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Overcoming language barriers: developing a trilingual terminology resource on childhood disorders for Italian, English and Russian

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i. Introduction

This project revolves around the design and implementation of a trilingual terminology resource in Italian, English and Russian, regarding the psychological field and, more specifically, the subdomain of childhood disorders. The decision to develop this resource and to analyse this sub-domain stems from our work experience: between 2021 and 2022 the author of this dissertation worked as a special education teacher in a kindergarten, located in the province of Vicenza, in the Veneto region. In this school numerous children were enrolled who had been diagnosed with childhood disorders and whose parents did not have a proper command of Italian. This situation was made even more complicated by the lack of cultural mediators.

As a result, parent-teacher conferences became almost impossible: teachers could not understand the needs and questions of parents, who, in turn, were not able to understand the school's communications and requests. In this difficult context, communication only took place with the contribution of a few teachers who had some basic knowledge of English.

In addition to this, it is important to note that during meetings between parents and the school staff, special education teachers outline the pupil's difficulties and disorders, along with the possible strategies that can be adopted to improve the situation. Usually, in these communicative exchanges, a rather complex terminology is used and therefore, in cases where mediation between two languages is required, communication may become impossible if the necessary resources are not available. Furthermore, the situation described is not limited to the school where this phenomenon was observed, but it also concerns other education and social settings, as emerged from the discussion with our former colleagues.

Given this situation, in 2022, when we attended the course held by Professor Vezzani regarding translation oriented terminography, we decided to present, as part of the course's final exam, a terminological report, in which we focused on childhood anxiety disorders in Italian and English. In this first project, we produced a concept system and two lexical networks, which then led to the compilation of 15 terminological records, using FAIRterm 1.0. Thus, the project we are presenting represents a continuation of the

work we started during Professor Vezzani's course, and it aims at developing a terminology resource addressing not only language experts, i.e., cultural mediators, translators and interpreters, but also teachers and social workers. The purpose is to provide users with a tool that can facilitate the communication of specialised information to the families of non-Italian pupils.

This thesis is divided into five chapters: in the first one, we will explore the core principles of terminology science and terminology management, starting with an overview of the historical evolution of this discipline, from its genesis to its establishment as an independent field of study. We will analyse the role of Wüster, considered the father of modern terminology, and the importance of his General Theory of Terminology (GTT). Moreover, this first chapter will also investigate the main characteristics of this discipline, from the fundamental distinction between lexicology and terminology to the twofold nature characterising this science. Lastly, we will explore another important aspect of terminology, i.e., terminology management: in particular, we will analyse the various steps involved in the development of a terminology resource, with a special focus on the FAIR terminology paradigm.

Then, the second chapter aims at providing a framework of the project at the core of this dissertation: we will explore the multifaceted and complex situation regarding the provision of linguistic services in Italy, starting from describing the phenomenon of child language brokering (CLB). This term refers to the interpreting and translation activities carried out by foreign children and adolescents who act as mediators for their parents. We will explore the various aspects relating to this phenomenon, from its establishment as an independent field of study, to the analysis of its consequences on both language brokers and their parents. In the second part of this chapter, we will analyse the role of cultural mediators in Italy: our aim is to provide a complete overview of this profession, by analysing its historical and legal background and the role mediators play in promoting the integration process of foreign students. We will also investigate some of the issues relating to this profession, such as the lack of a national official register and of government funding.

The second chapter will end with a reflection upon the topics we discussed so far, thus highlighting the importance of developing a terminology database and introducing the project underlying this dissertation.

The third chapter of this project will present both a theoretical and practical nature, as it will focus on the main steps characterising the preparation process of the terminology resource. This chapter will be divided into two main sections: the first one is dedicated to the analysis of childhood disorders, with a special focus on the three most frequent diagnostic grouping, i.e., neurodevelopmental disorders, anxiety disorders and disruptive, impulse-control and conduct disorders. The second part of the chapter, on the other hand, will describe the preliminary steps we followed while designing the resource, from analysing which professionals would benefit from this project to selecting which data categories to include. Then, we will directly address the future users of the database through the creation of a questionnaire, whose structure and data will be analysed in the last part of the chapter, along with the main difficulties encountered during the administration process.

The fourth chapter of this thesis will focus on the compilation of three trilingual corpora, which represents the basis for the creation of the concept system and the three lexical networks. First, we will provide a theoretical overview of corpus-based terminology and the ATE methodology, with a special focus on the fundamental role corpora play in terminology activities and the process of Automatic Term Extraction (ATE). Then we will introduce Sketch Engine, the corpus analysis tool we relied on used for the creation of the Italian, English and Russian corpora: we will explain how the software works, the steps we followed in the compilation of the corpora and the main difficulties we encountered during said process.

In the second half of the chapter, we will analyse the other preliminary phase, which consists in creating the concept system and the three lexical networks. Once again, we will start with a theoretical introduction of this aspect of terminology work: after analysing the various types of concept systems and describing the lexical networks, we will highlight the importance of adopting a dual approach to terminology. Then, we will move to the practical side of this section and, after a description of Miro, the software we relied on for this part of the project, we will present the concept system and then we will investigate how the concepts and relations identified are designated in the three lexical networks.

In the final chapter of this thesis, we will describe the last phase of the development process: after providing a brief overview of FAIRterm 2.0, from which we draw

inspiration for the creation of our database, we will present the final list of data categories and characteristics we want to include in the resource. In this regard, it is important to point out that some of the categories such as part of speech, definition, gender, number, etc., have been taken from FAIRterm 2.0 and its previous version, while others were added by the author of this project. For the new categories we added, i.e., pronunciation, causes, symptoms, therapy and diagnostic tools, we will also provide a definition to clarify what information the data category will include.

Another step characterising the development process consists in determining at which level the categories should be positioned in the terminological entry: by relying on the ISO standards 12620:2022, we will illustrate which data categories we decided to position at the concept level and which were instead positioned at the language and term levels, along with an explanation of the reasons behind this choice.

Finally, in the last section of this thesis, we will present our resource: we will illustrate its features, and we will also provide some examples of terminological records compiled with the resource.

1. Terminology and its core features

This chapter illustrates the core principles of terminology science and terminology management, starting with an overview of the historical evolution of this discipline: Section 1.1 will outline the main developments of terminology science and the events which contributed to its establishment as an independent field of study, from the 18th century, when scientists began to be interested in the nomenclature of their disciplines, until the 20th century that witnessed the contributions of technicians and engineers and the establishment of both theoretical and applied terminology. Furthermore, we will analyse the role of Wüster, considered the father of modern terminology, the importance of his General Theory of Terminology (GTT) and the alternative approaches suggested over the years by other scholars.

Then, in Section 1.2 we will focus on the definition of terminology and its main characteristics, as thoroughly described by scholars over the decades and in ISO TC 37 standards. Moreover, the distinction between lexicology and terminology will be investigated, as it is of pivotal importance for the understanding of two fundamental notions, i.e. general language and special language.

Section 1.3 will be dedicated to the conceptual and linguistic dimensions of terminology, since one of the main features of this discipline lies in the fact that it deals not only with terms but also with concepts and therefore the two dimensions and their characteristics will be explored.

Finally, the last section of this chapter will focus on terminology management: after investigating the definition of this term, we will analyse the various aspects of terminology management with a special focus on the different models outlined over the years and describing the various phases of the development of a terminology project. Additionally, we will investigate the FAIR terminology paradigm, developed for optimally manage terminological (meta)data within terminology resources.

1.1 Terminology as an independent science: a brief history

The present section aims at outlining from an historical point of view the evolution and development of terminology as an independent field of research. First, it is important

to note that terminology as the practice of naming and classifying concepts has always existed: with reference to the Western world, Rey (1995) points out that the origins of terminology can be dated back to Plato's *Cratylus*, which can be considered as the first basic text in terminology, since in this dialogue the author discusses language, its relation to reality and the correctness of names.

Some fundamental historical events in the development of terminology can be traced back to the 16th and 17th centuries with the introduction of the term “nomenclature” and with the appearance of the need to identify specialised language, especially in the French scientific community: this necessity increased in the 18th and 19th centuries, during which scientists began to structure and organize nomenclature related to their disciplines (Rey, 1995). Telling examples are the works of scholars such as Ferchault de Réaumur, who described concepts and their characteristics through the classification of insects (Depecker, 2015), and the research carried out by botanists, zoologists and chemists, who played a fundamental role in developing naming rules as a way to increase the accuracy of linguistic designations (Candel, 2022).

However, terminology as a science with its principles and methodology began to take shape only in the beginning of the 20th century, which witnessed a fundamental shift as engineers and technicians showed growing interest in this discipline and began to actively participate in the process of developing a standardized language specific to their fields of study. With the growing internationalization of science and the rapid technological developments, experts needed a set of rules for systematically defining the new concepts and identifying their respective terms (Cabr , 1999). As a result, for example, in 1906 the International Electrotechnical Commission (IEC) was founded with the purpose of preparing and publishing international standards and thus promoting homogeneity among all electrical, electronic and related technologies: it was the first international standardization body and nowadays it is the world's leading organization in the field of international standards, bringing together almost 170 countries¹. Therefore, technology has played a fundamental role in the establishment of terminology since it helped to standardize the terms used to refer to new advancements and to create a shared specialized vocabulary among different scientific communities.

¹ <https://iec.ch/history>

Moreover, it is interesting to note that in addition to the technologization of society, another factor contributed to the development of the field of terminology: during the second half of the 20th century the world entered the so-called “post-industrial period”, which was characterised by the industrialization of society and by the valued attached to information. This latter element is fundamental, since the alphabetisation of the population and the importance of written language over oral forms of communication, which were typical of rural communities, contributed to codifying languages and to spread the concept of “standard language” (Cabr , 1999).

The social changes, which started during the 20th century and are still being witnessed nowadays, also played a pivotal role in the development of terminology: first of all, as previously mentioned, the rapid evolution of science and technology led to the appearance of new concepts that needed to be named and this affected the fields of communication and information, thus leading to the establishment of updated vocabularies and language industries. Furthermore, the transfer of knowledge and information became one of the most important features of modern society: the quantity of data transferred increased and, as a result, various types of multidimensional databases were developed and constantly updated with the aim of storing large amounts of data that could be easily accessed and retrieved. The technological advancements, along with the new forms of mass communication, allowed the spread of terminology and its establishment as an independent science and, as this discipline became widely acknowledged, ad hoc organizations were created in order to manage and standardize terminological works and resources. Therefore, as Dubuc (1985 in Cabr , 1999, p.14) stated, “terminology was not the result of the desire to create a different field. It is the enormous development of technology and the growing needs of communication among different communities that lies behind its development as an autonomous discipline”.

The evolution of terminology can be divided into four main phases, according to Auger (1988 in Cabr , 1999): the origins, the structuring of the field, the boom and the expansion. The first period (1930-1960) was mainly characterised by a theoretical approach focused on designing methods for systematically form new terms and in fact, terminology as we understand it today began to be outlined in the 1930s thanks to the work of the Austrian engineer Eugen W ster, who in his doctoral thesis, suggested to

establish a set of principles and methodologies for dealing with terms and for processing terminological data.

Then, between 1960 and 1975, the new advancements in technology and the development of documentation techniques marked the transition to a new phase, which is defined as the “structuring of the field”: this period witnessed the creation of the first databases and the beginning of the initial approaches towards an international coordination and standardization of terminology and its processing principles.

The third stage took place in the second half of the 20th century, between 1975 and 1985, and was characterized by the spread of personal computers, that deeply changed the conditions in which terminology data is processed; furthermore, this period also saw the increase of terminology projects and language policies, pushed by some countries, such as the former URSS and Israel.

