, or a character in the narrative, and an interactive participant, or the person that reads and controls the reading event. In opposition to Grover's depiction, the reader is suggested to be brave to keep turning the pages. Through the interactions, readers exert their power over Grover, contradicting his verbal requests and undoing his protections. The outcomes of the reader's participation, however, are predefined, and although the reader has a feeling that their actions affect the story, such effects were pre-designed by the text, and there are no alternative outcomes.

The analysis of the participant's responses to the text revealed the readers' agency was *scripted* when they embodied the agentive identity proposed by the text, followed the text scripts and performed the interactions according to the framework. This happened when they showed signs of being scared by the possibility of the monster, but kept turning the page. It also happened when the readers were not scared, and mocked Grover, indicating their empowered position which opposed to Grover's fearfulness. However, the differences in the reader's confidence and sense of agency could be observed in their facial expressions, their spontaneous responses and even in the shape and intensity of their swipes. When rereading, children's enhanced agency, resulting from their knowledge of the story's framework and outcome, also led to empowered expressions of agency. Roza's reflection on how her favourite interaction, breaking the wall, empowered her and boosted her sense of agency is an example. When performing such interaction in the rereading, Roza made use of significant strength and speed, again foregrounding the intrinsic relationship between embodiment and agency, as to act consciously and intentionally always involves the reader's body. Agency was also highlighted in some examples from the secondary data, in which readers performed the gesture of turning the page in their re-enactments and Maria drew herself as a character

in the story. Maria's character alternated between agentive and fearful, reflecting her conflicted experience when reading the app.

Rereading provided the children with the possibility of reflecting on the narrative's structure and the meaning of their participation in it, while still also allowing them to subvert these aspects. Roza, Lukas and Maria, who reread this app multiple times, *improvised* new meanings and performances which indicated their knowledge and understanding of the constraints posed by text, as well as of several of the narrative devices used by the app to construct that fictional world, which they incorporated in their performance. Children's subversion of the text was significantly embodied and acted out. The incorporation of features from the narrative into their subversive improvisations indicate that the readers were still within the narrative's framework to a certain extent. Complete disruption from the narrative would result in the disruption of the narrative pleasure of engaging with the fictional world. Subversive improvisations, therefore, indicate moments in which readers' agency deviates more substantially, and usually playfully, from the script. Readers' agency with literary apps, nonetheless, remains always scripted.

8 THE NEGOTIATION OF AGENCY IN JOINT-READING

Other individuals and their interests also constitute important constraints to reader's agency (Bezemer & Kress, 2015), especially in the case of children's literature. As the reading events observed in this research were joint-reading situations, readers negotiated their agency with their parent(s), who participated as co-reader(s). Because *Little Red* presented interactions that were more difficult for the child reader to figure out and perform, the parents offered support and intervened more often than when reading *Monster*. In this case, therefore, the parents active participation resulted in more explicit instances of negotiation between co-readers. This chapter discusses the negotiation of agency between child and adult co-readers when reading *Little Red*, highlighting how their bodies continually expressed materialisations of this negotiation, especially when their bodies were engaged in the interactions.

8.1 The transferring of agency through scaffolding

Vignette 8.1: Bea's progressive stages of "scaffolding"

The first vignette shows Bea and Roza reading Scene 2, in which the reader must help Little Red pack the basket. This action is performed by dragging the food items that are scattered around the room into the basket being hold by Little Red. At this point, Roza

and Bea have already gathered most of the food immediately visible and are exploring what else they could collect.

17:36.840 [01]
Bea makes a suggestion and points at Little Red.



17:45.040 [02]
Bea drags Little Red, revealing a sandwich that was behind her.



17:48.000 [03]
Roza finds the sandwich and drags it to the basket, excited.



In this vignette, Bea actively engages with Roza to support the child's participation in the scene. During the previous interactions, Roza had moved Little Red slightly to the right, positioning the character in front of a sandwich on top of the counter. Bea might have noticed the sandwich previously or is merely aware of the possibility of moving the characters. Although they have not intentionally explored this option, Roza has inadvertently moved the characters around in this and the previous scene. Bea does not overtly state there is a sandwich behind Little Red but asks Roza a question to bring her attention to that area of the illustration and encourage her to explore it. Bea's question is accompanied by a deictic gesture that aims to guide Roza's attention to the character. This multimodal utterance involving question and gesture presents lower 'modality' (Halliday & Matthiessen, 2013; Kress & van Leeuwen, 2006), which in this case is realised in language through the word "maybe" and by posing a question instead of making a statement. By presenting the presence of food behind Little Red as a possibility rather than a certainty, Bea is not positioned as an authority even though she seems to have more knowledge of how to proceed than Roza. The gap in knowledge between child and adult readers attributes power to Bea, and the use of this hypothetical modality positions Bea as a collaborator rather than an authority, suggesting Roza's exploration in a positive way. The sandwich is not visible, and Roza does not try to move the character, so Bea moves Little Red, revealing the sandwich. This interactive gesture, therefore, presents a higher modality, as it indicates there is a sandwich there and reveals it. Next, Bea returns her arm closer to her body and lets Roza drag the sandwich into the basket.

This brief sequence shows Bea's efforts to support Roza's participation without dominating the interaction. Bea performs a series of moves that relate to Wood, Bruner, and Ross's (1976) seminal work on the scaffolding process. Bea 'recruits' Roza into the task by asking a question. She suggests there is an action still to be explored at the scene, dragging the characters to look for items that might be behind them. By pointing at the character, she is "reducing [Roza's] degrees of freedom" (p. 98), that is, she is simplifying the task by making Roza concentrate on one area of the screen. This move is also "marking critical features" (p. 98), or highlighting that there is something about Little Red that makes the character an element to be explored through interaction. Nonetheless, it is still unclear for Roza what she must do. As Wood et al. posit, the learner can only benefit from the scaffolding of the 'tutor' and solve the problem on their own if they understand the solution. Roza does not seem to have yet understood that she can move the characters around. She looks at the screen and does not see any item behind the character to be dragged, because the item is covered, and therefore does not understand her mother's suggestion. Bea continues with the scaffolding, now making use of the last two stages of the process: (1) by dragging Little Red and revealing the sandwich, she makes a 'demonstration' of what the interactive move should be; (2) simultaneously, the good timing of her demonstration works as 'frustration control.' Bea is attentive to Roza's reactions and notices she does not understand what she is supposed to do and decides the demonstration is needed.

Although Bea ends up performing the first part of the interaction herself, revealing the sandwich, there seems to be a conscious effort from the parent to not give away the right answer and let Roza explore and participate. Bea seems to position Roza as the primary agent in the transaction with the text. She tries to teach Roza that she has to move the character, this time without success, but she knows that once the sandwich is revealed, Roza will understand that she must drag it to the basket, so she refrains from completing the interaction herself. Dragging the character operates at discourse level, while dragging the food into the basket operates at story level and positions the reader as a character in the text. Therefore, when Bea lets Roza drag the sandwich, she is leaving the most meaningful action for Roza and supporting her experience of the narrative while, at the same time, giving the support she needs.

After Roza packs the sandwich, another exchange of similar structure happens between the pair:

Vignette 8.2: Roza performs the interaction autonomously

17:55.560 [01]
Bea repeats the question, this time referring to the character of the mother.



18:01.320 [02]
Roza drags the mother character out of the way. A banana is revealed.



18:03.360 [03]
Roza drags the banana into the basket.



Bea again supports Roza's action by repeating the question and pointing, this time suggesting that Roza moves the character of Mother. Roza shows she has learned how to manipulate the discourse of the story and moves the character, revealing a banana. She immediately drags the banana into the basket, completing the interaction. In this sequence, Bea repeats the stages of 'recruitment' and 'reduction in degrees of freedom.' As Roza has already "recognize[d] a solution to a particular class of problem" (Wood et al., 1976, p. 90), it is not necessary that she reach the further stages of scaffolding and Roza is more autonomous than she was in the previous turn. As a consequence, Roza's agency with regards to the texts is extended, and she is able to perform both levels of the interaction on her own. Hence, even though Bea is the most knowledgeable reader in this event, her agency is constrained by her role in providing scaffolding to Roza, and there does not seem to be much space for Bea to explore her own aesthetic experience of the app.

Vignette 8.3: Bea's scaffolding as a restraint to Roza's agency

This next vignette takes place thirty seconds after the previous one. After some time exploring the scene and unable to find anything else to pack, both Roza and Bea do not seem to understand fully what their next move should be. The arrow to move the story forward is still transparent, an indication that the actions in this scene are incomplete, but the participants cannot see any other food item to collect, so Bea steps in to try to determine what to do.



As at this point Bea also does not know how to interact next, so she performs a series of swipes across the screen. In the middle of her exploratory moves, Roza grabs her hands and moves it away from the screen. Roza also does not know how to proceed and similarly performs some swipe gestures unsuccessfully. Without any further resources to continue, Roza taps the arrow that returns to the previous scene, disrupting the story's linearity.

The difficulty in operating this scene seems to have put Bea, as the most knowledgeable participant, momentarily as the primary interactor. Bea is aware that Roza does not know how to proceed and feels the need to intervene, but not knowing what to do either, she explores the possibilities through interactive gestures. The nature of her participation is visibly different from the previous scaffolding strategies shown in the vignettes above. In the previous examples, Bea starts with a suggestion and when she interacts, her participation is punctual, leaving Roza to perform the main action. Roza perceives a shift in the control of the reading event and seems to feel that her agency is diminished by Bea's active engagement with the screen. Hence, Roza resumes her control over the reading experience by pushing Bea away. The fact that Roza mimics Bea's unsuccessful swipe gestures suggests that Roza has not realised that her mother also does not know what to do. Therefore, Roza does not interpret Bea's gestures as help but as a form of taking over the participation in the story and the reading event.

This sequence of three vignettes illustrates how the adult readers used not only language but deictic and interactive gestures in scaffolding the child reader's reading experience and that the child readers understand the engagement of the body in the interactions as an important form of agency in digital reading. It highlights how, when the parents refrain

from interacting, and leave the child readers to determine their actions, even when the children do not know what to do, they are granting the child with an extended agency and constraining their own aesthetic experience.

8.2 Spatial arrangement of the readers and agency

The analysis of the participants' posture, spatial arrangement and frequency of interactions in the events indicated that Roza liked to be in control of the reading experience and Bea was comfortable with a secondary role, engaging in the reading event mostly to support Roza when she needed help. This dynamic was reflected in the positioning of their bodies. Roza was the only child who altered the space of the library, including the seating arrangement, to suit her interests. Before the reading events begun, Roza used to play with the cushions that were part of the furniture, piling them up and letting the pile fall, or rearranging them in different positions. She also did not like to sit on the higher cushion side by side with her mother and preferred sitting on a smaller cushion instead. There may have been an issue of comfort related to her choices, as the big cushion was perhaps a bit too high for her, but there seemed to be also a matter of control over the reading event. For instance, in Session 4, Roza wanted to pile three cushions and put the iPad on top, and her mother and I had to negotiate a more standard sitting arrangement (see Figure 8.1). The suggestion of such an unusual sitting arrangement indicates a playful and subversive effort to be in control of the reading event and reduce her mother's access to the device.



Roza and Bea's sitting arrangement in session 1.



Roza and Bea's sitting arrangement in session 3.



Roza negotiating the iPad arrangement in session 4.



Roza and Bea's sitting arrangement in session 4.

Figure 8.1: Seating arrangements as organised by Roza in the different research sessions.

As seen in Figure 8.1 above, in Session 1, Roza requested to hold the iPad instead of resting it on the support, but in the other sessions, she preferred the arrangement involving the support for the device – possibly because she had difficulties operating the device when it was sitting on her legs. Sitting on different cushions meant that Roza was always closer to the iPad than her mother. Roza also directed the angle of the screen towards herself, and at times provided Bea with only a side view of the screen.

When asked in the questionnaire, "Why does your child read interactive or simple e-books by themselves?", Bea signalled only the option: "My child likes to read independently." Roza's desire for autonomy and independence seems to be reflected in the spatial dynamics of their bodies. Roza physically and materially shaped the space in ways that granted her greatest agency in the reading event. Therefore, the relative positions of child and parent to each other and to the device corroborated Roza's position as primary reader to the expense of Bea's reading experience. The fact that Bea did not try to alter her seat or engage more actively in the iPad interactions suggests a tacit agreement between them that reading is a space in which Roza can be in control. Roza highly values her power and, when reading with her mother, acts to preserve her agency when she feels any further constraints, as seen in Vignette 8.3. In Roza and Bea's case, therefore, the dual audience of apps seems to be diminished by the child reader's desire for independence and autonomy.

8.3 Subversive interactions in the negotiation of agency

Vignette 8.4: Molly playfully exploring the limits of her agency

In this vignette, Molly rereads *Little Red* with her mother Abby and her little sister Elsie. They read the last scene of the app (24), in which Little Red and Grandma have a feast.

01:06:42.240 [01]
As soon as the scene starts, Molly starts dragging the food out of the basket and on top of the table and counter.



01:07:04.120 [02]
Soon enough, Molly has unpacked all the food, but she continues trying to drag things out of the basket, unsuccessfully.



01:07:13.640 [03]
Molly then starts feeding the characters by dragging the food from the table. Among other items, she feeds Grandma with a big cake, which she eats at once.



01:07:16.400 [04]
Abby is surprised with the action and makes a comment to Molly.



01:07:34.280 [05]
Having fed the characters with most of the food, Molly starts unpacking another time, and the same items come out of the basket.



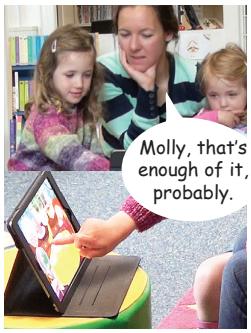
01:07:46.400 [06]
As Molly unpacks the whole basket again, Abby suggests it is enough.



01:07:48.560 [07]
Molly laughs and shakes her head "no". She continues feeding the characters.



01:08:03.880 [08]
After a few additional "feeding" actions from Molly, Abby repeats it is enough.



01:08:08.800 [09]
Molly ignores Abby and continues with the repeated interactions. Abby fixes her gaze towards Molly, waiting for her to stop and respond.



01:08:10.680 [10]
Molly continues, now dragging food out of the basket.



01:08:13.380 [11]
Elsie moves her hand towards the screen, trying to drag an item. The combination of fingers from both children activates a "zoom in" effect.



01:08:20.000 [12]
Abby performes the "zoom out" action, then drags the jelly, which Elsie tried to move, to feed Grandma. Molly continues feeding the characters.



01:08:22.600 [13]
Abby then taps the arrow forward, to change scenes.



01:08:25.400 [14]
"The End" appears on the screen. Abby looks at Molly and closes the event with a statement.



01:08:28.080 [15]
Molly smiles and chants excitedly "the end", mirroring the words on the screen.



[11]As soon as the scene starts, Molly begins unpacking the basket. In contrast to the other scenes, in this one, readers can perform interactions while the narrator speaks, because

[11] This vignette is a simplification of the actual event. Since the aim of the analysis is discussing the communication between the participants rather than between child and app, only crucial interactive moves are represented. The responses form the app to the interactions (verbal utterances from the characters) are also omitted.

the action of unpacking mirrors the content of the verbal narrative [01]. While in Molly's first reading of *Little Red*, she paused when asked to help unpack the basket, carefully arranging each item on the table and finishing the story, in this one, she seems aware of other interactive possibilities, such as feeding the characters[12]. She also seems to know that, as long as there is a spot on the table to place the food, food will indefinitely come out of the basket. The speed of Molly's actions and the quick alternation between unpacking, feeding, and unpacking again indicates that in her reading(s) at home she has explored further the possibilities of this scene, figuring out these playful forms of participation beyond what she experienced in her first reading. The knowledge of how to interact seems to give Molly agency and autonomy. Her movements are quick and fluid, and contrast significantly with her experience in Vignette 6.3, in which Molly and Abby struggled to figure out how to interact to find the key to the wardrobe, in their first reading of the app.