In 1985 the fourth stage of this development began, as new changes in terminology occurred: for example, the evolution of computer science played a fundamental role, since it allowed terminologists to use more efficient and user-friendly tools, which could be adapted to users’ needs. Moreover, the market of language industries emerged, resulting in a further acknowledgment of terminology as a discipline, in the consolidation of cooperation among countries and in the foundation of international standardization bodies (Cabr , 1999).

1.1.1 The role of W ster and the GTT

The father of modern terminology is Eugen W ster (1898 – 1977), who was also the founder representative of the Vienna School, one of the most important centres for terminology studies. As stated above, W ster had an engineering background but he was also interested in linguistics and in fact, in 1931 he presented his doctoral thesis, titled *International Standardization of Technical Language*, in which he attempted to identify general principles to organize technical vocabularies, believing that they should be arranged in a methodical and structured manner. In order to achieve this purpose, he suggested employing a concept-oriented and practical method for classifying and explaining subject-specific terms and concepts (Protopopescu, 2014).

Wüster developed a strong interest in information science and terminology, to which he devoted his work: in 1968 he published a project, funded by the Organization for Economic Cooperation and Development (OECD) of the United Nations and titled *The Machine Tool. An interlingual Dictionary of Basic Concepts*. The project consisted in developing a French and English dictionary containing standardized terms that could be used as a reference for future technical dictionaries. In fact, Wüster was an ardent supporter of clear and unambiguous professional communication, so much so that one of the main objectives pursued during his work was the standardization of terminology: he wanted to promote denotative communication without any emotional/connotative component in order to eliminate ambiguity in technical languages and improve communication among experts (Protopopescu, 2014). In this regard it comes as no surprise that he strongly believed in Esperanto, a language created in order to avoid the ambiguities arising from the linguistic nuances of individual languages (Humbley, 2022).

He also wanted to establish terminology as an independent science and to convince experts of the benefits that a standardized vocabulary would bring to the communication among various scientific communities (Protopopescu, 2014).

Therefore, he launched the first theory of terminology, that came to be known to as the General Theory of Terminology (GTT), in which he explained the three fundamental aspects of his approach: first of all, concepts are the starting point of terminological work, whereas denominations have to be dealt with by linguists; secondly, terminologists have to prioritize vocabulary over grammar and lastly, the synchronic dimension is more important than the diachronic one (Candel, 2022). Therefore, Wüster focused more on the conceptual dimension of terminology and preferred the onomasiological approach over the semasiological one: one of his main objectives was to identify general principles for naming concepts and for classifying them based on their relationship of superordination, subordination or coordination. According to him, specialized dictionaries necessarily start with generic concepts and then proceed to introduce more specific ones. In this regard he identified three types of conceptual relations: logical subordination (apple/fruit), logical coordination (apple/pear) and diagonal relation (mammal/snail) (Wüster, 1979 in Candel 2022).

These principles must be applicable to all specialised languages, and this is the reason why his theory is titled General Theory of Terminology, because he wanted to

provide a set of general rules, not limited to a particular specialized domain. Therefore, Wüster's approach to terminology was prescriptive, since he aimed at standardizing language and giving experts indications on what terminology must be used in certain contexts.

Furthermore, one of the most important principles promoted by Wüster is the principle of biunivocity, which claims that the relationship between a concept and its denomination must be unambiguous, in the sense that a term must designate only one concept and vice versa, a concept must be designated only by that specific term (Candel, 2004). In addition, Wüster argued that it is possible to list all the characteristics that make up a concept. This is referred to as the principle of saturability of concepts, i.e. the property whereby the set of collected characteristics makes it possible to exhaustively represent a concept (Freixa and Fernández-Silva, 2017).

When analysing Wüster's work, it is also important to pay attention to the historical context: he started to investigate the principles of terminology in the first of the 20th century, which was characterized by the spread of logical positivism, a philosophical movement according to which experience is the mother of science, in the sense that scientific thinking is only possible on the basis of concrete experience (Candel, 2022). In this context Wüster founded the Vienna School of Terminology and later was charged with promoting the general principles of terminology: he recognised the need to create a terminology committee that could work with the ISO (International Standard Organization) and as a result, he founded what is now known as the Technical Committee 37, which deals specifically with language and terminology. Lastly, he developed the documentation centre Infoterm in 1971 and the Austrian TermNet network in 1979, which is still today one of the most important terminology centres (Humbley, 2022).

Wüster's work is of pivotal importance, since his theory contributed to outlining the principles and objectives of terminology and to establish it as a science. His most famous work was published posthumously in 1979 by his successors with the title *Introduction to the General Theory of Terminology and Terminological Lexicography* and it generated a wave of negative reactions by various academics.

In fact, it is important to highlight that Wüster's approach was later criticized, since it appeared to be too restrictive and theoretical: his theory was mainly based on his experience as an engineer, on his contributions to national and international

standardization projects and on the compilation of his plurilingual dictionary. Therefore, he only experienced terminology applied to a limited section of technical languages, in which there were unified concepts and standardized terms (Protopopescu, 2014). This is the reason behind his theoretical approach to the discipline: as Cabré states (2003) Wüster wanted to ensure unambiguous plurilingual communication and therefore, he focused more on what terminology should be rather than on the variety that actually characterises this discipline.

In this regard, it is interesting to quote Protopopescu (2014), who summarizes the main aspect characterising the early stages of modern terminology:

Traditional terminology, rather than involving the study of language development and language evolution, mainly emphasized the concept system, which was, for the followers of traditional terminology, the basis of special language. Traditional terminology had a number of dogmatic principles, confused the principles with facts and converted wishes into reality. It failed to create a theoretical framework that would support its own principles and methods. In fact, research was impeded by the interests of standardization (Protopopescu, 2014, p. 5)

1.1.2 Alternative approaches to terminology

As Faber and L'Homme (2022) noted, the literature on terminology witnessed an important separation between the texts written before and after the 1990: as previously mentioned, Wüster's theory was criticised by several terminologists, who, starting from the end of the 20th century, introduced new descriptive approaches to the study of terms, as compared to the prescriptive theories of the previous decades:

[...] This watershed moment was at the beginning of the 1990s. The period before 1990 is strongly associated with the General Theory of Terminology (GTT) whereas the period after 1990 witnessed a host of new approaches to Terminology. Some of these approaches evolved around the GTT and adapted to changing methods and tools, whereas other approaches differed considerably from the GTT, which certain scholars had begun to refer to as traditional terminology². (Faber and L'Homme 2022, p. 1-2)

The several works published between the 1990s and the mid-2000s set a new foundation of terminology.

The first discipline that rejected the principles of the GTT was Socioterminology: this alternative approach came from France, began to spread in the 1980s and then received a theoretical background in 1993, when the scholar Gaudin published his

doctoral thesis, in which he openly criticized Wüster's principles. Socioterminology aimed at applying Sociolinguistics' theories to terminology and preferred the semasiological approach over the onomasiological one, meaning that the starting point in the analysis is the term: scholars belonging to this current wanted to observe term variations and language practices used in speech communities (Delavigne and Gaudin, 2022). Furthermore, socioterminologists challenged the principle of biunivocity, claiming that the one-to-one correspondence between terms and concepts is rarely attained and not desirable (Humbley 2022). Furthermore, Gaudin and Delavigne, the two main representative of this approach, criticized the fact that Wüster only focused on communication between experts, while they argued that terminology could play a pivotal role in popularising specialised knowledge, and they also rejected the distinction between terms and words, stating that "terms are simply words used in a particular way" (Alexandru and Gaudin, 2006 in Humbley, 2022, p. 25).

Another alternative approach was the Communicative Theory of Terminology, developed in 2000 by Maria Teresa Cabré, who argued in favour of revising Wüster's GTT. She claimed that terminology is characterized by three different dimensions, which needed to be investigated simultaneously: cognitive, i.e. the conceptual dimension, linguistic and communicative, which refers to how terms are used in a communicative exchange. Furthermore, she based her theory on two fundamental assumptions: firstly, terminology is "a set of needs, a set of practices to resolve these needs and a unified field of knowledge" (Cabré, 2003 in Protopopescu, 2014, p. 7) and secondly, it operates with "terminological units", which are multi-dimensional and therefore, are simultaneously units of knowledge, language and communication. In 2003 she introduced a model, titled *The Theory of Doors*, according to which terminological units are always accessible, regardless of the choice of the door of entry, i.e. whether one starts from the term, concept or communicative situation (Protopopescu, 2014).

Around the same period, another branch of terminology was developed in contrast with Wüster's principles: in 2000 Marcel Diki-Kidiri proposed a new approach called Cultural Terminology, which focuses on how African languages transfer and integrate specialised knowledge in their culture. By analysing the appropriation strategies used for new concepts, he claimed that concepts are not only mental representations, but they are also a cultural perception, a *percept*: this means that terms are not attributed arbitrarily,

as Saussure claimed, but culture plays an important role in the denomination of new concepts. Diki-Kidiri suggested that when coining new terms, our mind takes a concept we are familiar with and then adds the new element: for example, in *Bambara* the bicycle is called *nàgàsó*, which translates as “iron horse”, whereas in *Sango* the term for bicycle is *gbâzâbângâ*, i.e. ‘rubber wheels’ (Diki-Kidiri, 2022). Therefore, each language coins a different denomination for the same concept, according to way in which that concept is perceived.

It is also worth mentioning Rita Temmerman’s Sociocognitive Terminology, which was developed in the early 21st century: according to the scholar, the object of study in terminology is the so-called Unit of Understanding (UoU), which “pertains to the understanding of a referent in a situated reality and how this understanding is expressed in language (terminology in the discourse of a subject-field)” (Temmerman, 2022: 331). Therefore, Temmerman focuses on how individuals understand and interpret an object and its relative concept. Furthermore, she identifies four main aspects characterising her theory:

- prototypicality in understanding, i.e. some objects are more prototypical than others, meaning that they seem to better represent their category. For example, when thinking about the category of birds, the first object that comes to mind is a robin or a pigeon, not a penguin, even though all these objects belong to the same class. This happens because a robin or a pigeon better represent the characteristics that we associate with the concept of bird.
- our worldview depends on the society in which we live;
- a diachronic perspective should be preferred over the synchronic one;
- metaphors are deeply connected to our understanding and interpretation of the world (Temmerman, 2022).

To conclude this Section, it is important to mention two other theories: Frame-based terminology and Textual Terminology. The first one was developed in 2012 by Pamela Faber, who shares the theoretical premises of Sociocognitive and Communicative Terminology: she investigated not only on the relationship between concepts and their designations, but she also wanted to integrate them into frames or knowledge structures, so that terms in different languages could be linked to the same concept (Faber, 2022).

On the other hand, in Textual Terminology the main focus is on the text: this theory relies on Corpus Linguistics and on corpora to analyse specialized texts and explore linguistic variation (Humbley, 2022).

1.2 Definitions and functions of terminology

The present Section will provide an overview of the definitions and functions of terminology. First, it is important to outline what is terminology and as Cabré (1999) suggests, the word refers to at least three different concepts: the principles and conceptual bases that govern the study of terms, the guidelines used in terminographic work and the set of terms of a particular subject. Therefore, the term can be used to designate the whole field of research, the methodology used when working with terminology resources or the set of terms belonging to a specific domain.

For this reason, it is difficult to provide a single definition of terminology, nonetheless Sager in 1990 defined this discipline as

the study of and the field of activity concerned with the collection, description, processing and presentation of terms, i.e. lexical items belonging to specialised areas of usage of one or more languages. (p. 2)

This definition clarifies the various activities carried out in the field, since terminology deals with the process of naming the concepts and with the realization of said concepts in linguistic forms, including the standardization of terms and the creation of glossaries, vocabularies and termbases.

Furthermore, Sager's definition allows us to introduce two fundamental aspects of this discipline: first, terminology considers linguistic units belonging to special subject fields or domains. This notion does not have a clear-cut definition and often corresponds to a scientific discipline (e.g. biology, chemistry) or a technology (e.g. computer science, auto mechanics), even though economic sectors and sets of objects have also been defined as subject fields, whose classification is fundamental, as it sets the boundaries within which terminology work is carried out: only the terms belonging to the analysed domain are considered relevant (L'Homme, 2020).

The second pivotal aspect introduced by Sager is the fact that terminology deals with language used for the communication of specialized knowledge: this type of language is called *language for specific purposes* (LSP) or *special language*, and, according to the ISO 1087:2019 (p. 2) it is a “natural language used in interactions among domain experts, characterized by the use of specific linguistic expressions and communication methods”. The concept of special languages and their relationship with the general language will be further explained in Section 1.2.1.

Another interesting perspective is adopted by Goffin (1985), who highlights the interdisciplinary nature of terminology, since it takes elements from various disciplines and branches of linguistics, such as morphology, lexicology, semantics and applied linguistics, and as a result, there are several scientific approaches to its study and practice. However, what distinguishes terminology from other branches of linguistics is its firm grounding in applications: this discipline is deeply rooted in applications, such as standardisation, language planning, specialized dictionary compilation, specialized translation, document indexing and/or classification. Therefore, one of the main objectives of terminology’s theoretical and methodological principles is to “provide answers to the questions raised by these applications” (L’Homme, 2020, p. 6). In this regard it is interesting to quote Cabré (1999), who highlights the variety of different issues and purposes addressed by terminology and explains that it aims at

processing and presenting the terms of special subject fields in one or more languages, [...] addresses social needs and attempts to optimize communication among specialists and professionals by providing assistance either directly or to translators or to committees concerned with the standardization of a language (p.10).

Having outlined the definitions and main characteristics of this discipline, it is important to note that terminology has two main user groups: users for direct or indirect communication and terminologists. The first category includes specialists of the subject field, i.e. direct users, who view terminology as a fundamental tool for communication and for naming new concepts. This need is the reason behind experts’ interest in standardization processes, since their aim is to promote clear and unambiguous communication between specialists. To this first category also belong the so-called “terminology intermediaries”, namely technical writers and language professionals, such

as translators and interpreters, who develop glossaries and specialized dictionaries in order to facilitate communication for direct users.

The second category includes experts who deal with the compilation, processing and creation of terms: these professionals are usually terminologists, terminographers, language planners and information scientists, who must have a deep knowledge of the language, documentation and information related to a specific subject field (Cabr , 1999).

1.2.1 Lexicology vs terminology: general and special languages

In Section 1.2 we introduced the concept of *special language* or *language for specific purposes* (LSP), stating that terminology deals with language used to convey specialized knowledge and characterised by specific terms and communication methods. Each domain has its own special language, therefore various types of LSPs exist:

since terminology is concerned with the language used in special subject fields, this presupposes a division of language into as many special sublanguages as there are separate subject fields or areas of knowledge and activity in a given linguistic community (Sager, 1990 in Cabr , 1999, p. 70).

However, all LSPs share some aspects, such as the restricted number of users, the informative function and the usage of precise and informative language, which prefers nouns over verbs and adjectives.

Another fundamental notion, related to LSP, is *general language*, which is defined by ISO 1087:2019 (p. 2) as “natural language characterized by the use of linguistic means of expression independent of any specific domain.” It is important to point out that general and special languages are not completely separate, since they share various features and, as a matter of fact, special languages are considered variants of the general language: they have a specific set of terms and characteristics which vary depending on the communicative situation, interlocutors, subject field and speakers’ intentions. In this regard, Rey (1976 in Cabr , 1999, p. 61) uses an example from French, to clearly explain the difference between the two: “Strictly speaking, the language of law does not exist by itself but rather only as a part of the French language, and it consists of the vocabulary of law and, undoubtedly, of some particular syntactic constructions.” Therefore, special

languages derive from general language and are mainly used in the communicative exchanges among specialists in the same fields.

The study of special and general languages is dealt with by two different disciplines: terminology focuses on LSPs and their relative terms, as mentioned in Section 1.2, whereas general languages are investigated and analysed by lexicology, which describes the lexicon of a language, i.e. the words and rules of a linguistic system, and the lexical competence of speakers.

Therefore, these two disciplines differ in terms of:

- Domain: lexicology is concerned with general language and thus, has a larger domain compared to terminology, which, on the other hand, analyses the set of terms of a specific domain
- Basic unit: lexicology deals with words, whereas terminology focuses on terms; the difference between these units will be later analysed.
- Objectives: lexicology aims at identifying lexical units of general language and studying the lexical competence of users, whereas terminology has the purpose of naming the concepts of a specific subject field.
- Methodology: lexicology work from theoretical hypotheses, while terminology identifies terms in concept systems (Cabr , 1999)

Related to terminology and lexicology are two other disciplines, namely terminography and lexicography. The former is the applied branch of terminology and therefore its objective is to guarantee clear and unambiguous communication between specialists by creating specialized dictionaries in which the terms of a specific domain are collected and established as standardized reference forms. Lexicography, on the other hand, is concerned with the development of general language dictionaries, which collect the words of a given language in alphabetical order and provide information about them, such as definition, grammatical category and semantic use, with the purpose of increasing the users' competence or solving linguistic gaps. In addition, general language dictionaries have a descriptive purpose and are developed for laypeople, whereas specialized dictionaries have a prescriptive purpose and are intended for terminologists and experts of a given subject field (Cabr , 1999).

Thus, lexicology and terminology have two different objects of study: respectively words and terms, which are often used interchangeably. However, they differ significantly, as explained by L'Homme (2020, p. 5), who points out that terminological units or terms are “linguistic expressions that designate items of knowledge within special subject fields.” Therefore, terms, as opposed to words, possess characteristics and meanings that are deeply related to the domain they belong to and can be correctly used only if the speaker has a sufficient knowledge of the given subject field. Another important distinction is the fact that words consist of content-bearing items, for example tree and car, and functional elements, such as prepositions and conjunctions; whereas terms include only content-bearing items and in most cases are nouns, even though adjectives, adverbs and verbs can sometimes be classified as terms if used in a specific domain (Kageura, 2015). Furthermore, terms can be simple, if they are formed only by one lexical item (e.g. synthesis) or complex, i.e. constituted by multiple words (e.g. optical character recognition); short forms, abbreviations and acronyms are also considered terminological units.

Finally, words in general language can be polysemous and synonymous, whereas terminology aspires to monoreferentiality, meaning that a term should have one specific referent, and each concept should be expressed by one specific term. Therefore, terms tend to have a single and precise interpretation, sometimes achieved through the standardization process, since specialists want to avoid confusion and guarantee unambiguous communication, and therefore they avoid using synonyms or paraphrasing a term (Scarpa, 2020).

1.3 The dual dimension of terminology

One of the most interesting aspects of terminology is the fact that it is characterised by two dimensions, namely the conceptual and linguistic dimension: according to Santos and Costa (2015) these two perspectives are complementary and need to be used together, in order for this discipline to be considered as autonomous. Therefore, terminologists must deal with both dimensions, starting with the conceptual one and thus adopting the onomasiological approach, which consists in identifying the concepts of a given domain and building concept systems representing the relationships between such concepts. Then

terminologist must adopt the semasiological approach, thus focusing on the linguistic dimension: this involves analysing terms and creating lexical networks that “will contain linguistic manifestations of knowledge that might be close to the conceptualizations mirrored in the concept map” (Santos and Costa 2015, p. 170).

1.3.1 The conceptual dimension: concepts, characteristics and concept systems

Before delving into the description of concepts and their relations, it is important to point out that in terminology an *object* is anything that can be perceived or conceived. Objects are made up of *properties* and can be material (e.g. engine), immaterial (e.g. project planning) or imagined (e.g. unicorn). Moreover, objects undergo a process called conceptualization, which consists in identifying and analysing properties, grouping the given objects into categories and then abstracting the relevant proprieties into characteristics, which are combined to form a *concept* (ISO 704:2022, p. 4).

In this regard, the ISO 1087:2019 (p. 3), one of the most important references dealing with terminology work and science, defines the concept as a “unit of knowledge created by a unique combination of *characteristics*”. For example, “for the *concept* ‘computer mouse’, ‘computer connection’ is a type of characteristic. It includes *characteristics* such as ‘having a cable’ and ‘using wireless technology’” (ISO 1087:2019, p. 3).

The document then proceeds to explain that concepts are characterised by an extralinguistic nature, meaning that they exist independently from natural languages. However they are influenced by social or cultural elements, and this is the reason behind different categorizations. Two different categories of concepts exist: individual concepts, which are represented by proper names and refer to unique objects, such as ‘Saturn’, or ‘Moon’, and general concepts, that correspond to a group of potentially infinite objects sharing the same properties, for example ‘planet’, ‘tower’ and ‘dog’. The ISO 1087:2019 also argues that for general concepts it is important to be able to perceive or conceive more than one corresponding object.

Furthermore, it must be noted that there are two main types of characteristics: essential, which are indispensable to understand a concept, and non-essential, which are not fundamental for understanding the concept. To better understand this distinction, the ISO 1087:2019 provides the following example:

For defining the *concept* ‘traffic light’, the colour ‘red’, ‘green’ or ‘amber’ is an *essential characteristic*, while for defining the *concept* ‘computer mouse’, the colour (e.g. ‘ivory’, ‘blue’ or ‘red’) is a non-essential characteristic. (p. 3)

Additionally, among the essential characteristics, we can identify the delimiting characteristics, which serve the purpose of distinguishing a concept from other related ones. For example, ‘support for the back’ is considered a delimiting characteristic, since it differentiates the concepts ‘stool’ and ‘chair’. It is also important to note that a characteristic can be essential or non-essential, depending on the analysed concept: for example, ‘red’ is essential when describing the concept ‘wine’, since it allows us to distinguish red wine from white wine, but it is a non-essential characteristic if we analyse the concept ‘table’.

As the ISO 704:2022 standard states, concepts are not isolated, but they are always in relation to each other and in terminology work they are organized into concept systems, representing the different types of relations existing between concepts of a given domain. In this regard, it is important to point out the multidimensionality of concepts: in a concept system, concepts can be classified in different ways, depending on the perspective terminologists choose to adopt. For example, when creating a concept system regarding the subject “wine”, terminologists can decide to focus on the dimension of colour, thus dividing the superordinate concept ‘wine’ into two subordinate concepts: ‘white wine’ and ‘red wine’. However, another perspective can be adopted, since terminologists may decide to categorize the concept ‘wine’ according to its country of origin. In this case the concept system will be organised differently, as the subordinate concepts of ‘wine’ will be ‘Italian wine’ and ‘French wine’ (Bowker, 2022).

Concept relations can be of two different types: hierarchical and associative. The first category includes generic relations, also known as genus-species relations, in which the intension of the subordinate concept (i.e. the set of its characteristics) includes the intension of the superordinate concept with the addition of at least one delimiting characteristic (ISO 704:2022). For example, the concept ‘daisy’ contains all the characteristics of the concept ‘flower’ with at least one additional delimiting characteristic that allows us to distinguish a daisy from other flowers, such as tulips. In generic relations it is important to bear in mind that the subordinate concept in a concept system inherits all the characteristics of the superordinate one: this is referred to as the principle of inheritance (ISO 704:2022).

In the category of hierarchical relations fall the partitive relations, which connect comprehensive concepts, viewed as the whole consisting of various parts, with partitive ones, i.e. the part of the whole. For example, ‘wheel’ is a partitive concept of the comprehensive concept ‘bicycle’.