As in previous reading events, Abby assumes the role of mediator and does not try to interact, even if in this scene the multiple, repetitive possibilities of action would allow multiple readers to participate in alternation. Moreover, in this reading event, Abby's role as a mediator involved balancing the participation between the siblings, but during most of this scene, Molly is in control through the active and sequential engagement of her hands and fingers. She does not leave a gap so the other readers can engage.

Abby's mediation during most of the vignette happens through comments and questions aimed at Molly [02; 04; 06; 08; 10]. For instance, Molly repeatedly tries to drag items from the basket but the table is already full, so the app does not allow this interaction until the characters have eaten an item, creating an empty space. Abby then suggests to Molly that she has probably reached the end of the packing action [02]. Molly starts feeding the characters in response, suggesting she has considered Abby's comment despite her silence [03]. Abby also makes comments about the scene's events, such as when Grandma eats a whole cake at once [04]. Molly, however, seems focused on performing the actions and does not engage in verbal communication.

[12] Abby mentioned that Molly had read the app at home in between the first session and this one. Therefore, this is Molly's (at least) third reading of the app. It was unclear whether she reread at home once or multiple times.

Abby does not seem to interpret the repetition of 'unpack' and 'feed' gestures as an ideal form of participation. Molly, on the other hand, ignores the characters who eventually say "I think that's enough for me," and continues feeding them. The function of the scene in the narrative has been completed in the first round of unpacking and feeding; Molly now plays with the scene's interactive possibilities in a somewhat subversive way that seems to give her pleasure. Abby suggests that the characters have had enough, trying to stop the loop, but Molly continues to counteract her mother's suggestions. First, she laughs and shakes her head [07], rebutting Abby's statement, and then she does not respond at all when Abby insists she should stop. Ignoring Abby's suggestion and continuing with the playful engagement possibly adds to the subversiveness of Molly's actions, putting Molly in control of the situation despite her mother's requests and extending Molly's pleasure. When Molly ignores Abby's requests to end the scene, the conflict of interests seems to initiate a silent power struggle between Molly and Abby [09]. Molly, nonetheless, is in control as long as she keeps dragging the food. Abby uses language to try to, delicately, control the situation and end the scene, which she seems to consider is the ideal outcome at this point. Abby's tone of voice, although not represented in the transcript is significant: Abby talks softly but firmly to Molly. She also looks firmly at Molly, trying to establish contact and re-establish a position of authority. Language and gaze, however, present a lower power status in this exchange as they can be ignored. When Abby taps the arrow to conclude the scene [13], therefore, she also makes use of the interactive gestures as the dominant mode in the exchange. The interactive gestures provide her not only with control of the story but also of the reading event. Therefore, this scene also exemplifies how the performance of the interactive gestures promotes child agency and control in shared-reading.

Furthermore, the fact that Elsie barely participates, either through language or gestures, indicates her low level of agency in the event. Elsie is younger and does not seem to understand the dynamics of interactivity in this scene entirely. She only tries to participate towards the very end of the scene [11], after Molly has already made dozens of interactive gestures. Interestingly, she decides to engage at the moment of higher power struggle between Molly and Abby, which might indicate her awareness of it. It might be that Elsie also wants to be an active participant in this dynamic by performing an interactive gesture.

A final point is that Abby does not shift directly from trying to verbally convince Molly to press the arrow and closing the scene. There is a progression in her interactive

participation which culminates in pressing the arrow. First, Abby intervenes as the 'competent mediator,' performing the zoom-out action to re-establish the correct set up of the scene [12]. Such move restores her – literally "hands-on" – role in scaffolding the children's reading experience. Next, she performs one interactive gesture herself [12], feeding Grandma with the jelly. This gesture re-establishes her position as co-reader and might even indicate an inclination towards valuing her own aesthetic experience at this point in the reading event. At the same time, it is the effective completion of the interaction that Elsie unsuccessfully tried to perform. Thus, the gesture also seems to acknowledge Elsie and partially extend some agency towards the smaller child who barely had a chance to participate. Abby presses the arrow only after performing these two interactive gestures, and therefore being re-positioned as an active participant in the interactive reading. Regaining step-by-step control over the interactions seems to ease the repressive nature of Abby's action by positioning it as part of the natural flow of the reading event: readers interact and then move on to the next scene. As the scene ends, Molly continues to laugh and does not seem to be negatively affected by the interruption of her game [15]. Molly's positive response to the scene's conclusion, therefore, also indicates the playful nature of her subversion and suggests that Molly was mischievously testing the limits of her agency. When the power dynamics of the reading event returns to its traditional setup, Molly is comfortable with Abby resuming her position of authority.

8.4 Parent and child contrasting experiences of agency

Vignette 8.5: Maria and José interact to get Little Red away from Wolf

The scene represented in the next vignette is one of the moments of highest tension in the story of *Little Red*. In the previous scene, Little Red has figured out that it is Wolf rather than Grandma lying on the bed. Now, as Wolf jumps out of bed, the readers are expected to drag Little Red around the table to help her escape, and the app responds with Wolf always moving in the opposite direction, hence never reaching the girl (Scene17).

16:26.040 [01]
The scene starts with the narrator talking and the animation mirroring the words.



16:33.560 [02]
José is the first to interact, dragging Little Red around the table. Daniela laughs at the effect seen on the screen.



16:35.640 [03]
When he releases the character, Maria steps in and tries dragging her out of the scene.



16:36.680 [04]
Little Red reaches the edge of the scene and does not move any longer.



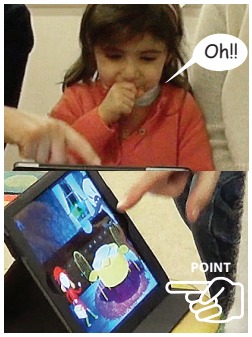
16:37.520 [05]
Maria swipes the character repeatedly towards the edge, trying to move her out of Wolf's reach.



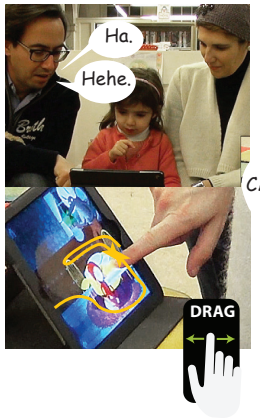
16:44.280 [06]
Unable to move her left, Maria moves Little Red to the right, but initially that brings her closer to the wolf, so soon she drags her again in the opposite direction.



16:49.640 [07]
The wolf threatens Little Red, adding dramatic effect. Maria releases her hand from the screen, covering her mouth, and whines, suggesting distress.



16:52.280 [08]
José again steps in to help, and confidently, drags Little Red around the table as expected, amused with the form of the interactivity.



16:58.360 [09]
The blue arrow blinks and José suggests that Maria tap to move to the next scene.



17:02.200 [10]
Maria moves Little Red for a brief moment and then taps the arrow to change scenes.



The area in which the scene takes place is limited and a table set in the middle positions Wolf and Little Red on opposite sides. For José, the scene set up seems to suggest moving the character around the table, as he immediately steps in to interact and confidently performs the circular moves [02]. Daniela laughs as he moves the character around and Wolf automatically moves in the opposite direction [02]. After a few moves, José stops interacting, allowing Maria to engage. Despite having seen her father's interactive moves, Maria does not seem aware of the dynamics of the interaction in this scene, and drags the character to the left edge of the screen, away from Wolf [03]. Unable to move her out of the scene, Maria changes the gestures to swiping instead of dragging [05]. This shift suggests she interpreted the limitations posed by the app as her personal inability to operate the interaction and has not yet figured out the correct gesture. Still unable to take Little Red out of Wolf's reach, Maria drags the character to the right, the only direction allowed. Moving to the right means getting closer to Wolf

instead of away from it, and she soon moves the character back to the left [06]. Wolf shouts that Little Red "can't get away" and that is precisely what Maria, as the controller of the character, seems to be experiencing; she tries to move Little Red away but is constrained by the design of the scene. Wolf's threat and the obstruction of her movements seem to provoke an emotional response that overwhelms Maria. She moves her hand away from the screen, covering her mouth and frowns [07]. At this moment, Maria's agency to participate through the interactive gesture seems to be constrained by her own emotional response, fearing Wolf will catch Little Red.

When Maria stops interacting, José quickly resumes his participation, moving Little Red around and laughing [08]. The contrast in the responses from the adult and the child suggests the distinct emotional connections of each reader with the situation depicted in the text. The adults are familiar with the story and seem to expect Little Red to escape in some way; they are merely exploring how; even if there is a possibility of Wolf eating Little Red, this does not seem to be an issue for them. They find the automatic response generated by their movement surprising and entertaining. Possibly, they might even feel that the fact the app is designed in a way that the Wolf will never reach Little Red is empowering.

Conversely, Maria appears immersed in the dramatic situation and shows empathy towards Little Red. Aliagas and Margallo (2017) report a case in which a preschool child feels responsible for the character's outcome when she has to make a decisive interactive choice when reading a literary app. This seems to happen here as well. When Maria starts moving to the right, refrains and returns to the left, it seems that Maria is also afraid that the result of her actions might result in Little Red being killed. Therefore, the power attributed to the reader through the interactive gesture seems to be interpreted by Maria as more significant than it is in reality, since readers' actions cannot result in the character's death. Maria understands that the interactions afford her possibilities of agency beyond what the app actually does. This understanding, nonetheless, paralyses instead of empowering her. The knowledge of how to operate the interaction and of how much they can do through interaction is also a source of agency to the reader. Therefore, when child and adult readers approach the text together, adults tend to come with the advantage of their extended knowledge and experience of the world, and of literature and technology.

Like the other parents, José's role in joint-reading is predominantly to promote Maria's agency in the narrative by encouraging her to interact with the story. When Maria does not interact spontaneously, he often encourages her or teaches her the required action. This scene is one of the rare moments in which José's engagement with the story and his aesthetic experience seems to dominate Maria's. Yet, his first move [02] seems to occupy a double role in the reading event: José plays and experiments with the app's possibilities while simultaneously demonstrating these possibilities to Maria. It seems that José is excited about the playful interaction but is also aware of his role as the mediator because he quickly stops interacting and gives Maria space to participate. Following Wood et al.'s (1976) premise, it seems that José's demonstration did not result in comprehension; therefore, Maria is not yet capable of reproducing the correct interactive move. Without understanding the meaning of the action and the response from the app, Maria cannot amuse herself or feel empowered by the interactive gesture.

While José and Daniela seem to respond emotionally to the narrative at every scene, indicating they also present an aesthetic stance towards the narrative, the fact that they do not participate through interaction indicates an agency 'unbalance' in the reading event. They enjoy the story, but Maria is the only one fully experiencing it because she performs almost the totality of the interactions. This vignette shows one of the few moments when the parent used their expertise also to support their individual aesthetic experience of the story. Interestingly, the same movement that seems to empower the adult reader disempowers the child reader. However, for the parent, the emotional impact of this scene is not relevant to the point that José does not fully acknowledge Maria's apprehension and loss of agency. José resumes his participation at Maria's retraction, moving Little Red around with great pleasure.

This example suggests that the dual audience of literary texts for the early years, as suggested for instance by Scott (1999) and Nikolajeva and Scott (2006), is complicated by the presence of the interactivity in a literary app. At occasional moments like the vignette above, the parents allowed themselves to participate in the shared-reading through the sharing of the interactive experience of the text. If interactivity is central to the reading experience of digital literature as the findings of this project and scholarship suggest (e.g., Nagel, 2017; Zhao & Unsworth, 2017), parents can only be partially considered an audience of literary apps.

8.5 Reflections on the joint-reading negotiation of agency

The vignettes discussed in this chapter indicate the complex negotiation of agency between adult and child readers that takes place during the joint-reading of literary apps and how this negotiation involves the bodies of the readers and the use of their bodies in reading. The examples above suggest that children's extended agency promoted by the interactive features of the text affect the balance of agency in the relationship between child and adult reader.

Interacting with the screen is a major source of agency for the reader. Often, however, an interactive gesture is played just once in a scene. This is either because the repetition of the gesture is meaningless in the context of the story – and therefore readers choose not to do it again – or because the app is programmed so that the story continues after the interaction, and there is no possibility of doing that action again, unless by re-starting the scene. The fact that the agency promoted by interactivity is intrinsically connected to the meaningfulness of the reader's participation in the story (Murray, 1997; K. Tanenbaum & Tanenbaum, 2010) results that the experience of agency is significantly individualised in the reader who performs the interactions, therefore affecting the dynamics of the shared-reading experience.

Scott (1999) argues that the format of the picturebook, in which words and pictures collaborate intimately to tell the narrative, tends to empower adult and child reader in more equal terms than other forms of narrative because children tend to be experts in the reading of the visual text, making up for their still developing proficiency in reading the verbal text. Interactivity extends the child reader's experience of the visual text, which now can be touched and changed. While most literary forms tend to privilege the most proficient reader of the verbal text, therefore, disempowering young children, literary apps shift the emphasis to the visual and spatial dimension of multimodal literature and therefore seems to empower the child at the expense of the adult reader. Since interactivity is central to the experience of reading literary apps and parents often withdraw from interacting to preserve the child's experience of the narrative, it can be argued that the dual audience of apps is affected. Merchant (2015) claims the adult reader (in his case, an educator in a nursery) becomes an "experienced co-listener" (p. 8), but the role of the adults as observed in this research was indeed more active and collaborative than that of simply co-listening, even if they put the child's aesthetic experience above their own.

In joint-reading, the extended experience and knowledge of adult readers, as well as their status as authorities, tend to provide them with the possibility of control over the reading event. Parents' interests can pose an important constraint in the child reader's agency if they wish to do so. The power gap between child and adult reader has been widely theorised in children's literature scholarship. Rose (1993) has proposed that the pervasiveness of adult's control and influence of children's fiction is such that children's literature is an impossibility, and Nodelman (2008) suggests that this 'hidden adult' is at the essence of what children's literature is. In this project, the adult's presence involved both the adults hidden in the text and those involved in the reading event (parents and researcher). The observations of the triadic encounters between child reader, adult reader and literary texts, however, seemed to reveal a very different picture from Rose and Nodelman's accounts. While the parents certainly have more power, and ultimately they can exert that power, as Abby did to conclude the reading event in Vignette 8.4, parents' primary choices at the time of reading seem to, more often than not, promote children's agency and control in reading. Parents support children's reading process, promoting a fluid and engaging aesthetic experience for the child reader, to the point that they seem to sacrifice their own possibilities of aesthetic experience. In many cases, the parents' enjoyment seemed to come from observing the enjoyment of their children and the affective dimension that joint-reading promotes more than from their personal aesthetic experience of the story.

When, for some reason, children felt their agency being constrained, such as Roza in Vignette 8.3, they were capable of expressing their dissatisfaction and resuming their control over the reading event, either by stopping the parent from participating (Vignette 8.3) or by playfully exploring the boundaries of their agency (Vignette 8.4). The roles assumed by the child and the parent in joint-reading seem to be significantly different. In literary apps, therefore, children seem to look for and are supported by the parents to assume the position of a 'protagonist reader,' while the parents assume a position of 'supporting reader.' The term protagonist reader seems appropriate in the context of literary app reading, since, as discussed throughout the findings of this thesis, this form of reading is significantly performative. The term 'protagonist' is of Greek origin and means the first actor in importance ("Protagonist," n.d.), which seems precisely to be the position looked after by the children and projected by the parents when they refrain their participation and support children in multiple ways.

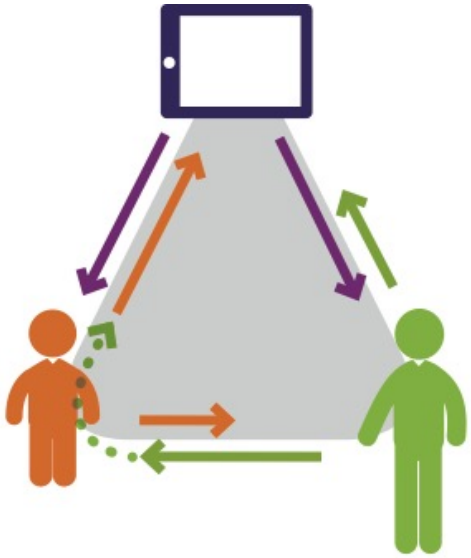


Figure 8.2: Visual representation of the dynamics of agency in joint-reading.
The child reader (in orange) is in full transaction with the text and exercising their full agency. They are often supported by the adult reader (in green), who transfers their own agency towards the child. The adult reader prioritises their transactions with the child and the child's transactions with the app, to the expense of their personal transaction with the text[13].

It is important to recognise, nonetheless, that on a macro-level, the adults are in control of the event. The children were only taking part in these reading events because an adult had created that situation (myself) and the parents decided that it was a good idea to participate, even if the children were consulted about their interest and willingness in being part of the project. Moreover, as the researcher, I was literally "hidden" – I was in the room while they were reading but out of their sight, not being recorded by the camera, so the analysis of the events mostly disregards my presence and control over the environment. The research, however, did not seem to constrain children's agency but, in fact, gave them access to new texts and reading situations that extended their possibility of agency in reading. The participant children were now reading digital literature while in some cases their parents were not themselves e-book readers. The constraints posed by the research were, nonetheless, there, but when children felt restrained by them, they seemed able to be agentive and manipulate the situation according to their interests, as Roza did by changing the setup of the reading space. Furthermore, reading the apps did not seem to be an imposition, as the child participants approached them eagerly.

[13] Maine (2015) has proposed a model for dialogic reading that is visually similar to this one. In her research, however, the negotiation of meaning takes place between peers; therefore the difference in knowledge, experience and power between co-readers is not as significant, and in her model, the arrows in all directions are of equal value.

8.6 Summary

This chapter has discussed vignettes in which the negotiation of agency between the child and the adult reader were salient. The child and the adult participants approached the reading events with distinct priorities and expectations, as well as with different levels of knowledge and experience of the world. While the position as most knowledgeable reader tends to place parents as the most agentive participant in the reading event, Vignette 8.1 suggests that, through the scaffolding process, parents can transfer their agency to the child reader. The process of scaffolding itself tends to show parent's interest in projecting the child as the protagonist of the reading event, modelling their own participation and constantly and intentionally leaving a gap for the child to fill in, in case they have reached the comprehension stage and are ready to act on their own. As these vignettes exemplify, even when the child does not know how to proceed, parents tended to encourage them to try, and at times they told them what to do, but they rarely performed the interactive gesture on behalf of the child. Even when demonstrating how an interaction worked, parents still seemed to carefully decide if they would represent a gesture in the air, hold the child's hand to teach them or perform the gesture themselves, usually prioritising the child's agency and allowing the child to operate the primary interaction. Operating the interactions seemed to be perceived by both adult and child readers as an essential aspect of the experience of agency in reading these stories, so that parents refrained from interacting and, when they eventually did interact, children might have felt their agency was constrained, as seen in Vignette 8.3.

Interacting, therefore, is not only essential for exerting agency in relation to the story but is also important in the dynamics of agency between co-readers. The child's physical control of the device extends the agency of the child reader to the expense of the adult reader who does not hold the device and does not operate it. Vignette 8.4 suggested children can be aware of the agency and power they possess as main interactors in the reading event, and might even use such power to playfully and subversively explore the boundaries of their agency in relation to the authoritative figure of their parents. In rereading, the difference in knowledge that results in adults approaching the reading event with comparatively more agency than the child seems to be partly equated. The mastery of the interactive design gave the child potential to explore the limits of other dimensions of her relationship with the adult reader, such as authority, which tends to be harder to equate. However, the ways embodiment operate in the dynamics of agency in joint-reading are not restricted to the interactive moves, and, as seen in Figure 8.1,

controlling the space of the reading event also seemed to contribute to the child reader's possibilities of agency and control of the reading event.

In rare situations, the parents engaged in interactive moves for their personal aesthetic pleasure, such as in Vignette 8.5. Here, the parent demonstrated the gesture to the child, but foremost he seemed to be exploring the aesthetic experience of this interaction that seemed to be playful to him. Focusing on his own experience seemed to divert his attention from supporting the child's experience when the child could not operate the interaction properly and felt that she and the character were trapped and at risk of being attacked.

This chapter concludes the findings part of this thesis, in which embodiment and agency were discussed as essential aspects of the process of meaning-making that takes place when young children joint-read literary apps with a parent.

9 CONCLUSION

This conclusion starts with the consideration of how this research answers the research questions posed at the beginning of the study. Next, the contribution to knowledge is outlined with regards to four areas: contributions to the textual analysis of literary apps for children, to the research in the field of children's responses to literature and media, to the field of children's literature more broadly, and, finally, methodological contributions. The chapter continues with a reflection on the limitations of this research project. It then examines the impact of this project's findings on education and the creation and production of literary apps for children and concludes with possibilities for future research.

9.1 Answering the first research question: How is meaning-making embodied in children's transactions with literary apps in joint-reading with a parent?

While all forms of reading and meaning-making are embodied and multisensory, literary apps read in touchscreen devices require the engagement of the readers' bodies frequently in interacting with the story. This research departs from the premise that meaning emerges from the encounter between reader and text, and views both as essential to the meaning-making process. Therefore, two steps were proposed to answer this question: the analysis of how the selected literary apps afforded readers' embodied engagement, and then the analysis of the children's responses to the narrative and their engagement with such affordances.

To conduct the analysis of the app's affordances and meaning potential related to the participation of the readers' bodies in reading these narratives, it was proposed that interactive gestures vary in terms of the performance they require from readers to activate the text, and such differences can be visualised in a spectrum, the 'implicit-explicit spectrum.' This spectrum, therefore, ranges from an explicit end, in which the relationship between the form of the gesture and its meaning is obvious and materialised in the sign, to an implicit end, in which the gestures operate under conventionalised relationships and do not present a formal relationship with the meanings they represent. Within this spectrum, interactive gestures were considered under three general areas: (1) of 'performative gestures,' in which the action of the reader is equal to the action being performed in the narrative; (2) of 'iconic gestures' that present some formal resemblance with the actions they represent in the narrative; and (3) of 'symbolic gestures,' in which there is no formal relationship between the forms of the gesture and the action it activates. Figure 9.1 summarises the spectrum with some examples of interactive gestures.

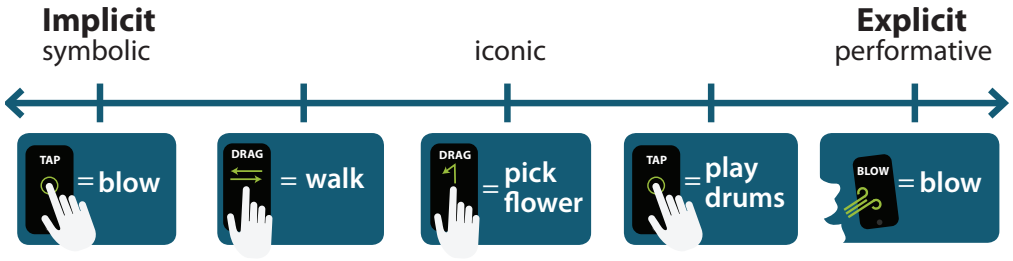


Figure 9.1 The implicit-explicit spectrum of performativity in interactive gestures.
The examples of interactive gestures are from *Little Red*.

While both apps required the reader's body in reading and activating the interactions, they did so in significantly different ways. *Monster* makes use of fewer interactions per scene, interactions that are significantly meaningful to the story being conveyed and that position the reader in a first-person perspective in relation to the story. In *Little Red*, readers face a more complex interactive scenario, in which they can use interactivity to participate at different levels of the narrative (story, discourse, visualisation of the text) and the gestures required to perform these interactions range across the whole spectrum of performativity as seen in the figure above.

When faced with multiple and distinct suggestions from the apps to use their bodies to interact, the participant readers either: (1) engaged in the 'most plausible form' of interactive performance, that is, an interactive performance which follows the app's suggestions and aligns with the conventions of touchscreen interactions, which were called 'convergent interactive gestures'; or (2) engaged in 'alternative interactive

gestures,' in which they diverged from the most plausible interaction. When readers diverged, they tended to perform gestures that presented stronger iconic or performative configurations than the most plausible gesture. That is, if both gestures were positioned in the performativity scale, the alternative gestures chosen by the reader would be positioned at the right of the original gesture, pending towards the explicit end of the spectrum. Such response from the participants indicates readers' tendencies to make meaningful connections between interactive gestures form (signifier) and their meanings in the narrative (signified). Such choice of representation contributes to the breaking of the boundaries between fictional and real worlds and to the readers' immersion. When the readers execute an interactive gesture performatively, they position themselves inside the fictional world while they also transform the real world into a fictionalised space. Such performative features present in readers' interactive gestures are also seen in readers' 'spontaneous performative responses', or responses in which readers perform an aspect of the narrative without the intention of activating the text through interactivity. In these forms of responses, also typical when young children read picturebooks, readers engaged their bodies to represent the story, to expressively engage with the story from within, positioning themselves inside the fictional world or extending the fictional world to their own world, at times, using this internal perspective to subvert the narrative. These responses also seemed to mirror some narrative features, and while *Little Red* afforded using gestures to perform actions without the use of verbal language, *Monster* afforded more expressive and performative spontaneous participation, often involving readers' bodies, intonation, vocalisations, gestures, in addition to verbal language to express their responses.

When using their bodies to interact, the young readers, novices in their use of touchscreen technology and in reading literary apps, had to learn the dynamics of this form of participation and at times the difficulties in performing the interactions resulted in disruption of the reading experience. Yet, often, there were significant signs of involvement with and immersion in the narrative. These signs seemed to express the readers' experiences of 'narrative immersion' (Ryan, 2015) (e.g., in moments of tension regarding Wolf's imminence of attack) and at times of 'ludic immersion' (Ryan, 2015) (e.g., when readers were immersed in performing the tasks for Little Red). Nonetheless, often the children seemed to achieve a state of 'flow' (Douglas & Hargadon, 2000), experiencing both forms of immersion when reading *Monster*. The readers' active and embodied responses through interactive and spontaneous performances indicate a high

level of emotional immersion. This could be noticed through the force, speed and intensity of the gestures, as well as the verbal comments and facial and body expression that accompanied them.

The embodied processes the participants experienced while reading these literary apps, therefore, played a crucial role in meaning-making. Interactive gestures were not merely a form of activating changes in the text but worked as part of the representation of the text, a representation that involves the reader's body. Therefore, I argue that the body of the reader is a mode of communication, a mode that operates both as part of the multimodal ecology of the text and of that of the reader, which involves the modes used by the reader in making meaning. Figure 9.2 represents the multimodal ecology of the transaction, including the modes orchestrated in the text, the modes orchestrated by the reader, and their connection, which operates *through* the reader's body. The reader's body as a mode consists of two elements, the gesture, which represents a process or action in the narrative, and the activation, which is usually done by the contact of the skin with the screen, but also involves non-haptic forms of activation (e.g., blowing). Both the performative element and the activation element are necessary, but their communicative function varies. The performance is an experience for the reader, and while touch is also part of this experience, the fact that the app does not offer tactile richness (all gestures provoke the same tactile sensation of touching glass) makes it less relevant than the performance of the interaction in itself. Conversely, what is most significant regarding the reader experience is not necessarily related to the activation element, which is responsible for generating a response from the app. The performative layer might involve a representation of an aspect of the narrative, while the activation involves the recognition of the reader by the device, as coded in the app, and depends on some form of material connection between the two, be it the electricity present in the reader's finger or the sound waves generated by blowing. This connection is responsible for generating the feedback loop, and that constitutes a significant distinction between picturebook and app reading. The body of the reader in picturebook reading is a mode for the reader to express their responses but is not part of the ecology of the picturebook text, which is the case for literary apps.

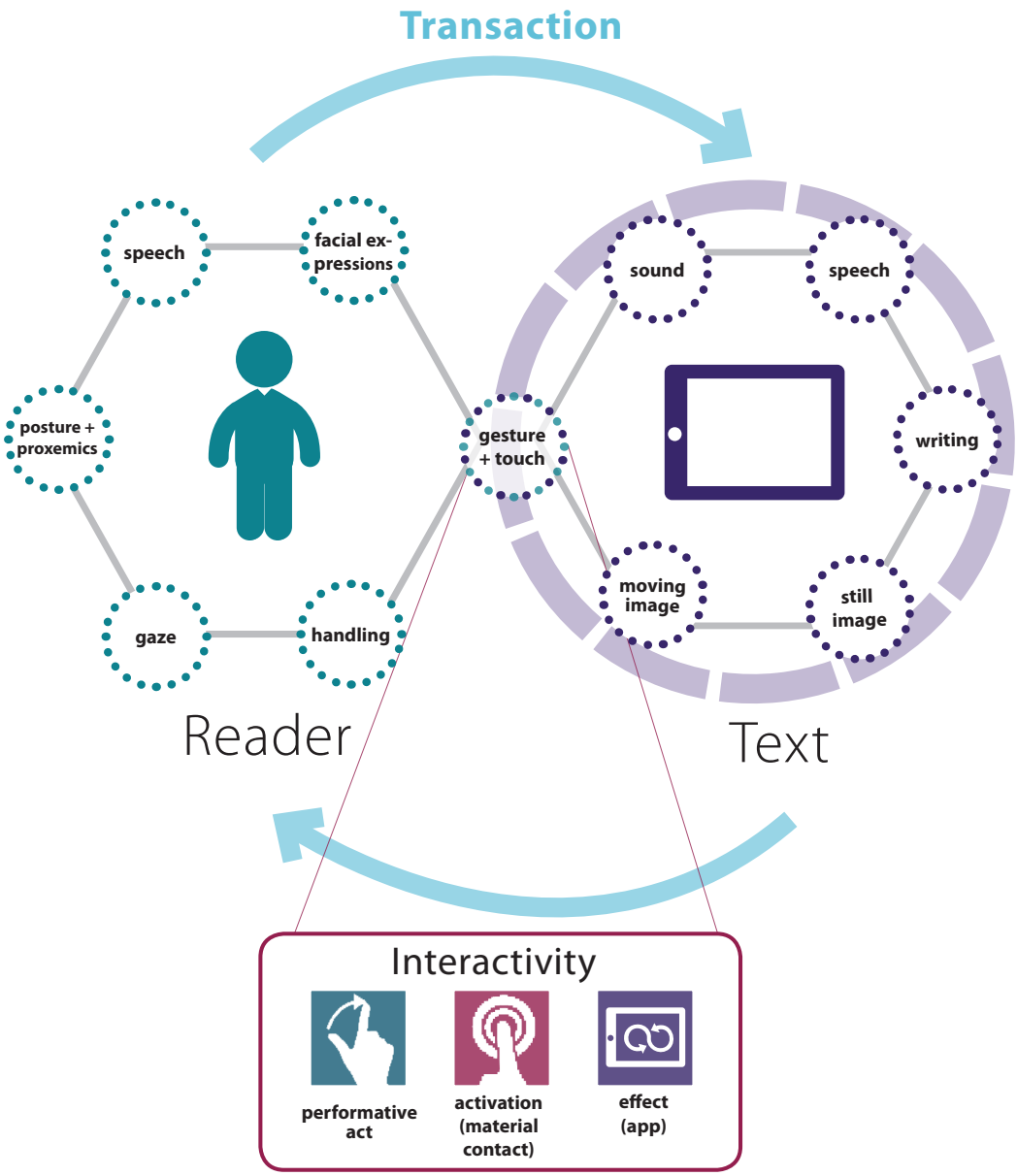


Figure 9.2: Visual representation of the transaction between readers and literary apps.
The interaction is represented as a central point of contact of physical and semiotic exchange in this form of reading. The reader orchestrates multiple embodied modes in reading, including gestures and touch required to perform the interaction. These same gestures and touch are integral to the multimodal ecology of the app.