As previously mentioned, the other main category of conceptual relations is the associative or pragmatic relation, defined by the ISO 1087:2019 (p. 6) as a “non-hierarchical relation between concepts”. Associative relations can be of various kinds:

- Contiguity relations are based on proximity between objects.
- Sequential relations include temporal (e.g. ‘production’ and ‘consumption’), spatial (e.g. ‘floor’ and ‘ceiling’), causal-effect (e.g. ‘humidity’ and ‘corrosion’), contiguity relations;
- Activity relations are based on an action, for example ‘teach’ and ‘teacher’.
- Origination relations deal with the origin of an object.
- Instrumental relations concern the tool used, for example ‘painter’ and ‘brush’.
- Interactional relations are based on a connection between objects.
- Transmission relations focus on sender-receiver connections.
- Opposite relations connect objects that can be viewed as opposite to one another, for example ‘conformity’ and ‘non-conformity’ (ISO 704:2022).

When analysing concepts, an important notion is the definition, which is the “representation of a concept by an expression that describes it and differentiates it from related concepts” (ISO 1087:2019, p. 6). A definition includes all the essential characteristics of a concept and can be of two different types: intensional and extensional. The first one conveys the intension of a concept, thus the set of its characteristics, starting with the superordinate concept and then listing the delimiting characteristics. For example, the intensional definition of optical mouse would be: “computer mouse in which movements are detected by light sensors” (ISO 1087:2019, p. 7). Intensional definitions must be concise and consider the writing conventions of the natural language.

Extensional definitions, on the other hand, enumerate all the subordinate concepts of a superordinate concept, for example “noble gas: helium, neon, argon, krypton, xenon or radon” (ISO 1087:2019, p. 7). Usually, terminologists prefer to use intensional definitions, whereas extensional ones are only used when there is a finite number of

subordinate concepts, which are well-known or can be classified by intensional definitions (ISO 704:2022).

1.3.2 The linguistic dimension: terms, designations and lexical networks

As previously mentioned, terminology is a twofold science, meaning that it is characterised by a conceptual and a linguistic dimension. While the former deals with concepts and their relations, the linguistic dimension focuses on designations and lexical networks.

According to the ISO 1987:2019 a designation is a representation of a concept: it can be linguistic or non-linguistic and it can include characters, but also punctuation marks, such as hyphens and parentheses. Furthermore, designations are divided into terms, proper names and symbols:

- Terms are designations representing a general concept by linguistic means. For example, “laser printer”, “chemical compound” and “pacemaker”.
- Proper names designate individual concepts, e.g. “International Organization for Standardization” and can refer to various types of objects, such as institutions, countries, persons, works of art, public places etc (ISO 704:2022).
- Symbols represent concepts by non-linguistic means and must be easy to recognize, monosemic and economic to reproduce. Furthermore, there should be a resemblance between the symbol and the concept it represents, to avoid ambiguity and to make the concept directly recognizable (ISO 704:2022).

Furthermore, it is important to point out that when forming new terms and/or proper names, one should follow the lexical, morphosyntactic and phonological structures of individual natural languages and therefore only national and regional standards should deal with specific principles of formation. Nonetheless there are some general principles which all specialists and terminologists should follow: first, as previously mentioned, terms are monoreferential, which means that they should designate only one concept and, conversely, a concept should be represented only by one specific term. As a result, terms tend to be monosemic, however, even within the same domain there can be cases of synonymy or quasi-synonymy: two terms are synonyms if they can be used

interchangeably in all situations, such as “term bank” and “terminological data bank”, whereas if terms are interchangeable only in some contexts, they are referred to as quasi-synonyms, e.g. “dashboard” and “instrument panel” (ISO 704:2022).

Furthermore, the terms used can differ according to the communicative situation and the speaker’s involved: in the domain of psychology the concept ‘social anxiety disorder’ can be designated by two terms, i.e. “social anxiety disorder” and “social anxiety”, which is the common name of the disorder, used by laypeople or in informal contexts.

Despite the positive attitude shown by some scholars, such as Temmerman, towards synonymy, nowadays there is an increasing need to communicate specialised knowledge in an efficient and unambiguous manner, which leads to a growing demand for a standardisation of the terminology of each discipline, to promote clear communication between different languages. Therefore, when there are more terms designating the same concept, a standardisation procedure is employed with the purpose of “eliminating semantic ambiguity by establishing a clear and one-to-one correspondence between term and concept” (Scarpa, 2020, p. 59).

Apart from monoreferentiality, the ISO 704:2022 explains that there are other principles which terms should adhere to, and which should be considered during the formation and standardisation process:

- Transparency: a term is transparent if the concept can be deduced from their linguistic elements and usually a delimiting characteristic is found in the term itself. For example, “the *term* “torque wrench” [...] is transparent. However, the *term* “monkey wrench” (based on the personal name of its supposed inventor, “Moncky”) is opaque” (ISO 704:2022, p. 54).
- Consistency: both the existing and the new terms must be consistent with the relevant concept system. For example, terms designating synthetic fabrics, such as “nylon”, “orlon”, “dacron”, “rayon” are consistent, because they all end with the suffix -on.
- Appropriateness: terms need to respect the established linguistic patterns of the natural language and confusing formations should be avoided. For example, the term “install wizard” is confusing because it can be interpreted as a command, therefore the term “installation wizard” should be preferred because it is clearer and more accurate.

- Conciseness: terms need to be as concise as possible to respect the principle of linguistic economy.
- Derivability and compoundability: terms that allow the formation of derivatives and compounds should be favoured over other terminological units. For example, the *term* “herb” is preferred over “medicinal plant”, because it produces derivatives such as “herbaceous”, “herbal”, “herbalist” and “herby”; whereas from “medicinal plant” no other terms are derived.
- Linguistic correctness: when coining new terms, it is fundamental to respect the morphological, morphosyntactic and phonological norms of the given natural language.
- Preference for a given natural language: although borrowing is an accepted method for coining new terms, designations in the given natural language should be used instead of direct loans.
- Transliteration and transcription: when rendering a term from one alphabet into another one, it is necessary to use authoritative systems, such as the International Standards (ISO 704:2022).

As stated before, terminology includes both an onomasiological and a semasiological approach, which consists in producing lexical networks representing the relationships between terms to investigate how concepts are designated in the given natural language. In this regard, it is important to point out that in the lexical networks the superordinate and subordinate concepts identified in the concept system translate respectively into hypernyms and hyponyms, whereas comprehensive and partitive concepts are designated by meronyms and holonyms.

1.4 Terminology management

As mentioned in Section 1.2, terminology presents an applied branch of study, which is referred to as terminography and is defined as “terminology work aimed at creating and maintaining terminology resources” (ISO 1087:2019, p. 13). The term “terminology work”, also referred to as “terminology management”, involves all the activities concerned with the collection, description, processing and presentation of concepts and

their designation, often carried out with the aim of developing terminology resources. Furthermore, terminology work can involve term formation, concept harmonization, term harmonization and terminology planning, i.e. developing, improving and disseminating the terminology of a domain or subject field (ISO 1087:2019). In this regard, it is interesting to quote Warburton (2014, p. 3), who specifies that terminology management deals with “the set of [terminology work] activities as an overall program and strategy”: this definition suggests that managing terminology involves not only carrying out the activities above mentioned, but also organizing said activities. In this sense terminology management has an administrative quality, as it includes all the practices related to the overall strategic organization of terminology work.

Therefore, terminography deals with the gather, systematisation and presentation of terms belonging to a specific domain of knowledge or human activity and it must not be confused with translation: when dealing with specialized texts, translators rely on specific terminology, however, they do not necessarily develop the terminology nor use all the terms belonging to that given domain or subject field. Moreover, it is important to specify that terminographers do not simply translate a term from one language into another one by choosing the best equivalent, but their work involves “gathering the designations that users of a language used to refer to a concept and ultimately, if necessary, proposing alternatives in those cases where speakers’ designations are unsatisfactory” (Cabr , 1999, p. 115). However, it must be noted that although translation and terminography deal with different types of tasks, the distinction between these two activities is not always clear-cut.

Moreover, in terminography texts play a pivotal role, since the terms found in terminology resources and specialized dictionaries and glossaries are collected from real texts produced by specialists and in this regard the cooperation between terminographers and experts of the given domain is fundamental to develop a reliable resource. Furthermore, terminography work is guided by technical, formal, and procedural recommendations published by international committees, such as the Technical Committee 37 (TC37) of the ISO. These guidelines are developed with the purpose of harmonizing terminography work and facilitating the exchange of knowledge between different languages. They also provide indications on which methods should be applied when carrying out various terminology work activities (e.g. assigning linguistic or non-

linguistic designations to concepts, creating and maintaining terminology resources, creating concept systems and lexical network) (ISO 704:2022).

1.4.1. Developing a terminology resource: an overview of the various models

When it comes to developing terminology projects and resources, there are various models and perspectives. For example, Dobrina (2015) identifies seven types of terminology projects, which all lead to the development of a specific resource designed to meet the needs and objectives of the given target group:

1. Creating a monolingual resource
2. Creating a multilingual domain resource
3. Localising a monolingual mono-domain resource
4. Adding new languages to an existing translation-oriented terminology resource
5. Enhancing the terminological quality of a resource
6. Merging existing resources into a multidomain and/or multilingual resource
7. Producing terminology on demand (maintaining a terminological query service) (ibid., pp. 183-185)

Furthermore, Dobrina points out that these projects contain three main phases: the first one, i.e. the preparatory phase, consists in collecting the necessary material, which is then used in the second phase, i.e. the main phase, for creating the terminological concept analysis. The last phase is called “presentation phase” and involves presenting and organizing the produced data in the form of a terminology resource.

Another interesting perspective is offered by Ciocchetti et al., who in 2013 interviewed 16 different terminology centres and units with the aim of identifying the core phases of the terminology elaboration process. They found that these phases vary between different centres and units, but nonetheless they were able to identify nine core steps, named as follows:

1. Needs analysis
2. Defining priorities
3. Documentation
4. Term extraction
5. Term selection
6. Elaborating terminological entries
7. Revision and quality assurance
8. Dissemination
9. Maintenance (Ciocchetti, Ralli, Lušický, and Wissik, 2013, pp. 8–9)

Moreover Ciocchetti et al. clarifies that the last phase, involving the maintenance of the resource, is a customized activity, which “can be event-driven (like a spelling reform or legal reforms) or can be motivated by the need to ensure and maintain the quality of the terminological resource” (ibid., 2013, pp. 10-11).

Another interesting model is the one provided by Cabré (1999), which has been followed during the development of this project. First, she identifies the various types of terminological search, which is categorised according to two criteria. The first is the number of languages involved, which determines whether a search is monolingual or multilingual, whereas the second criterion establishes whether a search is systematic or *ad hoc*. In the first case, i.e. systematic searches, terminographers deal with the entire subject field or with one of its subparts: they collect terms and concepts, develop concept systems, create lexical networks reflecting the related conceptualizations and create term entries. This type of search requires time to study the domain and to select and organize terms and concepts in a structured manner. However, searches can also be limited to a single term or a small set of terms belonging to different fields or to a subsection of a domain and in this case this work is referred to as *ad hoc* searches.

Therefore, there are four different types of terminological searches: systematic monolingual searches, systematic multilingual searches, ad hoc monolingual searches and ad hoc multilingual searches.

When developing a terminology resource, a systematic search is employed, which is divided into three main stages.