The body of the reader as a mode in literary apps realises the three Hallidayan meaning functions, ideational, interpersonal and textual (Halliday, 1978). The reader's body fulfils the ideational function because the interactions performed through their body are representations of the narrative. When readers interact through iconic and performative gestures, meaning (signified) is generated through the performance of the gesture (signifier) which represents an action in the narrative (object). However, even at times in which the app suggests the use of symbolic interactive gestures, readers often add iconic and performative features to the gestures, transforming them into a representation. As literary apps like the ones in this project tend to make use of formal relationships in

designing the interactions, such representation is made explicit. The action taking place in the narrative is performed, entirely or partially, through the reader's body. The reader *becomes* the text.

In this representation that happens through the reader's body, the gesture performed represents a process or an event in the narrative, and the reader may be positioned as a character in the fictional world (e.g., as Little Red's helper) or act on behalf of the character (the reader becomes Little Red). In such cases, the reader's viewpoint is juxtaposed with that of the character, generating a dual viewpoint that can alter the reader's experience of identification with or empathy towards the character. A rarer gestural viewpoint is that proposed by *Monster*, in which the readers are simply themselves, a reader that is in control of the narrative, and such positioning attributes great power to the reader in relation to the fictional narrative and positions them ambiguously inside and outside of the narrative. Therefore, when performing such interactive gestures, the reader is at the same time communicating with the app through the activation, but also communicating with himself. As their body becomes part of the narrative, the reader is at the same time text and audience of that text which includes themselves. As the reader communicates with the text and power relations are enacted, the interpersonal metafunction is fulfilled.

The reader's body and the signs it produces present coherence with the narrative and with the reading event, and therefore fulfil the textual metafunction. The interactive gestures performed by the reader extend in both time and space, contributing to the 'shape-shifting' quality (Maduro, 2014) of digital literature. They expand the spatiality of the visual text beyond the screen, adding the gestures performed by the reader to the changes in the visual text promoted by animated images, to the words as they are uttered, to the sound effects and the music as they appear and disappear on a moment-by-moment basis. Therefore, the text of the literary app is incomplete without the reader's body, because it depends on their body to unfold. The text of the literary app is also a performance, because communication does not exist without the reader's participation that evokes, through interaction, the app's signs to be displayed on the screen[14]. Furthermore, if the reader's body as a mode realises the three Hallidayan metafunctions,

[14] A similar claim was made by Nagel (2017), which asserted the literary app is an event through an approach based on performance theory.

it is simultaneously a constitutive element of both the story and the discourse of literary app's narratives.

Using the reader's own body to represent aspects of the text is likely to have consequences to children's phenomenal experience of reading. In case of the reading events observed, it was visible that often readers demonstrated significant joy in performing these interactions and that often it also afforded them an extended sense of agency in reading.

The emerging research on embodied cognition suggests there are important links between action and representation in meaning-making. Nonetheless, it might be premature, as Kokkola (2017) warns, to make interpretations of the embodied experience of young children reading literary apps in the light of these theories, especially because there is still little research about how the developing brains and bodies of babies, children and young adults might operate, in the process of making meaning from a text, differently from adults'. For instance, while some works suggest that stillness might be necessary for immersion (Gallese & Wojciehowski, 2011) and that the active use of the body in interaction might hinder the possibility of narrative immersion (Mangen, 2008), young children can have significantly embodied experiences with literature, as exemplified by the category of performative responses, but also by the extensions of their experiences with stories through play and make-believe (Crago, 2014). The fact that the children did not engage much in verbal conversation during the reading events, sometimes even when prompted by the parents, might, however, indicate having to make sense of the narrative and promptly respond through performative interactions might make significant cognitive demands on children, possibly hindering their communication with the co-reader.

9.2 Answering the second research question: How does the child reader negotiate their agency with the text and the co-reader in joint-reading literary apps?

For the purposes of analysis, the answer to this question was structured in two main parts, one involving the negotiation of agency between the participant child readers and the selected apps, and another between the child readers and their parents as co-reader. As the vignettes analysed indicate, however, both facets of agency are interrelated and influence each other.

To discuss the negotiation of agency between the child and the app's text, a multimodal analysis of the ideational and interpersonal metafunctions of the *Monster* app was conducted. The objective of the analysis was to discuss how, in this metafictive story, the agency of the reader is shaped not only by the possibility of the interactivity and its embodied features but in fact by the complex and carefully crafted narrative. The narrative's use of interactivity and other representational devices suggested the blurring of the barriers between the fictional and the reader's worlds and put readers in control. The app promotes reader' the app presents a script that guides readers' meaning-making and projects a sense of agency towards them.

The analysis of the children's responses to the meaning potential of the *Monster* app indicates that the interactive and narrative possibilities of the app seemed to boost the participant readers' sense of agency while reading this app. Furthermore, the children manifested this sense of agency through the expressive realisations of the interactive gestures and through spontaneous performances. The children experienced an enhanced sense of agency when reading *Monster*, but their agency took place within the boundaries of the app's narrative and interactive script. The app created a fictional world in which readers are suggested to be agentive but the interactions they perform do not have the actual power of changing the fictional world. Despite the constraints of the script, I argue that the agency of the reader in reading *Monster* is authentic, because:

(1) Agency is always constrained; therefore interactivity that does not allow the reader to change the story cannot be considered to disempower them if the action performed by the reader is meaningful in the context of the narrative;

(2) Readers welcome the text's constraints because they wish to be guided by such constraints with the aim of immersing into the fictional world – as such surrender is voluntary, ultimately, readers are in control of their reading experience;

(3) The embodied performative aspect of reading literary apps, be it through spontaneous performance or interactive gestures, provide a further opportunity for control and agency to the reader that personalise their reading experience.

Hence, when children use their bodies to make meaning from the narrative, be it through the (always) embodied interactive gestures or through spontaneous embodied responses, they reaffirm their appropriation of the process of meaning-making, that is, their agency in relation to the text. However, if these aspects of literary app reading promote reader's agency within the script, that is not to say that readers are not aware of the constraints

posed by the narrative and its interactive features. In rereading, there were moments in which the participants expressed their awareness and understanding of the script through their playful and intentional subversive improvisations. The readers re-signified the constraints in what looked like an effort of maintaining a pleasurable experience of the story despite the app not allowing them to do what they wanted, at the time that they wanted (e.g., when the interactivity was momentarily deactivated during the animated sequences). The children also presented signs of having assimilated the structure of the narrative and of being aware that, when they turned the pages or destroyed Grover's barriers, they were being agentive in accordance to the script's prescription. By playfully refusing to interact, they momentarily resumed their possibility of choice, just to step into the framework of the story a minute later, with renewed and extended pleasure. Readers' subversive responses are improvisations within the narrative script, and reinforce the points discussed earlier, justifying the belief that readers remain agentive even when they do not have the power to change a narrative. There is, therefore, an essential connection between agency and performance, whether the performance is made according to the script or through improvisations that subvert it.

Agency in the transactions with literary apps can thus be considered to have two tiers: one which relates to the meaning in the context of the narrative and how an interaction fills this gap; and another in which the reader constructs their own identity as an agentive participant. Readers represent this identity through their bodies, be it in their choice of the form of interactive gesture but also in their spontaneous performances. The reader's performance materialises the vital role that they have in meaning-making when they bring their preferences, interests, motivations and knowledge to the reading event. Hence, the reader's body plays an essential role in the negotiation of agency between the reader and the text, because the embodied experience of interaction seems to be simultaneously a performance of agency and an actual possibility of exerting one's agency.

In summary, embodied forms of meaning-making represent a major role in how readers exert their agency when reading literary apps. As an actual possibility of action in the realm of the story, interactivity supports the agency of the reader and enhances their sense of agency. At the same time, it constitutes a framework that scripts readers meaning-making. The performative layer of the interactive gesture always provides readers with the freedom to add their personal input to the scripted nature of the interaction, expanding their agency beyond the text but within the influence of the text.

Regarding children's negotiation of agency with their parents, the performance of the interactions seems to be considered by both children and parents an expression of power and control over the reading event. Hence, such power control is manifested through the engagement of the reader's bodies in the act of interacting. This finding is in accordance with the analysis of the reader-text negotiation of agency discussed previously. The participant parents have most often avoided performing the interactions, transferring their knowledge through the scaffolding of the child reader, in cases when the child reader did not know how to operate the interaction. Differently from the voluntary surrender to the control of the text the reader experiences when immersed in a story, the control of the parent over the reading event seemed to be faced with resistance. Such resistance was manifested either overtly or playfully. Overtly, it happened by blocking the parent's participation, which was physically executed by moving the parent's hand away from the screen, or by changes in the physical arrangement of the co-readers, providing the child with privileged access to the screen. Children resisted playfully by exploring, through multiple and uninterrupted interactive gestures, the edges of their agency in relation to the figure of authority represented by the parent. In all cases, the readers' bodies play a crucial role in the negotiation of agency between child and adult readers. The dynamics of bodies and of the embodied interactions seem therefore to position the children as 'protagonist readers' and the adults as 'supporting readers,' affecting the potential dual audience of literary apps, as only eventually the parents could fully experience the narrative through interactive participation.

To conclude, when making-meaning from a literary text, readers must negotiate their agency with the text and with other sign-makers – in this joint-reading situation, with the parents. Furthermore, readers can exert their agency in either direction (towards the text or the parent) in *scripted* forms, in which they operate within the framework that restrains them, or in *subversive improvisations*, in which they show awareness of the frame, playfully explore its limits and, in doing so, they re-assert their agency in the face of these constraints. The reader's body and embodied forms of meaning-making are essential when agency is scripted, even when there is improvisation, because it is through the child reader's body that such agency is experienced and performed and that the reader manifests their control over the text and in relation to the co-reader. The fact that literary apps explore embodiment through interactivity seems at the same time to expand and to pose further constraints to reader's agency, but ultimately interactivity is but another constraint in the set of constraints that defines reader's agency in meaning-

making. In the face of such constraints, the performative nature of such interactions adds new possibilities to readers' authentic and personal input into meaning which significantly contributes to their agency in meaning-making with literary apps.

9.3 Contributions to the field

This research contributes to scholarship with the analysis of the complex phenomenon of children's meaning-making with literary apps through an interdisciplinary framework based on multimodal social semiotics, integrating textual and reader response perspectives. The work is original in performing semiotic in-depth analysis of both the meaning-potential of the apps and of children's responses to them. The unprecedented use of this framework and multimodal methods of data collection and analysis lead to the theorisation of this form of meaning-making as a relational process in which the body of the reader is central in their meaning-making with the narrative and their negotiation of agency with the text and the co-reader. Since this approach is multi-layered, the contribution of each findings chapter will be discussed in relation to specific sub-areas of scholarship.

9.3.1 Contributions to the research on literary apps (textual perspectives)

This project contributes to the scholarship in the field of digital children's literature by asserting the importance of investigating children reading literary apps to understand the semiotic configuration of these texts. Literary apps are interactive texts that require readers' participation to unfold. As a result, the text of literary apps as a semiotic artefact is always incomplete and dependent on signs generated by the readers and their bodies during the act of reading. As Nagel (2017) proposes, the literary app is an event, but not only in the sense provided by Rosenblatt (1994/1978), of meaning being constructed in the transaction with the text, but also by incorporating the actual performance of the reader. This research project shares this premise with Nagel's work, but it expands the perspective by discussing the texts of literary apps and their semiotic configuration through the analysis of children's reading events, while Nagel bases her analysis on her own experience as the reader.

Chapter 5 contributes to textual approaches to literary apps by proposing the implicit-explicit spectrum of performativity, which maps the semiotic relationships between the interactive gestures and the actions they represent in the story. Enhanced by the considerations of the different types of perspective and point of view as proposed by

research on gesture studies (McNeill, 1992; Parrill, 2009), this framework is an original tool for the analysis of interactivity in literary apps. As exemplified in Chapter 6, it is also useful for the analysis of children's interactive gestures when reading these apps, as both the implied and the realized gestures can be positioned in different areas of the spectrum according to their level of iconicity.

Multimodal social semiotics has increasingly been applied to the analysis of children's literature (Aguilera, Kachorsky, Gee, & Serafini, 2016; Painter, Martin, & Unsworth, 2013; Zhao, & Unsworth, 2017). In this context, the analysis of *Monster* developed in Chapter 7 highlights how the multimodal social-semiotic metafunctional framework is useful in mapping how the meaning-potential from apps can suggest readers with an agentive identity. The framework allows to investigate how the multimodal, interactive texts of literary apps position the reader in relation to the text, inviting their participation and therefore working as one of the constraints that shape their negotiation of agency.

Bezember and Kress (2012) have stated that touch was not a mode in digital touchscreen communication. The findings of this thesis also advance this discussion by stating that embodiment is not only a feature of literary app reading but an essential aspect of the app's text, in which the reader's body functions as a mode of communication. While touch does not operate as a mode, the gestural, performative layer of interactivity can operate as a mode in digital touchscreen communication with literary apps, realizing social semiotics' three metafunctions.

9.3.2 Contributions to research on children's responses to literature

This project also contributes to the research in the field of young children's meaning-making and responses to literature. So far, few studies have considered the actual transaction between preschool children and literary apps from an empirical, qualitative and socio-cultural perspective (Aliagas & Margallo, 2014, 2015, 2017; Kucirkova et al., 2016; Mackey, 2016; Merchant, 2014, 2015, 2017). This study is the first to have analysed different children's responses to the same text and to focus on the nature of the transaction.

Although embodiment has been discussed previously, for instance, by Merchant (2014, 2015, 2017), previous research considered the role of the body in the reading event without paying close attention to the complex and meaningful gestures performed *in relation to the narrative*. The emphasis on the analysis of the reader's embodied responses to the literature adds to the seminal work of Arizpe and Styles (2016),

Pantaleo (2008) and Sipe (2008) on expanding our understanding of the multimodality of children's responses. These works counted on audio transcripts to capture children's responses, therefore, missing some crucial aspects of the embodied nature of their responses at the time of reading. This is particularly problematic for understanding children's responses to digital literature, but the analysis of children's embodied responses to apps might also bring new light to children's responses to print literature.

Chapter 6 adds to this body of work by proposing that children's embodied responses can be interactive or spontaneous, and that subversion is a feature present in both forms of response. The findings from this chapter develop the understanding of young children's responses to literature in considering the impact of interactivity on their responses, especially with regards to children's performative responses. Interactive gestures involve readers' intentions towards the narrative and are made unique by their performative choices, personalising the interaction. Therefore, this work also proposes that children's participation through interaction consists, simultaneously, in a fundamental aspect of digital reading and a form of response.

Furthermore, the overview of children's responses and their participation in the stories through interactivity presented in Chapter 6 questions the view that the embodied nature of apps may lead to 'minds-off' participation (Hirsh-Pasek et al., 2015), or automatized responses that do not indicate meaning-making, reflection and learning. This view is often stated in the media covering young children's uses of technology but was not reflected in the data, indicating that, when engaging with high-quality literary texts, children can be engaged in the narrative and search to participate in meaningful ways.

9.3.3 Contributions to the field of children's literature

With regards to the field of children's literature more broadly, this research contributes to the debate around the possibility of children's agency when engaging with children's literature. Often the analysis of children's agency in children's literature has assumed a 'deficit model' (Gubar, 2013), taking a top-down approach which focuses on children's domination and constraint of agency by the adults who control the writing, publishing, reviewing and mediation of children's literature (e.g., Nodelman, 2008, 2016; Rose, 1993). There is no doubt that these structures are real and that they pose constraints to children's agency. However, the bottom-up perspective provided by this research highlights how, despite these structures of domination being in place, at the time of reading the opposite movement emerges. The reading events observed in this research

suggest that, during the reading of children's literature, the same elements that constrain the child reader – the parents and the text – also work in empowering them. Furthermore, and perhaps foremost, children surrender to domination or resist domination, whenever it is meaningful for them to do so.

It is true, as Nodelman (2016) posits, that looking at the child reader's agency is challenging, but as Schwebel (2016) counter-argues, "this does not mean that children's agency did not or does not exist, but rather that evidence of this agency is particularly difficult to locate and particularly challenging to interpret" (p. 279). Despite the limited number of cases analysed in this research (another criticism of Nodelman to scholarship that searches for "the hidden child"), this thesis adds to a corpus of work that is searching for the traces of children's agency in children's literature (e.g., Bernstein, 2009, 2011, Gubar, 2011, 2013, 2016). While Gubar and Bernstein look at historical traces of children's agency, this research contributes by discussing contemporary accounts of children's agency in children's literature. Schwebel (2016) suggests that children's participation in social media and other online platforms allows new glimpses into how they exercise their agency. I argue that the observation of children reading digital texts is another opportunity, because the embodied and performative nature of the reading of these texts, as exemplified in this thesis, provides important insights into children's agency. The findings of this project add to the 'scriptive' model suggested by Bernstein by positing that digital texts can also be 'enscriptions,' From this lens, interactivity reveals to be an essential part of the script of literary apps, constraining and at the same time enhancing readers' agency in relation to the text, and affecting their negotiation of agency with the parents.

9.3.4 Methodological contributions

This project contributes methodologically to the study of meaning-making and of children's responses to literature by proposing the use of multimodal transcripts rather than traditional verbal transcripts. Verbal transcripts have supported research in this and other fields for decades, but neglect the richness of non-verbal information that is a significant aspect of young children's responses to literature and other texts. The richness of video-recording requires methods of representation that simplify and at the same time are representative of the data. The "voice" of the participants is not limited to what they say, but involve gestures, facial expressions, gaze, etc. integrated into multimodal responses. Furthermore, the use of infographics incorporates into academic

texts different ways of knowing that are not verbal. More than twenty years have passed since the publication of *A pedagogy of multiliteracies: Designing social futures* (New London Group, 1996), but little attention has been paid to the development of *researchers*' 21st Century multimodal literacies skills. Virtual and multimodal methods not only provide researchers with better, more reliable and authentic forms of dealing with data, but also affect the epistemology of the research. Without the visual transcript developed in this project, most of the findings and the issues discussed would not have emerged or seem impressionistic and not be verifiable by the reviewers of this work. Therefore, I argue, the use and development of visual methods of analysis and representation of data must be considered as an integral element of academic writing, especially when the phenomenon being examined presents a rich and dynamic multimodal configuration as the one in question.

9.4 Research Limitations

Developing a research project involves constantly making choices and, at each decision made, new opportunities inevitably arise, but also limitations. Furthermore, decisions that seemed logical at the start of the project may fall apart during or after data collection for reasons at times beyond the control of the researcher.

In methodological terms, one of the limitations of this study is that public libraries were and still are not a place where families go to read literary apps. I believe, however, that the analysis of meaning-making conducted by this research was not significantly affected by the fact that the children were unaccustomed to going to libraries to read apps. The choice of having the library as the setting, nonetheless, is likely to have impacted on children's expectations and approaches at the first readings of literary apps. As the children were not familiar with this format of literature, being in a library might have elicited experiences and expectations of reading and literature that framed their stance to reading literary apps. Had I conducted the research at another setting, the children might have brought different expectations, for instance, projecting experiences of gaming to frame their literary app reading.

Because libraries are not yet spaces for reading literary apps, the library used in the research also did not present the most comfortable furniture for shared app reading, as it was seen in the vignettes. Because at the pilot one child complained about having to hold the device for the entirety of the reading, I offered the participants a stool to support the iPad. This was a solution that, conversely, encouraged the participants to arrange their

bodies for joint-reading in a particular way. Therefore, it would be important for future research to consider how readers arrange their reading space and position themselves in natural joint-reading situations.

This project has combined the thorough analysis of both literary texts and children's responses to literary apps with the aim of developing new insights regarding: what literary apps are; how children make meaning from them; and especially, how meaning transacts in the encounter of the two. Firstly, one limitation of this approach is that the analysis of text and responses is extensive and time-consuming. To fit the time-frame of this research and the length limit of this report, choices were made to reduce the data in ways that did not compromise the research design. Therefore, although data regarding children reading a third app, *Hat Monkey* (Haughton, 2013) was collected, it was only possible to discuss and report the participants' responses to two apps. The richness of the data and the challenges of representing such richness through multimodal transcription, which was significantly time-consuming, also resulted in focusing on this report in the discussion of the joint-reading events and giving less attention to the graphic elicitation data (children's drawings and re-enactment of the story with puppets). I intend, in the future, to conduct further analysis and comparison of these different types of reading events.

Furthermore, combining a textual approach with an empirical approach is not without its challenges and limitations. Research investigating each of these areas tends to be structured differently and use different analytical tools because these two objects of study present different characteristics and their complexity manifest in different ways. Firstly, the text, even a literary app with its animated and interactive features, is self-contained. That allows a decomposability of the object of study and a more straightforward and less problematic analysis of one aspect in depth and independently from other aspects. The reading event, on the other hand, is dynamic, and such change and movement are guided by the readers involved in meaning-making, with their interests, motivations, connections, etc. This fluctuation of what is foregrounded and backgrounded by the different readers in the moment-by-moment requires a breadth of analysis. Certainly, high-quality research in both textual and empirical analysis needs to find the ideal balance between breadth and depth, but often this balance is not at the same point. There was, therefore, a significant effort in this report to balance both approaches in ways that answered the research questions in the best way possible.

The choice of conducting an in-depth analysis of six children reading *Monster* and *Little Red* means that the findings of this project cannot be considered representative of a larger corpus of literary apps, even though these apps were selected as two exemplary, high-quality apps of the subcategories of the metafictive genre and the fairy-tale genre. There are, however, a significant number of low-quality apps whose features and uses of interactivity does not support embodiment and performance in the same way. Hence, these findings cannot be generalised, especially not to this category of texts. Similarly, case studies provide rich insights into the individuality of a few readers; thus the small sample is not representative of the population of 4-year-olds in the UK. This is particularly relevant regarding gender imbalance, as five out of the six participants were girls and Lukas only read *Monster's* story because he participated in the pilot rather than in the main study. However, as gender was not a central topic of analysis in this project and stereotypical gendered responses were not foregrounded in the data, I believe the findings here discussed are not gender-specific.

9.5 Impact of the findings of this research

The findings of this research are useful in informing parents and educators about the characteristics of literary apps and their reading in the early years so they can develop strategies to make richer uses of these texts at home and school. The findings indicate that embodiment is an essential aspect of reading literary apps and that literary apps seem to have enormous potential to provide meaningful and 'hands-on learning' (Hirsh-Pasek et al., 2015) contexts for children's experiences with digital media. Since literary apps do not seem yet to have achieved similar levels of popularity to games and television, it is crucial for parents and educators to provide children with more access to this format of digital literature since they can provide young readers with rich aesthetic and learning possibilities.

Furthermore, the findings indicate that a common misconception that children are not reading, but "just playing," must be abandoned. Firstly, this view is not accurate because play is an essential form of learning in the early years and should not be seen in opposition to reading. This view is inadequate in the light of the findings from this research because in literary apps the ludic engagement with the text through embodied interactions is an active form of meaning-making that is similar to those that children express through performative responses to picturebooks. As Mackey (2007) has

discussed, reading, playing and watching share essential forms of meaning-making and reading is also "playing the text."

This research also highlights that young children might experience difficulties in performing the interactions of certain apps on their own, especially the first time they read an app, and therefore, mediation is essential. At the same time, when children become more experienced readers of literary apps, there is potential for autonomous reading experiences, as interactivity in these texts seems at times to privilege the role of one reader to the expense of co-readers. Finally, this research also indicates that the rereading of literary apps is enjoyed by young children and must be supported and encouraged. Rereading generates possibilities for deeper engagements with the story as well as supporting children's development of fluency in the interactive performances. The gradual knowledge of the story, its structure and patterns develop at every rereading, allowing children to creatively manipulate the story to their own advantage.

For authors, illustrators, designers, publishers and developers of literary apps, this research provides a better understanding of how performance and interactivity work in literary apps and how children read and respond to these texts. These professionals seem already to be creatively exploring the potential for embodiment and performativity of tablet computers in the creation of literary apps. Yet, it seems some lessons can be learned from the findings of this project.

Careful consideration must be made with regards to defining all aspects of interactivity, starting with which actions are going to be made interactive and prioritising that the central event taking place in each scene be made interactive, rather than secondary ones. Furthermore, interactivity that privileges iconic and performative engagements of the reader's body seems to be especially delightful for children, but such performativity must be tightly linked with the meaning of the narrative. Gesture perspective and viewpoint must also be considered carefully, and it might be interesting to present a consistent viewpoint throughout the narrative with the aim of sustaining readers' identification with a particular character or role they are assuming in the narrative through these gestures. Regarding the number of interactive possibilities per scene, 'more' is not a synonym for augmented agency, and the need to perform multiple interactions in the same scene might cause confusion and the disruption of the reading experience. Therefore, it is also essential that there are simple and efficient cues and tips to guide the reader, and that such information is programmed to appear at the right time,

avoiding, on the one hand, undertaking reader's exploratory stance, and on the other, causing frustration. Wood, Bruner, and Ross (1976) stages of scaffolding might serve as a useful guide for designers to develop gradual tips that support readers in figuring out how to perform the interactions.

The findings also suggest that the interactive structure of literary apps does not promote the adult aesthetic experience as much as that of the children, especially when parents' important roles as the tellers of stories is taken over by the narration features of the apps. Therefore, creators must explore novel, meaningful ways of integrating parents into the app joint-reading experience. Since parents mediate children's access to tablets and the downloading of apps, and some parents hesitate in leaving children to play independently with digital devices, engaging the parents, as well as the children, is fundamental. Finally, the observation of children's responses indicates the importance of prototyping these apps and testing them with real readers, and highlights that observing children's spontaneous performative responses to literary texts might provide creators with good insights to what consists meaningful participation from a child's perspective.

9.6 Future research

The field of children's digital literature and its reception by young readers is a promising area with still multiple opportunities for research. With regards to embodiment in reading literary apps, possible next steps are the investigation of other facets of digital reading that are importantly related to embodiment, namely affect, emotions and playfulness. Affect and emotion are intimately related to the body, so that the way readers engage their bodies when reading literary apps is likely to influence their emotional connection with the stories read. On the other hand, depictions of emotion in visual narratives frequently rely on the embodied configurations of the characters. Yet another important relationship between affect and embodiment in young children's digital reading lies in the uses adults make of their bodies in joint-reading. The co-reader's body may enhance the emotional layer of the text, with parents sometimes expanding the textual representation of emotional content through performance, other times supporting the child reader emotionally through gaze, touch, and proximity. Playfulness is a topic I explored in my Masters research and that I believe is also central to the discussion of digital reading, because of the hybrid features of these texts, that combine features from digital games, but also because the embodied experience of reading apps invites playfulness, as seen in several of the vignettes presented in this

thesis. Affect, emotions and playfulness are aspects that were also salient in the data but that were beyond the scope of this thesis to analyse. I aim to explore these in future publications.

Furthermore, the analysis of these two apps indicates how different the responses from children and their reading experiences can be depending on the apps' textual and the narrative configurations. The hybridity of literary apps' texts in their combination of narrative strategies from picturebooks, films and games and how these are affected by multiple possibilities of interactivity, which now include virtual and augmented reality, indicate that the category of literary apps is extremely heterogeneous. Stichnothe's (2014) research pioneered in this area with her differentiation between 'multiple fabula apps,' which allow readers to create their own story, and 'alternative story apps' in which they manipulate the discourse level. Kucirkova also has an impressive body of work on apps that allow content personalisation, but the boundaries between apps that allow the reader to read and to create a story are not defined in her research (Kucirkova, 2013, 2016; Kucirkova et al., 2013; Kucirkova & Sakr, 2017). Despite these initiatives, more research is needed to map the different features and identify sub-genres and sub-categories of the general corpus of literary apps. This also leads to the need for more research that can map how such different configurations affect children's reading experience and meaning-making, in the light of works such as Aliagas and Margallo (2017) and Mackey (2016).

Potter and McDougall (2017) suggest that literacies – which they call dynamic literacies to emphasise their situated and adaptable nature – present a sociocultural layer and a semiotic, multimodal layer. I contend such double layering can be extended to all research on meaning-making from a multimodal frame, even when the aesthetic perspective is foregrounded as it is in this research. Because this research focuses on the iterative flow of meaning between texts, readers and co-readers and it has not captured spontaneous literacy events, it only addresses the socio-cultural as it is materialised in the reading events observed. The link between the situated events and the broader socio-cultural context is another area that has been only slightly explored in research (Aliagas & Margallo, 2014, 2015, Merchant, 2014, 2015) and therefore deserves further investigation. This includes the need to investigate why literary apps, despite the pervasiveness of technology in young children's lives, do not seem to have been integrated into their textual ecologies as print picturebooks are, from the literary end, and as games and television/YouTube also are, from the digital media end.

So far, the research on the effects of e-books and apps in literacy development has focused on examining whether textual features such as the presence of a dictionary or an "e-friend" (Karemaker, Jelley, Clancy, & Sylva, 2017), or the multimedia features of apps (Takacs, Swart, & Bus, 2014) can promote better word learning, story comprehension, etc. This research, however, has not yet approached digital reading in the early years through the framework of embodied cognition. The findings of this project suggest that embodiment is a central feature of literary app reading. Furthermore, research has found a correlation between embodied forms of reading and better story comprehension (Glenberg et al., 2011, 2004). Therefore, future research in this area could investigate whether this defining feature of literary apps might also promote better comprehension and which of the various forms of embodiment and the ways they relate to the representation of the narrative might be especially effective.

9.7 Final thoughts

This project involved years of deep immersion into children's intimate meaning-making processes with literary apps. In this process, children's bodies permeate every level, integrating material and semiotic connections, both within the space of the fictional worlds of the stories and the social space of joint-reading. The richness, complexity and often messiness of meaning-making has been embraced and addressed through a multi-layered, multimodal framework that analysed artefacts and readers, textual as well as empirical data. The research process involved constant deduction and induction, iteratively drawing from both the theoretical framework and the data, navigating through such complexity with curiosity and openness, aiming for understanding without reductionism. The result is a multimodal thesis which is also semiotically multi-layered and presents one of the many avenues allowing the expansion of our knowledge regarding literary apps and children's meaning making processes in digital reading. It is not a conclusion, but an exploration that aims to lead to further meaningful engagements with this exciting phenomenon.

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Appendix A:
Poster created for participant recruitment



Does your child LOVE STORIES?

Do you like READING TOGETHER?

Would you like to read together GREAT INTERACTIVE STORIES on an iPad?

You and your child could help researcher at the Faculty of Education of the University of Cambridge understand how **preschool children** make sense of interactive picturebooks on an iPad when joint-reading with an adult. **Your participation is very important** to help us understand children's digital reading!