First of all, one must define the domain to address, the purpose of their work, the amount of data to be collected and the final users: this is fundamental because when developing a terminology resource the set of terms belonging to the domain remain the same, but the corpus chosen as the source of extraction and the way in which terms are presented will vary according to the situation and end users. For example, if the final users are non-experts, they will require a user-friendly resource, whereas if the target is a specialized public, basic information can be left out. Additionally, we must identify the purpose of the end product, since it can be descriptive, thus limited to gathering terms, or prescriptive with the aim of providing indications on which terms should be used.

The second stage includes preparatory tasks, such as collecting the necessary information about the topic, the available documentation and the professional context:

when carrying out these tasks it is important to be able to rely on subject field experts, who can give advice and solve issues regarding the documentation or certain complex notions. Then, it is important to choose the consultants for the project, keeping in mind that terminologists and subject field experts should cooperate during the development of the resource. Another important step of the preparation phase includes the creation of the corpus, from which terms will be extracted and selected. To obtain reliable results, the corpus must meet the following criteria:

- it must be pertinent, i.e., representative, of the field being analyzed, and, if possible, written by a highly regarded author
- it must be complete, and as such include all aspects of the terminological task to be performed
- it must be up-to-date, so that the list of terms obtained will be useful
- it must be original, i.e., written in the language in which the terminological work is being carried out. (Cabr , 1999, p. 134)

After having gathered all the necessary information, the next step is to create a concept system, which must cover the entire field being researched and it must include only the relevant concepts. Usually, concept systems are represented in tree diagrams, and they should be as detailed and rigorous as possible, so that the work on terms will be easier.

The third stage is focused on preparing the terminology, starting with the terminological extraction, in which candidate terms will be extracted from the corpus. In this regard it is important to note that only the pertinent terms need to be selected, since some of the extracted terms may not belong to the topic at issue, but to other fields or domains. Therefore, it is important to carefully select the relevant terms, which are then going to be represented in lexical networks. The final task of the third stage consists of compiling the terminological record, which provides information about the given term: nowadays these records are electronic and follow different models depending on the purpose and on the needs and characteristics of the final users. Nonetheless, they all contain the following data, presented according to the standardized conventions, which allow to easily retrieve the information and exchange it:

- the entry
- the reference of the term

- the grammatical category of the term
- the subject area to which the term belongs
- the definition or context or both
- equivalents in other languages, if equivalents are going to be included in this terminological job
- cross-references
- management data for the record: the record's author, the date
- miscellaneous comments
- status code or label of the term or record, if one has been proposed (Cabr , 1999, p. 139)

In case a multilingual resource is being developed, all the steps explained above must be followed for each language involved. Finally, after having compiled all the records for each of the selected terms, it is fundamental to produce the documentation for the final users containing, among other information, the instructions for use, the conceptual organization of the subject field and the glossary of terms presented as dictionary entries. However, even after the work has been completed, there can be issues, which still need to be solved, for example, the designation for a given concept may be uncertain. To solve these queries, one can consult other reference works, subject field experts or official standardisation bodies, depending on the issue.

1.4.2 FAIR terminology: a paradigm for terminology management

The design and implementation of terminology resources is a complex process which must be carefully carried out to efficiently organise and manage terminology data, and therefore, it is fundamental to provide detailed guidelines and norms aimed at guaranteeing the correctness and quality of the collected data. In this regard, one of the first series of guidelines regarding this issue was published in 2016 by Wilkinson et al. within the framework of the European Open Science Cloud (EOSC) platform, whose purpose is promoting the FAIRness of research data. In their article, titled *FAIR Guiding Principles for scientific data management and stewardship*, the authors argued that optimal data management is not the goal, but the key which allows to conduct good

research. Wilkinson (2016) provided a set of guidelines underlining the need for FAIR data, where the acronym FAIR stands for Findability, Accessibility, Interoperability and Reusability and describes the core features which digital assets must possess. The FAIR principles refer to three types of entities: data, i.e. the digital object of study, metadata, namely the information about the object, and the related infrastructures (Vezzani and Di Nunzio, 2022). Furthermore, since humans increasingly rely on computers to work with data, these principles also apply to computational systems, as the aim is to improve their capacity to find, access, interoperate, and reuse data without human intervention.

Before analysing the implementation of these principles in the field of terminology, it is important to clarify the meaning and implications of the acronym FAIR. First of all, according to Wilkinson et al., data must be findable, which means that both humans and computers should be able to easily find digital assets: in order to achieve this goal, (meta)data are assigned a globally unique and persistent identifier, i.e. an internet link, and are then registered or indexed in searchable resources to increase their availability.

The other fundamental principle is Accessibility, which means that users need to know how to access (meta)data and for this reason data producers use a standardized communication protocol which is open, free, universally implementable and guarantees data accessibility even when they are no longer available.

Moreover (meta)data are usually integrated with other digital assets and need to operate with other applications to be analysed, processed and stored and for this reason they must be interoperable, thus they must use a formal and broadly shared language and include references to other meta(data).

Finally, data producers must richly describe their meta(data), including their provenance, and release them with clear and accessible usage license, so that they can be reused, which is the ultimate goal of FAIR².

In the field of terminology, the Technical Committee ISO/TC 37 provided standards aimed at designing and implementing structurally homogeneous terminology resources. However, it must be noted that these resources often present a heterogeneous format and do not follow the FAIR principles, thus making them difficult to retrieve, reuse and integrate with other meta(data). In this regard, a noticeable project was carried out by the Common Language Resources and Technology Infrastructure, a European research centre

² <https://www.go-fair.org/fair-principles/> (Retrieved 16th Nov. 2024)

in which scholars can access the language resources available in Europe and data are structured in accordance with the FAIR principles (De Jong et al., 2018 in Vezzani and Di Nunzio, 2022).

Another important project in this field is FAIR terminology, an initiative carried out by Federica Vezzani and Giorgio Maria Di Nunzio, professors respectively at the Department of Linguistic and Literary Studies and at the Department of Information Engineering of the University of Padua.

FAIR Terminology was developed with the purpose of “providing a paradigm for the optimal organization of terminological data compliant with the FAIR principles”³ in order to solve the issues concerning the structuring and standardization of terminology data. Therefore, the objective of this initiative is to provide a set of principles that will guarantee the findability, accessibility and interoperability of terminology data and will allow them to be reused by other professionals, for example by translators in CAT tools (Vezzani, 2022).

The paradigm is based on the application of three ISO standards, published by the ISO TC/37 SC/3, which deals with the management of terminology resources. The first standard is the ISO 16642:2017, which is related to the Terminological Markup Framework (TMF): the objective is to provide a common model to structure terminological entries because if terminology resources shared the same structure, it would be easier to integrate and transfer terminology data from one resource to another. According to this standard, a terminology resource is conceived as a collection of data with global (resource name, copyright) and complementary (bibliography, images, video, audio) information. The resource contains several terminology entries: each entry refers to one concept, for which we can have various language sections that allow us to verbalise the given concept. For each language section, we have various term sections designating the concept in that given language. Therefore, the TMF model has a vertical structure containing the terminological entries, the language section(s), the term section(s), and the term component section(s), which describes the different parts of a complex term.

FAIR Terminology also relies on the ISO 12620:2019, which provides guidelines for managing data categories, namely information regarding the terminological entry, such

³ <https://shiny.dei.unipd.it/fairterm/> (Retrieved 16th Nov. 2024)

as definition, part of speech, context, domain, etc. Moreover, the present standard clarifies where data categories should be positioned in the terminological entry: for example, part of speech, gender and number should be positioned in the term section, since they are properties describing the term.

The third standard is the ISO 30042:2019 and it refers to the TBX (TermBase Exchange) format, an implementation format written in XML that allows to import and reuse terminological data: the aim is to have a data collection that can be reused in different translation projects. The TBX combines the TMF with the terminology data categories, thus creating the TBX dialect. Three types of dialects exist: the TBX-core, which is used for multilingual glossaries and contains little information (term, date, notes), the TBX-min, which adds other data categories to those of the core (e.g. part of speech, domain, external reference, administrative status) and the TBX-basic, that includes the TBX-core and TBX-min's categories and adds others such as context, definition and responsibility (Vezzani, Di Nunzio and Costa, 2023).

By combining these standards Vezzani and Di Nunzio developed the FAIRterm Web application, a software which allows to compile, store and download terminology records in accordance with the FAIR principles (Vezzani, 2021). This software will be thoroughly analysed in Chapter 4.

After having provided an overview of terminology science and terminology management, the next chapter will address the complex situation regarding the provision of language services in Italy with the aim of illustrating the context at the core of this project: thus, we will explore and analyse the multifaceted and controversial phenomenon of child language brokering (CLB) and the role of cultural mediators in Italy, from the historical and legal background to the issues relating to this profession.

2. The (in)visible mediators

This chapter serves as an overview of the multifaceted and complex situation regarding the provision of linguistic services in Italy and provides a framework of the project at the core of this dissertation and the context in which it unfolds: the first half of the chapter will focus on child language brokering (CLB), a form of non-professional interpreting and translation carried out by foreign children and adolescents who act as mediators for their parents in a variety of different contexts and situation. The sections will analyse the terminology and definitions suggested over the years and the growing interest shown by the academic community towards this phenomenon, which has recently become an independent field of study. Then an overview of CLB and the main contexts in which it is observed will be provided along with an analysis of its consequences on both language brokers and their parents.

Section 2.2 will explore the role of cultural mediators in Italy: after discussing the terminology used to refer to this profession and the heterogeneous definitions suggested by scholars, we will analyse the Italian historical and legal background of linguistic and cultural mediation with a special focus on the situation in schools, where mediators play a fundamental role in promoting the acculturation and integration process of foreign students. Lastly, we will investigate some of the issues relating to this profession, such as the lack of a national official register and of government funding, and its repercussions on mediators.

The last section of the chapter will sum up the previous findings and explain the difficult situation observed in schools, thus highlighting the importance of developing a terminology database and introducing the project underlying this dissertation.

2.1 Child language brokering (CLB) as a form of NPIT

Before delving into the phenomenon of child language brokering (CLB), it is important to provide a brief overview of Non-professional interpreting and translation (NPIT), since CLB is a form of NPIT performed by children, as it is going to be discussed in the next section. NPIT is a complex and multifaceted phenomenon that has existed for a very long time.

The term refers to interpreting and translation activities carried out by bilingual or multilingual speakers, who are usually members of ethnic and/or linguistic minorities and act as language brokers in a variety of formal and informal contexts and who did not receive a specific training in these professions. NPIT relates to both written and oral language services, and it applies to scenarios in which individuals, due to financial constraints or personal and/or cultural reasons, opt for a family member or someone from their ethnic or linguistic community to act as their language broker instead of a professional linguistic or cultural mediator/interpreter. Furthermore, Del Torto (2008) notices that this phenomenon is often a distinctive feature of bilingual families, where second-generation family members often act as language brokers between third and first generations.

NPIT is a recent area of research which began to emerge as an independent object of study in the 1970s, thanks to the contribution of Harris (1977) who coined the expression “natural translation” to refer to translation activities performed daily by bilinguals who did not receive any specific training.

Since then, and especially in the last decades, NPIT has caught the attention of a growing number of scholars who are still debating on this phenomenon and on its role and place in the language industry, as well as on the label that should be used to refer to this practice. Various studies were carried out to shed a light on NPIT and its various branches: for example, research has focused on NPIT found in healthcare services, where professional translators are not always available when needed, especially in urgent situations (Baraldi, Gavioli, 2016). It is worth mentioning that, even though scholars have primarily focused on healthcare settings, NPIT is also found in other contexts, such as religious settings, tourism, public services and schools (Antonini et al., 2017).