All you have to do is to read together **high quality interactive stories** selected by specialists and engage in **art activities** about the story. It all happens in a public library in Cambridge. **SOUNDS FUN?**

If you have a 4 year-old preschool child and would like to know more, please contact:

Ms. Aline Frederico: **af543@cam.ac.uk**
www.cfp.cc/G2QJC3

As **compensation** for your participation we offer the participant families advice on how to select the best books for your children and how to make the most of your joint-reading experience, with both print and digital picturebooks. You will also get a picturebook to continue the joy of reading at home.

APPENDIX B:
BIBLIOGRAPHY OF APPS CONSULTED

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APPENDIX C:
PRE-OBSERVATION SEMI-STRUCTURED INTERVIEW OUTLINE

0. General information

Child's date of birth:

1. Reading

- Frequency: How often?
- Types of reading: What? Print or digital? Preferred genres?
- Setting: Where do they read? When?
- Use of public libraries? How often?
- Knowledge and use of apps: Familiar with literary apps? How often? Preferred apps?
- Knowledge and use of other forms of digital books

1a. Child's reading habits

- Likes reading?
- Asks to be read to?
- Favourite books or types of books
- Preference for print or digital books
- Parents preference for print or digital

1b. Reading together

- Who most frequently reads to the child?
- Child reads by herself/himself?
- On iPad? On paper? On other digital devices?

2. Technology

- Ownership of technology: What kind of technology? Have an iPad? Who owns the device?
- Frequency: How often? For how long per day/week? Where?
- Regulations of use: Rules bounding the use? Opposition to technology?
- Use: What kinds of activities parents and children do on the iPad? Read? Games? Internet? Movies?
- Perceptions of digital reading: Consider literary apps reading? Other forms of digital reading?
- Other uses of technology by parents: Games and other technological narratives

APPENDIX D:
QUESTIONNAIRE

This questionnaire was created by the BookTrust to map the reading habits of children in the UK. As part of The Construction of Meaning of Preschoolers Reading Picturebook Apps research, we would like to ask you to answer the questions so we can know how your habits fit in the national statistics. The information you provide here will be under the regulations that you agreed to when signing the consent form. Please answer the questions considering the habits you had before taking part in the research. The research meetings should not be counted as part of your print or digital reading habits or you use of digital media.

We will be asking questions about digital media in general, followed by questions specifically about e-books and print books and how you use these with your child. Before you start, please read through the information below.

The survey will take about 20 to 25 minutes to complete. Your responses are confidential and will be stored securely on a password protected computer.

In the survey, we'll be asking some questions about your son/daughter's use of digital technologies. Any information that you supply will be treated confidentially and stored securely.

Please confirm that you are happy to continue with the survey:

1. Yes, I am happy to continue
2. No, I do not want to take part anymore

We will now be asking you to think about your 4-year-old child who is taking part in the research.

Your child is …

1. An only child
2. The youngest child
3. A middle child
4. The oldest child
5. A twin, triplet, quadruplet etc.

Does your child have any special educational needs, as identified by a professional?

1. Yes
2. No
3. Prefer not to say

How much time does your child spend using any of the following digital media devices at home either with you or alone?

	Over 6 hours a day	Up to 6 hours a day	Up to 3 hours a day	Up to an hour a day	A few hours a week	A few hours a month	Less often than a few hours a months	Never	N/A – we do not have this device in the household
TV									
Games console (like an X-Box, Playstation, or Wii)									
A handheld video game player (like a PSP, or Nintendo DS)									
A "smartphone" (i.e. a mobile phone that you can use the internet on)									
An iPod Touch or other type of video iPod									
A tablet device (like an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)									
A basic e-reader device (like a Kindle or Nook)									
A laptop or desktop computer									
An educational game device (like a Leapster or a V-Smile)									

‘Use of digital media can include activities such as watching TV, using a computer, tablet, smartphone, e-reader or games console’

How often does your child use media? Often, sometimes, once in a while, never; for the following reasons?

	Often	**Sometimes**	**Once in a while**	**Never**
To be entertained				
To learn something				
To relax				
So I can get things done				
To keep [him/her] safe and out of trouble				
To connect with other family members				

Which of the following, if any, does your child use digital media for?

1. Playing games
2. Reading e-books
3. Using educational apps or websites
4. Playing educational games
5. Using other apps or websites
6. Watching television or films
7. Listening to music
8. Taking photographs
9. Communicating with other people (e.g. phone, Skype, etc.)
10. Communicating with other people via social media (e.g. iTwixie or GeckoLife)
11. Messaging and texting
12. Other (please specify): _____
13. Don’t know

Does your child use digital media…

1. Alone
2. With other children (e.g. brothers/sisters/friends)
3. With you
4. With another adult
5. Don't know

Which of the following, if any, are reasons why you use digital media with your child?

1. It helps him/her to learn digital skills
2. It helps him/her to benefit from the content
3. I enjoy it
4. He/she enjoys it
5. He/she asks me to
6. It's a good way to spend time together
7. I happen to be in the same room
8. To make sure he/she doesn't break the equipment
9. To make sure he/she doesn't get exposed to inappropriate content
10. Other (please specify): _____
11. Don't know

Which of the following, if any, are reasons why you don't use digital media with your child?

1. It's better for him/her to do it independently
2. We have difficulty finding content we both enjoy
3. I need the time to get other things done
4. He/she doesn't want me to
5. I'm not home enough
6. I know my child is using safe content
7. He/she uses media in a different room from me
8. We have our own separate devices
9. I don't feel that confident using digital media
10. I prefer to share our time together doing something different
11. My partner or another adult prefers to use digital media with him/her
12. My child prefers to use digital media with other children
13. I don't enjoy using digital media
14. The demands of my other children get in the way
15. Other (please specify): _____
16. Don't know

IN CASE YOUR CHILD DOES NOT USE DIGITAL DEVICES (otherwise skip this question)

Why doesn't your child use any digital devices or media either with you or alone?

1. He/she is too young
2. I want to make sure that he/she doesn't get exposed to inappropriate content
3. He/she doesn't enjoy using digital media
4. He/she is not interested in digital media
5. We don't have any digital media devices in our household
6. I don't want him/her to break the equipment
7. I don't think digital media is good for my child's educational development
8. I don't think digital media is good for my child's social development
9. Other (please specify): _____
10. Don't know

How do you feel about the amount of time your child spends using digital media?

1. It is far too much
2. It is a bit too much
3. It is just right
4. It is not quite enough
5. It is nowhere near enough

Which of the following, if any, are your biggest concerns about digital media use?

1. My child will get addicted to technology
2. My child will not want to play outside
3. My child will have less social contact with other children
4. My child might be exposed to inappropriate content
5. My child might become overweight
6. They can harm my child's brain
7. It takes them away from other experiences that are important for children's development
8. No concerns
9. Don't know

To what extent do you agree or disagree with each of the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
I would like more advice, support or guidance from experts about how to find good TV programmes, games and websites that can support my child's learning.						
I would like more advice, support and guidance from experts about how much TV, gaming, and computer time is good for my child's development.						
I'd like more advice, support and guidance from experts on at what age my child should be allowed their own mobile phone/smart phone.						
I would like more advice from experts on how to effectively limit the amount of time my child spends using digital media.						

Are there any other kinds of advice, support and guidance you would like concerning children's use of digital media?

Open response:

- Don't know

Books and reading

In this section we will be asking questions about print books, e-books (including simple e-books and interactive e-books) and reading. Unless otherwise stated, the questions are about reading for pleasure rather than reading for education. By reading for pleasure we mean voluntary reading for enjoyment.

Simple e-books – This term is used to describe digital books which appear on e-readers (e.g. Kindles) as well as smartphones, tablets and desktop PCs and do not include any interactivity.

Interactive e-books – We use this term to describe digital books which can appear on e-readers, smart phones or tablets and which have interactive features such as animation, voice-over or personalisation. These books are often called children's apps or storyapps.

Thinking about reading for pleasure, including print books and e-books, does your child read…

1. Alone
2. With you
3. With another adult
4. With other children, (e.g. brothers, sisters, friends)
5. Not at all

How often do you read the following with your child? This includes reading and all reading related activities (e.g. online or printed activities focused around reading)

	Every day or almost every day	Several times a week	Once or twice a week	Once or twice a month	Less often than once a month	Not at all
Print books						
Interactive e- books (e.g. children's apps or story apps on tablets or smartphones)						
Simple e-books (on e-readers (e.g. Kindle) or desktop PCs)						

IN CASE YOU HAVE MARKED THAT YOU READ SIMPLE OR INTERACTIVE E-BOOKS WITH YOUR CHILD (otherwise skip this question)

Which of the following, if any, are reasons why you read simple or interactive e-books *together with your child*?

1. It helps him/her learn digital skills when we use it together
2. It helps him/her benefit from the content when we use it together
3. I enjoy it
4. He/she enjoys it
5. He/she asks me to
6. He/she is too young to use it alone
7. He/she gets too distracted without me
8. It's a good way to spend time together
9. To make sure he/she doesn't break the equipment
10. To make sure he/she doesn't get exposed to inappropriate content
11. To make sure he/she doesn't purchase any additional apps without my knowledge
12. My child is too young to read stories by themselves
13. Other (please specify): _____
14. Don't know

IN CASE YOU HAVE MARKED THAT YOU READ PRINT BOOKS WITH YOUR CHILD (otherwise skip this question)

Why do you read print books *together with your child*?

1. It helps him/her learn fine motor skills (i.e. hand eye coordination) when we read together
2. It helps him/her benefit from the content when we read together
3. I enjoy it
4. He/she enjoys it
5. He/she asks me to
6. He/she is too young to use them alone
7. He/she gets too distracted without me
8. To help him/her learn new things
9. It's a good way to spend time together
10. To make sure he/she doesn't damage the book
11. My child is too young to read stories by themselves
12. Other (please specify): _____
13. Don't know

How often does your child read the following by themselves? This includes reading and all reading related activities (e.g. online or printed activities focused around reading)

	Every day or almost every day	**Several times a week**	**Once or twice a week**	**Once or twice a month**	**Less often than once a month**	**Not at all**
Print books						
Interactive e- books (e.g. children's apps or story apps on tablets or smartphones)						
Simple e-books (on e-readers (e.g. Kindle) or desktop PCs)						

IN CASE YOU HAVE MARKED THAT YOUR CHILD READS SIMPLE OR INTERACTIVE E-BOOKS BY THEMSELVES (otherwise skip this question)

Why does your child read interactive or simple e - books by themselves?

1. My child likes to read independently
2. I have difficulty finding the time.
3. My child does not want me to read with them
4. I don't feel confident using an e-reader, tablet, smart phone etc.
5. I don't feel confident reading with my child
6. I don't enjoy reading with my child
7. I don't enjoy using an e-reader, tablet, smart phone etc.
8. It helps him/her learn digital skills
9. It helps him/her learn fine motor skills (i.e. hand-eye coordination)
10. It helps him/her benefit more from the content
11. Other (please specify): _____
12. Don't know

IN CASE YOU HAVE MARKED THAT YOUR CHILD DOES NOT READ SIMPLE OR INTERACTIVE E-BOOKS BY THEMSELVES (otherwise skip this question)

Why doesn't your child read interactive or simple e-books by themselves?

1. He/she is too young
2. He/she prefers to read them with someone
3. He/she isn't interested in using interactive e-books
4. He/she isn't interested in using simple e-books
5. I don't want him/her using a screen too much
6. He/she doesn't like reading at all
7. We don't have a digital reading device (e.g. Kindle, tablet, etc.) in the household
8. I don't think e-books are good for my child's educational development
9. I don't think e-books are good for my child's social development
10. I only want my child to read print books
11. Other (please specify): _____
12. Don't know

IN CASE YOU HAVE MARKED THAT YOUR CHILD READS PRINT BOOKS BY THEMSELVES (otherwise skip this question)

Why does your child read print books by themselves?

1. He/she likes to read independently
2. I have difficulty finding the time
3. He/she does not want me to read with them
4. I don't feel confident using a print book
5. I don't feel confident reading with my child
6. I don't enjoy reading with my child
7. I don't enjoy using a print book
8. It helps him/her learn how to use a print book (e.g. turning pages)
9. It helps him/her learn fine motor skills (i.e. hand-eye coordination)
10. It helps him/her benefit from the content
11. Other (please specify): _____
12. Don't know

IN CASE YOU HAVE MARKED THAT YOUR CHILD DOES NOT READ PRINT BOOKS BY THEMSELVES (otherwise skip this question)

Why doesn't your child read print books by themselves?

1. He/she is too young
2. He/she prefers to read them with someone
3. He/she isn't interested in print books
4. I prefer him/her to use digital devices
5. He/she doesn't like reading at all
6. We don't have print books in the household
7. I don't think print books are good for my child's educational development
8. I don't think print books are good for my child's social development
9. I only want my child to read e-books
10. I prefer to buy him/her e-books
11. Other (please specify): _____
12. Don't know

How do you feel about the amount of time your child spends reading interactive or simple e-books?

1. It is far too much
2. It is a bit too much
3. It is just right
4. It is not quite enough
5. It is nowhere near enough
6. Don't know

How do you feel about the amount of time your child spends reading print books?

1. It is far too much
2. It is a bit too much
3. It is just right
4. It is not quite enough
5. It is nowhere near enough
6. Don't know

When do you think is the best time to start reading each of the following types of book with your child?

	From birth	Within the first year	At 1 year old	At 2 years old	At 3 years old	At 4 years old	At 5 years old	Older than 5 years	Not at all	Don't know
Print books										
Interactive e- books (e.g. children's apps or story apps on tablets or smartphones)										
Simple e-books (on e-readers (e.g. Kindle) or desktop PCs)										

Thinking about each of the three formats of books, which format do you think…

(If two or more formats are equal, please select all relevant options.)

	Print books	**Interactive e- books (on tablets or smartphones)**	**Simple e-books on e-readers or desktop PCs**	**None of these**	**Don't know**
Is the most entertaining for children					
Is the most engaging for children					
Is the most educational for children					
Is the easiest to read together with my child					
Takes the longest to read					
Best helps children to focus on the story					
Best prepares children for educational settings, e.g. nursery, primary or secondary school					
Best helps my child and I to talk more about the story or things in the book					
Helps my child learn how to read most effectively					
Best helps my child and I to talk more about what we are doing (e.g. swiping screen, turning pages etc.)					

Do you think there are any other differences between reading a print book, a simple e-book or an interactive e-book with your child?

Open response

- Don’t know

For each activity, which format does your child prefer? If he/she likes two or more equally, please select all relevant options

	Print books	Interactive e- books	Simple e-books	None of these	Don’t know
For reading for pleasure					
For reading for education					

IF YOU MARKED PRINT BOOKS AS YOUR CHILD'S PREFERRED FORMAT (otherwise skip question)

Why do you think your child prefers print books for reading for pleasure?

1. He/she is too young for e-books
2. Print books are easier to get hold of
3. He/she likes to own his/her own print book
4. He/she likes to visit the library to choose books
5. He/she likes to visit the shop to choose books
6. He/she likes to turn the pages
7. He/she finds it easier to focus on print books
8. It is easier for him/her to use print books independently
9. It is easier for him/her to read print books with me or another adult
10. The pictures and illustrations are better quality
11. They are more fashionable/ cool
12. Other (please specify): _____
13. Don't know

IF YOU MARKED SIMPLE OR INTERACTIVE E-BOOKS AS YOUR CHILD'S PREFERRED FORMAT (otherwise skip question)

Why do you think your child prefers simple or interactive e-books for reading for pleasure?