We are not going to delve into the varied debate regarding these topics. However, it is important to mention the reasons why NPIT is worth studying. First, this phenomenon has existed for a very long time, and it is not going to disappear: the need for linguistic services has increased exponentially because of the significant immigration waves that many nations have witnessed in the last decades and the existence of an increasing number of varied language communities inside national borders. Non-professional practices invariably satisfy a portion of the current demand for translation and interpreting

services because they are typically more readily available than professional services and are primarily unpaid.

The second reason for shedding a light on NPIT lies in the fact that investigating these practices is fundamental for the academic and professional community, since the points of view and experiences of providers and users of non-professional linguistic services may help professionals and scholars to gain a better and more complete understanding of the dynamics of the interpreting and translation markets.

As a matter of fact, as Antonini (2017) notices, non-professional language brokers need to be included in the discussion on translation and interpreting, because ignoring their existence and building barriers against them will not erase NPIT from the market of language services: on the contrary this phenomenon would continue to exist and flourish alongside with the rising migratory flows. Furthermore, it is important to underline that non-professional interpreters and translators might not be aware of the fact that their work may interfere with, and even replace, those of professionals. Thus, encouraging strict policies against NPIT and simply viewing non-professional interpreters and translators as unfair competitors is not an efficient strategy to deal with this phenomenon and it only results in a biased understanding of the situation.

In addition, it must be noted that, despite being a reality in every country, non-professional interpreting and translation has been an ignored area of research until very recently and it is still generally considered by professionals and scholars a dangerous practice due to ethical concerns and potential effects on those who require the assistance of a language mediator. As a matter of fact, NPIT was officially recognised in the field of translation studies in 2011, when an entry dedicated to the Natural Translator and Interpreter was added to the Translation Studies Reader. Two more entries, “non-professional interpreting and translation” and “child language brokering”, were then added in the upcoming edition of the Routledge Encyclopedia of Interpreting Studies.

Therefore, NPIT is still a largely unknown reality, despite the growing number of studies devoted to this topic, which are, however, quite fragmented, especially because “research is carried out by scholars who may not always be aware of what is going on outside the boundaries of their own discipline” (Antonini et al., 2017, p. 21).

As previously mentioned, the demographic changes caused by mass migration and globalisation processes in the last century led to the formation of many ethnic and

linguistic minorities in the countries subject to migratory flows. Therefore, there is a growing demand for linguistic services, whose provision became a critical issue, often underestimated and ignored by national and local governments.

Therefore, due to the lack of linguistic and cultural mediators, immigrants very often “hire” their children to act as language brokers. This kind of NPIT carried out by children and adolescents is called “child language brokering” (CLB) and it is a widespread practice as it is going to be explained in the following sections.

2.1.1 CLB: definitions and clarifications on terminology

Child language brokering (CLB) is an umbrella term used to describe non-professional language practices performed by children and adolescents and in particular it refers to “interpreting and translation activities carried out by children who mediate linguistically and culturally in formal and informal contexts and domains between their family, friends and the members of the linguistic community they belong to and the institutions and society of the country where their families reside or have migrated to” (Antonini, 2015, p. 97).

The term was coined by the scholar Lucy Tse in 1995 and used shortly after by Hall and Sham in 1998 to refer to children born in migrant families who act as linguistic and cultural mediators for their relatives, friends and members of their ethnic communities.

However, it is important to point out that other terms were coined to indicate this phenomenon: for example, Jones and Trickett used the expression “culture broker” to highlight the fact that translation and interpreting activities create a relationship not only between languages, but also between cultures. Orellana et al. developed the term “paraphraser” to refer to the act of paraphrasing performed by children when translating/interpreting.

Regardless of the term used, whether it is natural translation, language brokering, family interpreting or paraphrasing, each of them underlines the ability of children of foreign origin to mediate between different social and linguistic backgrounds and to adapt to the context in which the communicative exchange takes place. The activities they carry out are multifaceted and extremely difficult, since the skills required go beyond the ability to speak and understand the host language: when child mediators interpret and translate,

they do not simply perform a literal translation of the message, but they take on the responsibility of managing the interaction and making the other family members understand how the society and culture of the host country works (Orellana, 2010).

Therefore, after considering all the different terms used to describe this multifaceted and complex phenomenon, for the purpose of this thesis it has been decided to adopt the term “child language brokering”, also referred to with the acronym “CLB”. The reason behind this choice is twofold: on one hand this term sheds a light on the fact that these non-professional interpreting and translation activities are carried out by children and adolescents, and, on the other hand, the term highlights the concept of mediating between different languages and cultures and the responsibilities linked to this practice.

Furthermore, it is important to point out that even though there is a relationship between bilingualism and child language brokering, the two terms are not synonyms: despite the potential correlation, language brokering implies more than simply being bilingual. Bilingualism refers to the ability to understand and speak two or more languages and to use them in everyday life, whereas language brokering includes activities related to the practice of interpreting and/or translating. Therefore, the knowledge of two or more languages does not imply the ability to mediate between these languages and their respective cultures.

However, scholars not always agree on this statement: for example, Harris and Sherwood (1978) explain that being able to carry out interpreting and translating activities is a direct consequence of bilingualism and therefore, the two phenomena are related. In contrast, other researchers, such as Antonini and Orellana, pointed out that the ability to interpret and translate requires different and specific skills that must be developed and trained.

In light of the differing points of view, it is important to acknowledge that even though being bilingual is a prerequisite in order to mediate between two or more languages or cultures, and bilinguals can occasionally act as language brokers and provide linguistic services to other people, the success of interpreting and translation activities and therefore the outcome of the whole interaction are linked to specific skills that bilinguals per se do not have and need to develop or train.

Having said that, child language brokering is a young area of research, as it is going to be explained in the following section, and it is recently receiving more recognition as

an independent field of study: scholars are highlighting the importance of this phenomenon, pointing out that the study of CLB should be pursued both to acknowledge the help that these children offer to their family and communities, and to provide useful tools to support the work of professional interpreters and translators (Antonini et al., 2017).

2.1.2 CLB as an independent field of study

After having clarified the terminology and definitions regarding child language brokering and before outlining the origins and characteristics of this phenomenon, the present section aims at introducing and describing the development of CLB as an independent field of research.

First of all, it is important to point out that child language brokering is an ancient practice, that has been going on for many centuries: as Harris and Sherwood (1978) noted, children have performed interpreting and translation activities throughout history and therefore, we are dealing with a phenomenon that can be observed not only in different cultures and languages, but also in different periods of time. However, research on this particular type of linguistic and cultural mediation is fairly recent, while CLB has been established as an independent field of study only in the last decades: studies on the phenomenon began in 1978 when Harris and Sherwood started to investigate non-professional interpreting and translation practices, which then led to the development of the concept of natural translation, adopted to refer to the linguistic and cultural mediation carried out by friends or family members. According to the scholars the ability to translate/interpret is to be considered an innate skill, a sort of predisposition in children to pick up speech patterns from the environment they live in. Therefore, according to Harris and Sherwood the ability to translate and interpret is a natural aptitude, which bilingual children show when performing forms of linguistic and cultural mediation.

Despite being questioned by other authors, who argued, as previously mentioned, that being bilingual does not automatically imply being able to translate or act as a qualified translator, this was the first study that successfully draw attention to the realm of non-professional interpreting and translation practices: Harris and Sherwood laid the foundation for the acknowledgement of CLB as an independent field of research. During

the 1990s various disciplines, from education and psychology to sociology and linguistics, started to examine child language brokering, focusing on various aspects of the phenomenon, such as the beneficiaries of this practice and the contexts and situations in which CLB. However, a turning point in the study of language brokering activities happened in the late 1990s, when researchers, such as Tse and McQuillan, began to investigate the consequences produced by CLB on the psychological and educational development of these young mediators. Moreover, a light was shed on the effects that language brokering can have on children, which are often asked to mediate between not only languages and cultures, but also between different economic, social and legal systems: language brokers are often exposed to stressful and difficult situations, which children are usually protected from and are asked to take on responsibilities which are normally dealt with by adults. This represents a cause of stress and a burden for bilingual children, since they are often in charge of the wellbeing of their families, as it is going to be thoroughly explained in section 2.1.5.

Furthermore, it is important to stress that most of the research relating to CLB has been carried out in the United States and especially among Spanish-speaking communities, whereas in Europe studies on child language brokering began in the late 1990s and have been mainly UK-based until very recently. In the last decade the Italian academic community has been acknowledging the existence of CLB, as it was shown by the organisation of the first conference on non-professional interpreting and translation, held in Forlì in 2012: this conference contributed to increasing the awareness and establishing the study of child language brokering as a field of research per se.

In regard of the growing recognition of CLB in Europe and, especially in Italy, it is important to mention the In MedIO PUER(I) project, a four-year project funded by the University of Bologna and carried out in the region of Emilia-Romagna by Professors Antonini, Bucaria, Cirillo, Rossato and Torresi. The project started in 2007 with the aim of providing the first in-depth and large-scale analysis of child language brokering in Italy and thus acknowledging this widespread and yet invisible phenomenon. More specifically the project was created with the purpose of:

- mapping out this phenomenon and confirming its practice among all the linguistic and ethnic communities that live in Emilia-Romagna;

- providing a detailed description of all the participants involved as well as the situations and contexts in which children are likely to language broker;
- assessing how CLB influences various aspects of the life and development of language brokers;
- gathering data on the children's, parents', teachers' and institutional representatives' attitudes towards this practice. (Antonini, 2016, p. 6)

Furthermore, it is important to stress that the participants were young mediators attending primary and secondary schools as well as former language brokers belonging to different ethnic and linguistic communities. Moreover, one of the most important features of the In MedIO PUER(I) Project is the methods used: the project relied on a multi-method approach, based on questionnaires, semi-structured interviews, observations in classrooms and the collection of written and graphic narratives. As a part of the project, researchers also organized a contest, called "Traduttori in Erba", involving primary and secondary schools in the province of Forlì-Cesena, in the Emilia-Romagna region. Children were asked to describe or illustrate a situation in which they either witnessed or participated in an interpreting and/or translation activity by presenting a brief essay or drawing. The competition had a specific set of rules, a jury and an official ceremony in which awards were handed to winners.

In all, the project received 200 contributions, which allowed researchers to have a better understanding of the phenomenon and to investigate other issues and factors related to CLB, such as the emotional and psychological impact of language brokering on children, the translation strategies adopted by these young mediators and the difficulties of the integration process.

However, it must be stressed that there is still scepticism and an overall lack of recognition towards this phenomenon and non-professional interpreting and translation (NPIT) studies in general: as mentioned before, academics and professional interpreters/translators often disregard CLB as a topic unworthy of attention and are usually sceptical of this practice. They perceive it as dangerous, since cultural and linguistic mediation deals with complex situations in which a misunderstanding can lead to serious consequences, such as incorrect diagnosis, loss of income or legal issues, and young language brokers do not know the ethical issues related to this type of interpreting. Therefore, it is fundamental that young language brokers are provided with the help and support they need, since they are constantly exposed to stressful and difficult situations.

In conclusion, despite the growing interest scholars are showing towards CLB, there is still much work that needs to be done in order to give this phenomenon and the children involved the recognition and acknowledgement they deserve: there are various aspects of CLB that need to be further investigated and it is fundamental to carry out more in-depth research, since it is a multifaceted and complex phenomenon that, if properly explored, can enrich translation and interpreting studies by providing new insights and it can also encourage the development of proper community interpreting services.

2.1.3 Overview of the phenomenon

Before delving into the description of the main features of child language brokering, it is important to briefly frame the recent developments of migratory flows, since immigration is deeply linked to CLB.