1. He/she likes to use digital devices
2. He/she likes the additional features available (e.g. noises, moving pictures, etc.)
3. He/she finds e-books more interesting than print books
4. He/she likes to interact with the e-book (e.g. swiping screen)
5. It is easier for him/her to use e-books independently than print books
6. They are easier to get hold of
7. He/ she likes to browse online to choose books
8. He/ she finds it easier to focus on e-books
9. It is easier for him/ her to read e-books with me
10. The pictures and illustrations are better quality
11. They are more fashionable/ cool
12. Other (please specify): _____
13. Don't know

From which source would you like to receive more advice on interactive e-books from?

	From parents	From experts	Other	Neither – I do not need/want any advice on this	Don't know
I would like more advice about entertaining interactive e-books for my child					
I would like more advice about the best interactive e-books to support my child's learning					
I would like more advice on the different features available with interactive e-books					
I would like more advice on how my to support my child to get the most benefit from interactive e-books					
I would like more advice about how much time my child should be using interactive e-books					
I would like more advice about how interactive e-books can influence my child's development					
I would like more advice on how to effectively limit the amount of time my child spends using interactive e-books.					

What other kinds of advice, support and guidance, if any, would you like around interactive e-books and your child?

Open response

- Don't know

To what extent do you agree or disagree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
I feel up to date on the current debates around children's use of interactive e-books						
I'm not interested in the debates around children's use of interactive e-books						
I'm confident that I know what's best for my child when it comes to how much time they spend reading interactive e-books						
I sometimes feel confused about the right thing to do when it comes to my child's use of interactive e-books						
I'm excited about what the new developments in interactive e-books will be						
I feel concerned about the decline of print books because of interactive e-books						
I think children need to learn to read interactive e-books as they are the future of reading						

What, if any, are your biggest concerns about interactive e-book use?

1. My child might be exposed to inappropriate content
2. My child might be exposed to too much advertising
3. They can harm my child's brain
4. I don't want my child to have too much screen time
5. I don't think e-books help my child to learn effectively
6. I'm concerned about the impact it might have on my child's attention span and/or ability to focus
7. I am concerned my child will lose interest in print books
8. I am concerned about my child purchasing add-ons without my knowledge
9. I am less able to monitor or guide what my child looks at
10. Other (please specify): _____
11. No concerns
12. Don't know

Are there any ways that children's interactive e-books could be improved?

Open response

- Don't know

Are there any challenges to ensuring there is a balance between your child's engagement with digital activities (e.g. watching TV, using a computer, tablet, smartphone, e-reader or games console) and their engagement with other activities (e.g. reading print books, writing, drawing, craft activities)?

1. Yes
2. No
3. Don't know
4. It's not necessary to try and balance my child's engagement

Please could you give details on why you think this?

Open response

- Don't know

How often, if at all, do you read for pleasure by yourself? This includes reading and all reading related activities (e.g. online or printed activities focused around reading) that is not for work or education.

	Every day or almost every day	**Several times a week**	**Once or twice a week**	**Once or twice a month**	**Less often than once a month**	**Not at all**
Print books						
E-books						
Other e.g. magazines, newspapers, websites etc.						

How much do you enjoy reading for pleasure by yourself?

1. Very much
2. Quite a lot
3. Not much
4. Not at all

How confident are you when it comes to using digital media?

1. Very confident
2. Fairly confident
3. Not very confident
4. Not at all confident
5. Don't know

How confident is your child when it comes to using digital media?

1. Very confident
2. Fairly confident
3. Not very confident
4. Not at all confident
5. N/A – my child is too young to use digital media
6. Don't know

Thank you for completing the survey.

APPENDIX E:
CHECKLIST FOR OBSERVATION SESSIONS

Participants:

One week (or earlier, if possible) before observation:
☐ ☐ ☐ ☐ ☐ Book room
☐ ☐ ☐ ☐ ☐ Confirm session with participants
☐ ☐ ☐ ☐ ☐ Send participants location and parking details

One day before observation:
☐ ☐ ☐ ☐ ☐ Recharge equipment and check if memory disks are clean:
☐ ☐ ☐ ☐ ☐ iPad
☐ ☐ ☐ ☐ ☐ Camera 1
☐ ☐ ☐ ☐ ☐ Camera 2
☐ ☐ ☐ ☐ ☐ Camera 3
☐ ☐ ☐ ☐ ☐ Camera 4
☐ ☐ ☐ ☐ ☐ Audio recorder
☐ ☐ ☐ ☐ ☐ Remind participants of session
☐ ☐ ☐ ☐ ☐ Print out informed consent, if needed
☐ ☐ ☐ ☐ ☐ Print out and assemble puppets, if needed

List of equipment:
☐ ☐ ☐ ☐ ☐ iPad
☐ ☐ ☐ ☐ ☐ Camera 1
☐ ☐ ☐ ☐ ☐ Camera 2
☐ ☐ ☐ ☐ ☐ Camera 3
☐ ☐ ☐ ☐ ☐ Camera 4
☐ ☐ ☐ ☐ ☐ Audio recorder
☐ ☐ ☐ ☐ ☐ Tripod 1
☐ ☐ ☐ ☐ ☐ Tripod 2
☐ ☐ ☐ ☐ ☐ Tripod 3

Materials for session:
☐ ☐ ☐ ☐ ☐ Pencil
☐ ☐ ☐ ☐ ☐ Drawing paper
☐ ☐ ☐ ☐ ☐ Informed consent form
☐ ☐ ☐ ☐ ☐ Puppets
☐ ☐ ☐ ☐ ☐ Print book

One hour/30min before session:
☐ ☐ ☐ ☐ ☐ Set up equipment and seating position
☐ ☐ ☐ ☐ ☐ iPad
☐ ☐ ☐ ☐ ☐ Camera 1
☐ ☐ ☐ ☐ ☐ Camera 2
☐ ☐ ☐ ☐ ☐ Camera 3
☐ ☐ ☐ ☐ ☐ Camera 4
☐ ☐ ☐ ☐ ☐ Audio recorder

☐ ☐ ☐ ☐ ☐ Turn on external microphone/test iPad set up
☐ ☐ ☐ ☐ ☐ Turn on sound
☐ ☐ ☐ ☐ ☐ Check volume
☐ ☐ ☐ ☐ ☐ Reset app, if applicable
☐ ☐ ☐ ☐ ☐ Remove password for iPad
☐ ☐ ☐ ☐ ☐ Set iPad on airplane mode
☐ ☐ ☐ ☐ ☐ Set iPad on do not disturb mode
☐ ☐ ☐ ☐ ☐ Cell phone set up: airplane mode
☐ ☐ ☐ ☐ ☐ Have secondary material ready on a side table

During session:
☐ ☐ ☐ ☐ ☐ **Welcome** them and conduct to reading room
☐ ☐ ☐ ☐ ☐ Get informed consent **form** signed, if applicable
☐ ☐ ☐ ☐ ☐ **Present** the structure of the session to parent and child in suitable language
☐ ☐ ☐ ☐ ☐ Ask for the **child's permission** to continue and record
☐ ☐ ☐ ☐ ☐ Conduct them to **sitting area**
☐ ☐ ☐ ☐ ☐ **Warm up** activity (let child choose e a book and read first)
☐ ☐ ☐ ☐ ☐ **Turn on cameras** and recorder
☐ ☐ ☐ ☐ ☐ Handle **iPad** with app
☐ ☐ ☐ ☐ ☐ When reading comes to an end, bring **paper/crayon**
☐ ☐ ☐ ☐ ☐ Present the **drawing task**
☐ ☐ ☐ ☐ ☐ Talk to the child about the drawing
☐ ☐ ☐ ☐ ☐ When drawing comes to an end, bring **puppets**
☐ ☐ ☐ ☐ ☐ Present the **puppet task**
☐ ☐ ☐ ☐ ☐ Talk to the child about the retelling
☐ ☐ ☐ ☐ ☐ Closing/**thanking**

Actions required post-session:
☐ ☐ ☐ ☐ ☐ E-mail thanking the participants and reminding of the following session
☐ ☐ ☐ ☐ ☐ Send anything promised to the participants during the session:_____

Upload all data into computer:
☐ ☐ ☐ ☐ ☐ Camera 1
☐ ☐ ☐ ☐ ☐ Camera 2
☐ ☐ ☐ ☐ ☐ Camera 3
☐ ☐ ☐ ☐ ☐ Camera 4
☐ ☐ ☐ ☐ ☐ Audio recorder
☐ ☐ ☐ ☐ ☐ Backup all data from the computer into external drive

Delete all data from equipment:
☐ ☐ ☐ ☐ ☐ Camera 1
☐ ☐ ☐ ☐ ☐ Camera 2
☐ ☐ ☐ ☐ ☐ Camera 3
☐ ☐ ☐ ☐ ☐ Camera 4
☐ ☐ ☐ ☐ ☐ Audio recorder

APPENDIX F:
RESEARCH ETHICS REVIEW CHECKLIST FOR THE FACULTY OF EDUCATION

The Faculty's Three Stages of Ethical Clearance

Stage 1 involves you in completion of this Ethics Review Checklist. This is the first stage of three. It will help you (and others) decide to what extent you need to become involved in the second and third stages. When you have completed it you (and the Faculty) will be in a position to make this judgement.

Stage 2 will involve you in discussing any ethical dimensions of your research in some depth with your another 'knowledgeable person of standing'; this is a very likely outcome of completing the checklist. Further details are provided in Section C.

Stage 3 will involve you in obtaining formal 'ethical clearance' through the Faculty of Education's procedures; some projects will need to proceed to this stage. Further details are provided in Section C .

Most of the questions on this checklist deliberately offer you just two answers ('yes' or 'no'). You will probably find that you can answer many of the questions unequivocally one way or the other. However, sometimes you may wish there was an 'it depends' response category. If you find yourself in this position, please give the answer which suggests that, at this preliminary stage, there might be an ethical issue requiring more discussion at Stage 2.

Section A: Details of the Project

Student Name	Aline Frederico
Email	af543@cam.ac.uk
Supervisor	Dr. Fiona Maine
Supervisor email	flm27@cam.ac.uk
Registration Report Title	Picturebook apps' potential and realized meanings in preschool children and parent co-reading situations

Section B: Checklist

Code of Practice relating to Educational Research		
1a	Have you read the Revised Ethical Guidelines for Educational Research (2011) of the British Educational Research Association (BERA)? (if you have not read it, the latest version is available at http://www.bera.ac.uk/researchers-	Yes
1b	Is this Code relevant to the conduct of your research? If you have answered 'no', please briefly explain why:	Yes
1c	Do you agree to subscribe to the Code in carrying out your own research?	Yes
2	Are there any aspects of your proposed research which, in the context of BERA's Code of Practice, might give rise to concern amongst other educational researchers?	No
If you have answered 'yes', please briefly list possible causes for concern below:		
a		
b		
c		
3a	Will you be analysing an existing data set that has already been collected by someone else?	No
3b	If you answered YES: can you confirm that the data you will be using is either Already available in the public domain for anyone to analyse Or You have been given permission[15] by the owner of the data set to undertake your own analysis and results.	N/A

[15] this permission should only be given if the owner of the data can make it available for secondary analysis on the basis of the informed consent they obtained from their original participants

4	Will you be collecting your own research data for the study (through such techniques as interviewing people, observing situations, issuing questionnaires etc)? nb. If you have answered NO to this question, you may proceed to Section C and need not answer any further questions in this section.	Yes
Obtaining 'Informed Consent'		
5	Are you familiar with the concept of 'informed consent'? (if you are not familiar with this concept you should first consult the following source: page 5 of the BERA guidelines above).	Yes
6	Does your research involve securing participation from children, young people or adults where the concept of 'informed consent' might apply? Permission is likely to be needed to report any information about people or institutions that is not in the public domain, and which you have been able to obtain due to your privileged access to the research site(s) in whatever capacity[16]	Yes
If you have answered 'yes' to Question 6 above, please answer the following questions.		
7a	Do you believe that you are adopting suitable safeguards with respect to obtaining 'informed consent' from participants in your research in line with the Code of Practice?	Yes
7b	Will all the information about individuals and institutions be treated on an 'in confidence' basis at all stages of your research including writing up and publication?	Yes

[16] Professional work (such as teaching) can involve the collection of evidence to better understand problems/issues and to evaluate innovative practice - leaving practitioners with the question of when these activities become formal research requiring informed consent. This comment is meant to highlight how the collection of data for public reporting beyond the institution (e.g. in a thesis) should be considered as a key criterion for deciding when informed consent is required.

7c(i)	Will all the information collected about the institution(s) where research is based be presented in ways that guarantee the institution(s) cannot be identified from information provided in the report? Note: in a thesis written by a researcher about a research context where they have a publicly acknowledged role, it is difficult to disguise the identity of the institution whilst also providing the expected detail of the researcher's relationship with the research context.[17]	Yes
7c(ii)	If not, has the appropriate responsible person given approval for the research on the understanding that the identity of the institution cannot be protected in the report of the research?	N/A
7c(iii)	Will all the information collected about individuals be presented in ways that guarantee their anonymity? Note: a person with a named role, or having a specific set of reported characteristics that is unique in the research context.	Yes
7c(iv)	If not, have these issues been explained to the relevant participants (and appropriate gatekeepers in the case of children or other vulnerable participants)?	N/A
The Involvement of Adults in the Research		
8a	Will your research involve adults?	Yes
If you have answered 'yes' to Question 8a above, please answer the following questions; otherwise move to Question 9.		

[17] Professional work (such as teaching) can involve the collection of evidence to better understand problems/issues and to evaluate innovative practice - leaving practitioners with the question of when these activities become formal research requiring informed consent. This comment is meant to highlight how the collection of data for public reporting beyond the institution (e.g. in a thesis) should be considered as a key criterion for deciding when informed consent is required.
At present the implicit assumption is that anonymity is always desirable*, and is always achievable. In many studies these assumptions are sound. However, a practitioner (e.g. teacher) reporting research into their own practice/institution in a thesis would normally need to be explicit about their professional relationship to the research context to give an authentic account of their research. As the staff lists of many educational institutions are in the public domain and often readily found by a web search, a thesis by a named member of staff allows the institution to be readily identified from the name of the thesis author. Given that an institution can readily be identified, this also has consequences for the degree of anonymity that can be promised to participants - for example those with named roles such as Head of Year 11, Student Voice Coordinator, Head Prefect, etc, or those identifiable from detailed reported characteristics.
* Some institutions or participants may welcome being acknowledged by name in a thesis, and their views should be taken into account and balanced against other considerations.

8b	Will these adults be provided with sufficient information prior to agreeing to participate in your research to enable them to exercise 'informed consent'?	Yes
8c	Will the adults involved in your research be in a position to give 'informed consent' themselves with respect to their participation?	Yes
8d	Will these adults be able to opt out of your research in its entirety if they wish to do so by, for example, declining to be interviewed or refusing to answer a questionnaire?	Yes
8e	Will these adults be able to opt out of parts of your research by, for example, declining to participate in certain activities or answer particular questions?	Yes
The Involvement of Children, Young People and other potentially Vulnerable Persons in the Research		
9a	Will your research involve children, young people or other potentially vulnerable persons (such as those with learning disabilities or your own students).	Yes
If you have answered 'yes' to Question 9a above, please answer the following questions; otherwise move to Question 10. In educational and social research 'informed consent' regarding access is often given by a 'gatekeeper' on behalf of a wider group of persons (e.g. a head or class teacher with respect to their pupils, a youth worker working with young people, another person in an 'authority' position).		
9b	Who will act as the 'gatekeeper(s)' in your research? Please list their position(s) briefly below and, where this is not self-evident, describe the nature of their relationship with those on whose behalves they are giving 'informed consent'. The researcher cannot act as the gatekeeper (see 9g below)	
i	Parents	
ii	Whether the access to participants becomes difficult, the research may take place in a nursery setting. In this case, teachers would also become gatekeepers.	
iii		
9c	Will you be briefing your 'gatekeeper(s)' about the nature of the questions or activities you will be undertaking with the children, young people or other potentially vulnerable persons involved in your research?	Yes

9d	If another person (such as a teacher or parent of a child in your study) expressed concerns about any of the questions or activities involved in your research, would your 'gatekeeper(s)' have sufficient information to provide a brief justification for having given 'informed consent'?	Yes
9e	If unforeseen problems were to arise during the course of the research, would your 'gatekeeper(s)' be able to contact you at relatively short notice to seek advice, if they needed to do so?	Yes
9f	Could your 'gatekeeper(s)' withdraw consent during the research if, for whatever reason, they felt this to be necessary?	Yes
9g(i)	Are you undertaking research into your own professional context/institution (e.g. with students in a school where you work)? If you answered 'Yes' then you should identify (in 9b above) a suitable senior person who has agreed to act as an independent point of contact for participants to act as the gatekeeper, and answer the following two questions:	No
9g(ii)	Will you ensure that other people in the research context are aware of the identity of the gatekeeper?	Yes
9g(iii)	Will you take reasonable precautions to ensure that research participants (and where appropriate their parents/guardians) know that they should contact the gatekeeper (and not you) if they have any concerns about the research?	Yes
Other Ethical Aspects of the Research		
10	Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (eg. covert observation of people in public places)	No
11	Will the research involve the discussion of topics which some people may deem to be 'sensitive'? (e.g. sexual activity, drug use, certain matters relating to political attitudes or religious beliefs)	No
12	Does the research involve any questions or activities which might be considered inappropriate in an educational setting?	No

13	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind? If you have ticked 'Yes' it is vital to refer the matter to the Faculty Research Office for onward reference to the University Insurance Section.	No
14	Will blood, tissue or other samples be taken from the bodies of participants?	No
15	Is pain or more than mild discomfort likely to result from the study?	No
16	Could the research involve psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	No
17	Are there any other aspects of the research which could be interpreted as infringing the norms and expectations of behaviour prevailing in educational settings?	No
18	Are there any other aspects of the research which could be to the participants' detriment?	No
19	Will the study involve prolonged or repetitive testing?	No
20	Will financial inducements (other than reasonable expenses or compensation for time) be offered to participants?	No

SECTION C: Interpretation of Results

If any of your answers coincide with the response options having a coloured background, then you should assume that further discussion involving Stage 2 procedures is required because some aspect of your proposed research is likely to be 'ethically sensitive'. In practice, many issues can be resolved at this stage. In practice, many issues can be resolved at this stage.

Members of staff should be especially careful about research involving their own students (question 9g).

If you have ticked 'yes' in response to one or more of questions 10 to 20, both Stage 2 and Stage 3 clearance will definitely be required.

Stage 2 Clearance

Any 'ethically sensitive' responses identified above should be discussed with a 'knowledgeable person of standing'. In the case of students within the Faculty, this person will, in almost every case, be the person supervising your research.

On completion of the discussion, the 'knowledgeable person of standing' is asked to choose one of the following three responses, to delete the other two and to affirm their views by adding their signature.	
a	I have discussed the ethical dimensions of this research and, as outlined to me, I do not foresee any ethical issues arising which require further clearance.
b	There may be some ethical issues arising from this research. I think it would be prudent for the researcher to seek further advice and, possibly, Stage 3 clearance.
c	Ethical issues arise in this research which require further discussion; my advice is that Stage 3 ethical clearance should be sought.

Supervisor Name/ Signature	Dr. Fiona Maine
Date	May 8th, 2015

APPENDIX G:
INFORMED CONSENT FORM

Day Month Year

Dear parent or carer,

I am a PhD student at the Faculty of Education of the University of Cambridge. My research investigates children's meaning-making when reading with a parent digital picturebooks on an iPad. At this document you can find all information regarding what your participation and that of your child involves, but feel free to contact me at any point if you have any questions or concerns.

The child's participation: The research involves your child's participation in informal conversations with the researcher and in observation sessions. The observations include your child and you reading picturebooks (print or on the iPad), your child making a drawing about the story, and your child retelling the story using finger puppets.

Your participation: Your participation will involve informal interviews and observation sessions in which you will read together with your child. You will also accompany your child as she is asked to make the drawing and retell the story. You will be present at all times during your child's participation in the research.

Structure of the study: There will be one **30 min informal interview** with you at the beginning of the study, **one warm-up session** and **four observation sessions** with you and your child. All sessions will happen at **Rock Road Library**, in Cambridge, unless you request otherwise. Each observation session is expected to last **30 to 45 minutes**, depending on the engagement of the participants. In the warm-up session, you and your child will be invited to visit the library where the research will take place, observe the equipment which will be used in the video-recordings and have time to freely talk to the researcher and read stories on the iPad or on print books. On the observation sessions, there will be three activities:

1. You and your child read together a picturebook (4 books in total: one print and 3 on an iPad).
2. Your child is asked to make a drawing about the story.
3. Your child is given finger puppets and asked to retell the story.

As **follow up**, there might be one or two extra observation sessions where children will be invited to choose one of the stories to re-read.

Recording of data: The interview will be *audio-recorded* and the observations will be *audio and video-recorded*.

Risks: This research *does not involve any risks* to you or your child, but your child will be *exposed to an electronic device (iPad)*, where together two will read the picturebooks. The time duration of the reading event will depend on your and your child's interest; it usually lasts from 10 to 15 minutes. *You may at any point bring the activity to an end* if you think the child's exposure to the device starts exceeding what you believe to be adequate. *If you have any opposition to your child being exposed to this technology for the period of time suggested above, it is recommended that you do not participate in the study.*

Benefits: There will be *no immediate and direct benefit* to you or to your child, but your child will have the opportunity to engage with high quality picturebooks and participate in ludic activities like drawing and puppet theatre that usually provide pleasant experiences to children.

As a sign of gratitude for your participation, at the end of the study you will *receive a picturebook* to continue the joy of reading at home. Also, if it is of your interest, you will be offered *advice* on how to improve your joint-reading experience with your child both with print and digital texts, how to select the best stories and mediate children's digital experience.

Your and your child's participation will help us find out more about how children read, make sense and respond to digital children's literature. As a new form of reading that is rapidly becoming popular, it is urgent to understand these processes in order to inform parents and educators about the potential of these texts and how to best mediate children's digital reading practices. The *results of the research will be shared with you* and it is expected that they can inform parents about different aspects of joint-reading digital picturebooks with children.

Use of the data: The data is *confidential* and will be analysed and used for *academic purposes only*, not being accessible to other people. Dissemination of the research findings at conferences and academic publications may occur and include bits of audio and video-recordings and screen shots, but again only in a purely academic context. As much as possible, you and your child will be anonymised from the images.

Anonymity: In accordance with the guidelines set out by the British Educational Research Association, *all participants will be anonymised* in the collection, analysis and publication of data. Unless you request otherwise, your and your child's *first names will be kept* at the report *as recognition of the value of your participation*, understanding that omitting your family name is enough to keep both of you anonymous.

Your and your child's participation are *voluntary* and you have the right to *withdraw at any time*. *Your child will be consulted* about his/her involvement, and *permission sought from him/her to share his/her reflections*. In order to insure the wellbeing of you child, if she/he shows signs of discomfort with the research situation and/or the audio/video-recording, *the session might need to be interrupted and/or cancelled*.

In order for me to carry out this work and the collection of the material outlined above I need to ask for your written consent on the attached form. I would ask you to return the attached form to me at the time of the first session. If you have any queries about the work please do feel free to contact me at any time:

Aline Frederico
af543@cam.ac.uk
+44 (0) 7858 558168

Your and you child's participation are very important. Thank you very much for your help.

Yours sincerely,



Aline Frederico
PhD Candidate
Faculty of Education
University of Cambridge

Name of child participant: _____

I hereby consent to my child participating in the data collection for this research project. I understand the nature and purpose of the research project, as communicated on the information letter that accompanies this form. I understand the purposes for which the data will be used, and that the references to my child will be anonymised in academic writing resulting from the project.

Specifically, I give my permission for:

□ Audio-recorded conversations.

□ Video-recorded conversations.

□ Video-recorded observations of child and parent reading together.

☐ Video-recorded observations of the child's creation of a visual response to the story (drawings).

☐ Video-recorded observations of the child's retelling of the story using puppets.

(Please tick the boxes to signify that you have given permission).

Signed: _____

Relationship to child: _____

Name of adult participant: _____

I hereby consent to participate in the data collection for this research project. I understand the nature and purpose of the research project, as communicated on the information letter that accompanies this form. I understand the purposes for which the data will be used, and that any references to me will be anonymised in academic writing resulting from the project.

Specifically, I give my permission for:

☐ Audio-recorded conversations.

☐ Video-recorded conversations.

☐ Video-recorded observations of child and parent reading together.

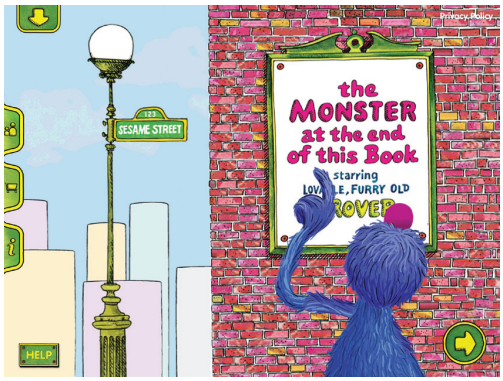
(Please tick the boxes to signify that you have given permission).

Signed: _____

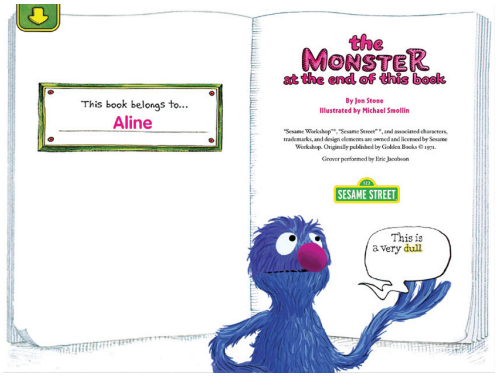
APPENDIX H:
SCREENSHOTS FROM THE SCENES OF *THE MONSTER AT THE END OF THIS BOOK* APP

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Scene 1 | PARATEXT



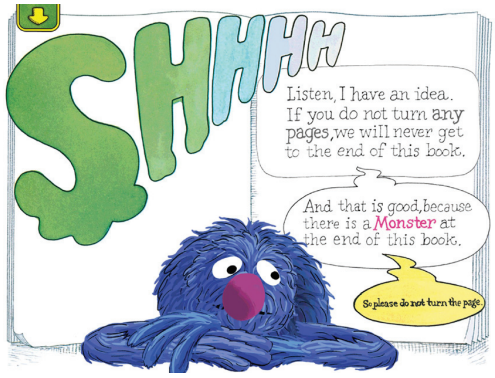
Scene 2 | TITLE PAGE



Scene 3 | WHAT



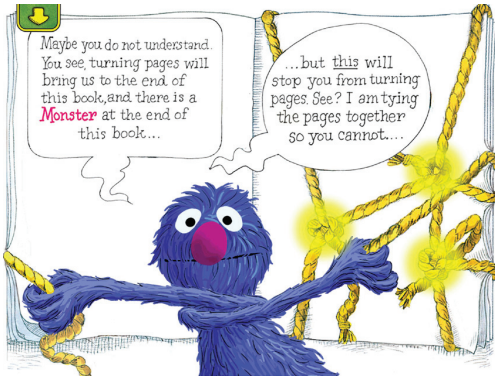
Scene 4 | SHHH



Scene 5 | YOU TURNED THE PAGE



Scene 6 | ROPES



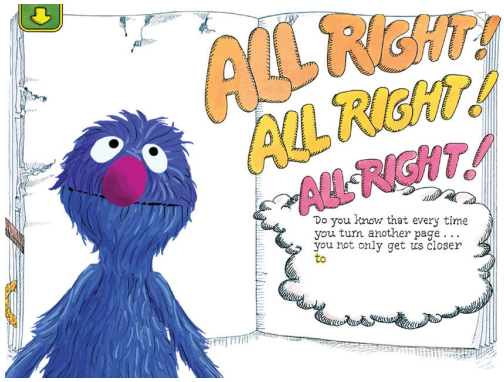
Scene 7 | ANOTHER PAGE



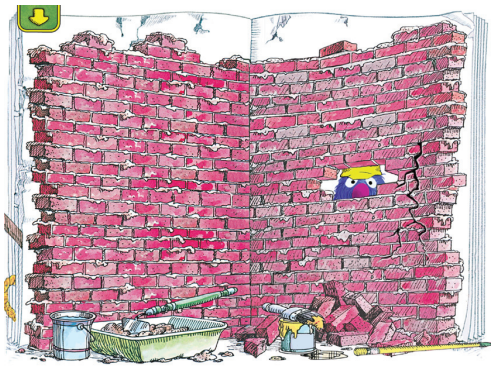
Scene 8 | WOOD



Scene 9 | ALRIGHT!



Scene 10 | BRICKS



Scene 11 | STRONG



Scene 12 | NEXT PAGE



Scene 13 | THE END



APPENDIX I:
SCREENSHOTS FROM THE SCENES OF THE *LITTLE RED RIDING HOOD* APP

Copyright for all the following images: © Nosy Crow, artwork by Ed Bryan.

0 Scene | PARATEXT



1 Scene | INTRO



2 Scene | PACKING



3 Scene | WARNING



4 Scene | FOREST 1



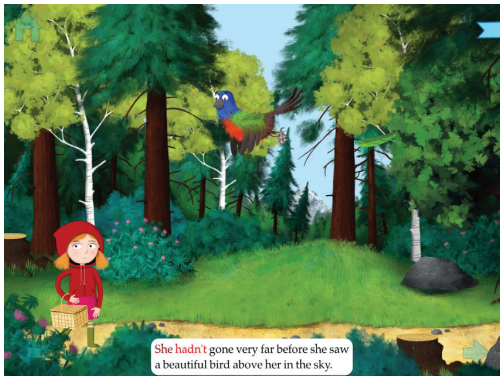
5 Scene | WOLF



6 Scene | FORK 1



Scene 7 | GAME 1A FEATHERS



Scene 7 | GAME 1B FLOWERS



Scene 8 | FOREST 2



Scene 9 | FORK 2A WATER OR ACORN



Scene 9 | FORK 2B DANDELION OR THISTLE



Scene 10 | GAME 2A DANDELION



Scene 10 | GAME 2B THISTLE



Scene 10 | GAME 2C ACORN



Scene 10 | GAME 2D WATER



Scene 11 | FOREST 3



Scene 12 | FORK 3A HONEY OR WHISTLE



Scene 12 | FORK 3B SPIDER OR WHISTLE



Scene 13 | GAME 3A HONEY



Scene 13 | GAME B WHISTLE



Scene 13 | GAME C SPIDER



Scene 14 | FOREST 4



Scene 15 | GRANDMA'S DOOR



Scene 16 | BIG EYES



Scene 17 | CHASING



Scene 18 | ATTACK 1A FEATHERS



Scene 18 | ATTACK 1B FLOWERS



Scene 19 | ATTACK 2A DANDELIONS



Scene 19 | ATTACK 2B THISTLES



Scene 19 | ATTACK 2C ACORNS



Scene 19 | ATTACK 2D WATER



Scene 20 | ATTACK 3A HONEY



Scene 20 | ATTACK 3B WHISTLE



Scene 20 | ATTACK 3C SPIDER



Scene 21 | WOLF'S FATE A BEES



Scene 21 | WOLF'S FATE B POLICE



Scene 21 | WOLF'S FATE C SPIDER



Scene 22 | RELEASE GRANDMA



Scene 23 | FEAST



Scene 24 | THE END