In the last decades the world population has witnessed an increase in international migration movements, which are mainly caused by globalisation, population growth and social inequalities. These factors, along with the economic crisis and wars, force people to leave their countries and to migrate from the less developed parts of the world to the wealthier and more developed countries, located mainly in Europe and Asia, which are the two continents hosting the highest number of migrants: as the 2022 World Migration Report stated, these continents hosted respectively 87 and 86 million international migrants. Moreover, as far as Europe is concerned, Germany, France and the United Kingdom have a long migration history and therefore typically host the largest migrant population, whereas Italy has started to deal with migratory flows only in the last decades, since they have a more established history in mass emigration movements than in immigration ones. Starting from the 1970s Italy has witnessed a growing prosperity, which, along with its strategic position in the Mediterranean, began to attract many foreigners due to some peculiar aspects of the Italian labour market, such as the need for non-qualified workers and the tendency to hire migrants to perform low-paying jobs (Zanfrini, 2007). Considering these factors and the changes undergoing in the Italian society and economy in the last decades, the country has become one of the main recipients of immigration: according to the Ministry of Internal Affairs, in 2023 there

were around 158 thousand sea arrivals, an increase of 50% compared to the 2022 statistics⁴.

As a result of growing migratory flows, the need for linguistic mediators that could facilitate migrants access to health care, educational and social services has increased and in many countries, such as Sweden, Australia and the UK, the local government often provides linguistic services available in various languages. However, the availability of such services is not always guaranteed in countries, such as Italy. Therefore, immigrants usually rely on their children to overcome the linguistic and cultural barriers, and this is the main reason behind the expansion of the CLB phenomenon (Antonini, 2016).

The immigration and acculturation processes are very stressful for immigrant families, since they need to acquire the new language and culture, look for a job, secure housing and navigate through the bureaucracy and legal system of the host country. Therefore, since children learn the new language more rapidly than parents, they are often asked to act as interpreters/translators in a variety of different situations and contexts that can vary from casual conversation, such as answering the phone, making purchases and running errands, to complex activities, including filling out governmental forms, interpreting in parent-teacher meetings and talking to doctors, lawyers and police officers (Antonini et al., 2017).

According to the results of previous research on CLB, children begin to mediate for their parents as soon as they arrive in the host country, since, as mentioned before, they tend to learn the language at a fast pace. On average, child language brokers start when they are around eight or nine years old (Tse, 1995) and usually first-born children take on the responsibility to translate for their parents and the reason behind this choice is twofold: on one hand in non-Western families rank and birth order play an important role and therefore, eldest children have more responsibilities (Weisskirch, 2010); on the other hand, first-born children normally have spent more years at school and have a better understanding of the language compared to their younger siblings. Furthermore, language brokering can continue during adolescence and even in adulthood if the parents still do not master the societal language (Weisskirch, 2007).

⁴ <https://integrazioneimmigranti.gov.it/it-it/Ricerca-news/Dettaglio-news/id/3595/Nel-2023-sbarcati-in-Italia-158-mila-migranti-50>

As far as gender is concerned, it is important to point out that girls tend to act as language brokers more often than boys, since they usually take on the role of the caretakers and subsequently develop a sense of family obligation (Fuligni et al., 2002). Valtolina (2010) also highlighted that parents are more likely to choose their daughters to carry out interpreting/translation activities, because they have great communicative skills and spend more time at home with their parents and they are also more likely to continue this practice as they grow older.

Furthermore, child language brokering is carried out mainly for family members and parents, but also for members of the community, teachers, friends, neighbours and schoolmates and the settings in which children perform linguistic services vary from restaurants and public offices to courthouses, hospitals and police stations. (Orellana et al., 2003). Language brokers may also be asked to translate documents, such as shop signs, newspapers, menus, but also more formal material, including bank documents, governmental forms, medical diagnosis and teacher's notes.

In this regard it is interesting to quote an excerpt from a narrative collected by Antonini during the In MEDIO PUER(I) project: the following text is written by three fourteen-year-old Chinese girls, who describe their experience when interpreting for their families:

The main place where we play this role is obviously the school and three of us remember that, at the beginning of our school experience in Italy, there were other Chinese kids who were our first personal translators because they helped us understand what our teachers and classmates said to us. At the beginning of the school year, for instance, a new Chinese boy who could not speak Italian arrived. Since then, every time a teacher asks us to translate into Chinese the things he is supposed to do and that he does not understand, we help him in any possible way even though it is not easy because we also need to follow the lesson that is taking place in the classroom. Another situation is when our family members or friends or acquaintances ask us to go with them to the doctors. We are glad to help them, but it is not an easy task because we have to answer the doctor's questions who asks the patient what the problem of the person we are helping is and what are their symptoms. At the end of the consultation the doctor prescribes the medicines, and we have to explain to the patient how to take them; and it is exactly in that moment that we feel the burden of our responsibility as translators because we cannot make mistakes since health is no laughing matter! (Antonini, 2016, p. 11)

This narrative is particularly interesting, since it provides an insight on the life of these young mediators, the responsibilities they take on and the tasks they are asked to perform and it also sheds a light on the delicate situations they are confronted with, situations which even adults and expert interpreters find difficult to deal with.

Furthermore, as it can be inferred from the narrative above, CLB is most frequently observed and investigated in hospitals and schools and for this reason, the following sections will focus on CLB in healthcare settings and in schools.

2.1.4 CLB in educational and healthcare institutions

As for the healthcare setting, it is important to note that very often hospitals and other types of medical institutions do not receive enough funds to provide proper linguistic and cultural services, or they are unaware that they can rely on available interpreters/translators. For example, in Italy the provision of cultural and linguistic mediation in health care depends on random initiatives and ad hoc measures, such as pamphlets translated in different languages, phone interpreting service or a mediation service funded by the local health authority (Antonini, 2015). The reason behind this choice can be found in the way the Italian government perceives the immigration and acculturation process: language barriers are considered a minor problem that is likely to disappear as migrants learn the societal language; therefore, the government does not invest in providing adequate language services, thus forcing medical institutions to resort to non-professional interpreting and translation practices, considered a necessary evil.

Furthermore, language services can be found only in important health units and centres, mainly located near those cities that are usually visited by tourists, so that they can easily access to languages services in case of health problems. Moreover, the provision of language mediation services is poorly advertised and funded, thus making it even more difficult for migrants to overcome the language barriers and to be properly assisted.

Given this framework, hospital staff is often forced to rely on family members, including children, strangers found in the hospital or untrained members of personnel to interpret, even though this kind of practice, which falls into the realm of NPIT, can lead to translation errors, loss of information and misunderstandings, with a negative impact on the quality of diagnosis and of the overall clinical care (Antonini, 2015).

As far as CLB is concerned, healthcare professionals have different opinions regarding this practice: some doctors reported that child language brokering is acceptable in doctor-patient consultation dealing with common diseases, such as back pain or flu,

which are easy to diagnose and can be explained and described using a simple and understandable language. Furthermore, family members can provide important additional information regarding the patient or second opinions which can help doctors with the diagnosis (Cohen et al., 1999).

However, other healthcare professionals strongly oppose CLB in complex situations dealing with serious diseases. The reason is twofold: on one hand there is a higher risk of interpreting errors and misunderstandings, since the terminology used in these situations is far more difficult to understand and translate, and therefore child mediators should be the last resource, to rely on only when no other mediation services are available (Cirillo, 2014). On the other hand, when dealing with sensitive issues, such as serious pathologies or psychological problems, children are exposed to situations which they would normally be protected from, since these topics are not suitable for their age and could have a negative impact on their mental health: research showed that delivering information regarding a serious condition affecting their family member can be traumatizing for children, in addition to the amount of anxiety, stress and confusion caused by translating difficult medical terms (Cirillo and Torresi, 2013).

As previously mentioned, another setting in which CLB is frequently observed is the school and once again, as in medical institutions, teachers and students rely on child mediators due to the lack of proper language services. In Italy, the government pays little to no attention to the increasingly multilingual and multicultural nature of the Italian society, and, consequently, there are very few investments in the provision of adequate language services, which are usually funded either by local institutions or by NGOs, based on the number of students enrolled in schools. However, schools receive only a limited number of hours of professional cultural and linguistic mediation, which is not sufficient to cover the needs of all immigrant students. Therefore, since professional help is very often not available, teachers are forced to resort to students from the same or another class to interpret for immigrant children who do not understand Italian, and when even this option is not available, newly arrived students are left on their own (Antonini, 2016).

In this regard it is important to mention a study carried out by Ceccoli (2018) who, by means of structured questionnaires, investigated the presence of CLB in the schools of the province of Ravenna during the school year 2014/2015: four junior high schools were involved with 126 answers collected from students and 27 from teachers. The

research provides interesting results and helps the academic community to shed a light on CLB in Italian schools: according to the data collected, 94% of students who participated in the research stated to have acted as a language broker at least once in their life, while 69% admitted to continuing with this practice in their everyday life and especially in the school setting (43%). Participants stated to have translated for their teachers, classmates and for their parents during parent-teacher conferences, while the documents they translate most frequently are school communications. As for the teachers involved in the research, 96% of them stated to have asked children to act as interpreters to communicate with newly arrived students who do not have a command of Italian, and one of the reasons behind this choice is the fact that child language brokers are immediately available (77%). However, 58% of teachers pointed out that they are not fully sure if these young mediators translate everything properly to their classmates or to their parents during parent-teacher conferences, whereas 17% of participants noted that to help other students, language brokers are often left behind in class. Another interesting piece of data is the teachers' opinions regarding this practice: 72% of them perceives CLB as an activity that should be avoided in delicate contexts, such as in hospitals, public offices or schools.

Given this framework, the role played by these young mediators is fundamental, as Antonini et al. noted in the In MediO PUER(I) project, which, as previously mentioned, collected narratives from different schools of the Emilia-Romagna region. In these narratives child brokers describe their experience in helping other children learn the host language and culture and adapt to the new country and school system: very often this proves to be a difficult task, since language brokers do not always know how to help and they often feel frustrated and at loss, as it is described in the following example written by a Chinese child who was asked to mediate for a schoolmate just arrived in Italy:

I am 12, I was born in China and I've been living in Italy for two and a half years. Sometimes teacher Gianni asked Shu Bin and I to go to his classroom to help a Chinese girl who has just arrived in Italy. Her name is Elena, she is five, she does not speak Italian and her classmates think that she is very stupid. Her classmates think that she is stupid because she does not want to do anything, but she behaves like this because she cannot understand what they ask her and she would rather stay at home. I explain many things in Chinese, but it is difficult for her to speak Italian and she only reads her Mickey Mouse book. I keep putting it under her desk but she takes it out again and that makes me very angry (Antonini, 2016, p. 10).

Furthermore, children very often mediate for their parents during parent-teacher conferences, in which teachers discuss the student's performance in class and eventual

problems s/he may be facing, such as attention disorders or social anxiety: these are delicate situations, in which specific terms are often used, thus making the translation process difficult for child mediators. In addition, children may not translate everything that the teacher is saying, in order not to upset or worry their parents: for example, Bauer (2010) reported that during parent-teacher conferences child language brokers would change the information related to their grades so that their parents would not get angry.

What is even more surprising is the fact that the guidelines for the integration of foreign students in schools, published in 2022 by the Italian Ministry of Education, highlight the importance of cooperating with mediators to properly welcome these students and provide indications on how to assist immigrant children enrolled in Italian schools. However, the guidelines do not acknowledge the existence of CLB nor the fact that teachers have to resort to children as the only available solution to overcome linguistic barriers, since schools do not have enough funds to rely on trained interpreters.

In this regard, it is important to mention an initiative conducted by Cline, Crafter and Prokopiou who in 2014 published *Child Interpreting in School: Supporting Good Practice*: this guide was based on a study funded by the Nuffield Foundation and is set out to support school staff when it comes to dealing with linguistic and cultural mediation. After a brief introduction, which explains the reasons behind the CLB phenomenon, the guide is divided into sections containing a series of useful recommendations on how to deal with multiculturalism, including how to choose who should act as a mediator (professional interpreters, bilingual teachers or adult brokers). The booklet also clarifies that the phenomenon of child language brokering should be given more attention and children's help should be recognised. However, school staff should not exclusively rely on them and, as a rule, children should not deal with sensitive topics.

These guidelines were implemented by the Young Interpreter Scheme, a project organised by the Hampshire County Council with the aim of supporting multilingual schools and newly arrived students: the program values the help of young language brokers and offers them the necessary training to practice language brokering in the appropriate contexts⁵.

⁵ More information about the program can be found at: <https://www.hants.gov.uk/educationandlearning/emtas/supportinglanguages/young-interpreters-guide>

Another initiative worth mentioning is the EYLBID, an acronym which stands for *Empowering Young Language Brokers for Inclusion and Diversity*: the project started in 2020 with the partnership of 5 higher education institutions and one social enterprise and it was funded with the support of the European Commission. The focus of the program is to raise awareness about CLB across Europe and to acknowledge the linguistic activities carried out by young language brokers. For this reason, EYLBID has produced different materials, including classroom activities, interactive games and a Teacher's Book, which explains the phenomenon and contain a series of guidelines for dealing with CLB in the school setting. All the materials were translated into Spanish, Catalan, English, German and Italian, i.e. the countries participating in the program⁶.

The projects and studies mentioned above are particularly important because it is not likely that child language brokering will disappear soon, especially in the school setting and therefore it is fundamental to make both the academic community and society aware of this phenomenon and to provide guidelines in order to successfully deal with the challenges posed by a multicultural society without exposing young language brokers to difficult or stressful situations.. In particular, the project carried out by Cline, Crafter and Prokopiou proves that CLB can be beneficial for both the children and the school if practiced in a secure environment and with the right training.

Furthermore, in the previous sections some first suggestions have been made regarding the effects of child language brokering, which can produce positive outcomes in promoting the acculturation process and the cognitive development of language brokers, but at the same time CLB can result in traumatic and stressful experiences and in the adultification of children.

The following section will thoroughly describe the consequences of this phenomenon, analysing its strengths and weaknesses.

2.1.5 The burden of language: CLB and its consequences

As previously mentioned, CLB is a multifaceted phenomenon performed in a variety of different situations and involving multiple activities that can vary from interpreting in a restaurant for one's family to translating a governmental form regarding taxes.

⁶ More information about the project can be found at: <https://webs.uab.cat/eylbid/en/>

Therefore, given its complex nature, child language brokering carries both positive and consequences and young mediators themselves very often have mixed feelings about their interpreting and translation activities.

First of all, among the beneficial aspects of this practice, it is important to point out that language brokering can be used as an acculturation strategy, since it helps immigrant children and their parents understand the practices and norms of the host country and therefore, by acting as cultural mediators, immigrant children learn about the host culture and its language and are then able to successfully adapt and integrate (Weisskirch, 2010).

Furthermore, some scholars found that CLB may help improve the cognitive abilities of language brokers: the reason behind this correlation lays in the fact that when translating or interpreting children often deal with specific terminology and complex concepts since, for example, they are asked to translate bank documents, tax forms or school notes which are difficult to understand. These activities are usually very challenging and in response children develop different strategies, such as paraphrasing, using synonyms, reformulating and looking for the main concepts of a text (Bucaria and Rossato, 2010), and they also develop problem solving and communication skills. The potential correlation between CLB and the development of cognitive skills is confirmed by various studies: for example, in an article published in 2003 Orellana et al. investigated the interpreting and translation activities carried out by 18 young adolescents living around Chicago and coming from Mexican and Polish communities. From the data collected, the scholars noted that child language brokers tend to have higher scores in math tests compared to their non-brokers classmates.

This positive relation was also reported by Acoach and Webb (2004), who analysed the influence of language brokering on Hispanic adolescents. The results of the research are quite interesting, since the scholars found that language brokers show a stronger bilingualism and biculturalism compared to other immigrant children, since they are more exposed to the norms and patterns of the host culture: therefore, their process of acculturation proceeds at a fast pace, but at the same time they strengthen their connection with their native culture. Their confidence in the command of the host language increases confidence in their academic competence, thus allowing language brokers to have high scores and to succeed in the academic field.

Another beneficial aspect of this practice can be found in the positive relationships that young interpreters establish with their parents and, in general, with adults: in order to properly interpret and translate language brokers need to adopt and understand their parents' point of view, and this allows them to develop interpersonal skills and to build a closer and more functional relationship with their parents (Weisskirch, 2007).

However, as previously suggested, CLB may also produce negative consequences for the children involved: for example, language brokers who are asked to mediate in delicate and challenging contexts tend to experience negative feelings, usually associated with the fear of not understanding what is being said or of mistranslating. When asked to interpret in contexts dealing with sensitive issues, such as at the hospital, the police station or in a public office, young interpreters are involved in emotionally challenging situations, and therefore, these children often experience high levels of stress and anxiety, since they are asked to perform difficult tasks and they take on the responsibility of the positive outcome of the communication, while being perfectly aware of the negative consequences of eventual mistranslations (Antonini et al., 2017). In this regard, it is worth mentioning an excerpt from a narrative written by a group of Chinese girls, who perfectly describe the impact that CLB has on their lives. The following narrative was produced in the context of the In Medio PUER(I) project:

In this situation we feel all the burden of the responsibility that our parents give us, because they do not speak Italian or don't speak it very well and, thus, they are not able to understand what they are required to do. Our experience helps you understand that being 'translators' means doing things that boys and girls of our own age would not normally do. It is not easy to spend a whole afternoon at the trade union's or at the Police station, because we have to do something important for our family; but we have to do it because it is our duty! We are really sorry when we have to miss a day or a few hours of school, but we cannot say no to our parents or friends who need our help! (Antonini, 2016, p. 13)

Furthermore, it is important to point out that, since immigrant children learn the host language and culture at a faster pace than their parents, they often become the caretakers of their family, through a process called "parentification", which refers to when a child takes on the parental role of looking after their siblings, parents and/or other family members. As Winton (2003) highlighted, parentification is very common in immigrant families and often complicates the family dynamics: this process may be adaptive, when

family members value and acknowledge the child's work, or destructive, when the child is overwhelmed by responsibilities without receiving any recognition.

Moreover, some studies identified feelings of isolation and loneliness in child language brokers, who may feel marginalized and not welcomed by the hosting society: young mediators can suffer from depression, anxiety and low self-esteem, especially when they are performing interpreting activities in healthcare settings. For example, Corona et al. (2012) conducted an analysis of Latino parents and adolescents' feelings and thoughts regarding CLB: the scholars interviewed 25 teenagers and their parents living in the US and coming from Spanish communities to investigate how child language brokering influenced parent-child relationships. From the data collected, researchers found that language brokers experience both positive feelings, such as pride, and negative feelings, like embarrassment and/or depression: during the interviews children explained that they are happy to help their families. However, they feel the pressure of having to deal with difficult scenario, such as at the hospital, in which the well-being of their family member is at stake. Furthermore, parents reported feeling ashamed and embarrassed that they have to rely on their children to translate for them and explained that they would like to be able to do things on their own.

In conclusion, child language brokering can be defined as a controversial practice, carrying both positive and negative consequences, and it is also an understudied phenomenon which is only recently raising the interest of the academic community. As previously mentioned, there are various factors which contribute to the increase of this phenomenon: on one hand migrant families prefer to rely on children because they represent and understand the family needs and will maintain the information confidential; on the other hand, CLB is often caused by the lack of professional language services, especially in countries with a recent history of migratory flows, such as Italy. This raises questions regarding the role of linguistic and cultural mediation, whether it is an outdated profession and what policies do governments implement to meet the needs of this new multicultural society. The following section will, therefore, be dedicated to analysing the role of the mediators with a specific focus on the situation in Italy.

2.2 The linguistic and cultural mediator: an outdated profession?

As previously mentioned, in the last decade Italy, along with other European countries, such as Germany, France and Spain (ISMU, 2024), has witnessed a rise in migratory flows, which inevitably led to an increase in the number of asylum applications and of immigrant citizens: people who are victimized or are fleeing from wars or occupied countries or families looking for better opportunities often risk their lives to reach Western Europe. According to the statistics produced by ISTAT and ISMU⁷, as of 1 January 2023 there are 5 million foreign nationals residing in Italy, which makes up approximately 8.7% of the total population⁸, while as for the asylum applications Italy has witnessed 131 thousand requests, a 69.1% increase compared to 2022⁹.

This ongoing phenomenon is referred to as the “European refugee crisis” or the “European migrant crisis” and it is producing serious consequences on the European society, which is becoming increasingly multicultural and multilingual, and on the governments of the hosting countries, which often found themselves unable to adequately deal with this phenomenon.

Considering this situation, the need for language services has drastically increased in the hosting countries and in the areas which asylum seekers cross while reaching their destinations. However, governments often fail to implement efficient immigration policies and to provide proper language services: various factors contribute to this failure, such as inflexible institutional structures, the lack of experience in dealing with migratory flows, but also the lack of a political will to finance programs and initiatives to overcome linguistic barriers (Vaccarelli, 2024).

The provision of professional language services is a fundamental part of integration policies, since it facilitates the acculturation process and helps immigrants and asylum seekers to access public services and to have a better understanding of the laws and norms of the receiving country. Therefore, the role of the linguistic and cultural mediator is

⁷ The ISMU ETS Foundation is an independent scientific research organization founded in 1993 with the aim of studying migration phenomena and integration processes.

⁸ <https://noi-italia.istat.it/pagina.php?L=0&categoria=4&dove=ITA>

⁹ <https://www.ismu.org/nel-2023-sono-oltre-un-milione-i-richiedenti-asilo-che-hanno-presentato-per-la-prima-volta-domanda-di-protezione-in-ue-comunicato-stampa-19-6-2024/>

fundamental in promoting this scope, even though the recognition of this profession is still an issue, as it is going to be explained in the following section.

2.2.1 Who is the mediator? A reflection upon terminology

Before proceeding to describing the profession of the mediator from a legal and historical perspective, it is important to clarify the concept of mediation and to investigate the potential correlation and distinction between interpreting and mediation, since these terms are often used interchangeably.

First, it is important to point out that on both a national and international level there is no clear and unambiguous definition of the concept of mediation, despite the work of various scholars, which attempted to clarify the role of mediators. For example, Cohen-Emerique in 1997 suggested three possible definitions of mediation, which can be seen as a mean to facilitate communication and understanding between people from different cultural backgrounds, or it can be defined as a tool to solve conflicts between the migrant family and the hosting country. In addition to this, Cohen-Emerique provided a third definition of mediation as a creative and transformative process.

During the first decade of the 21st century, other scholars attempted to provide a clear definition of this concept. An interesting example is the work of Favaro (2007), who distinguished two main areas of intervention: the social and informative level and the linguistic and intercultural level. In the first case the mediator contributes to the development of integration projects aimed at explaining to foreign citizens how public services and bureaucracy is organised, whereas in the linguistic and intercultural level mediators are asked to perform translation and interpreting activities aimed at overcoming linguistic and cultural barriers.

Another important study was conducted by Luatti (2011), who, to highlight the complexity of this profession, grouped all the existing terms used interchangeably to refer to the mediator, such as social interpreter, linguistic mediator, cultural mediator, intercultural mediator, social mediator etc.

Furthermore, it is important to underline that in the academic community two main areas of research were developed: one group of scholars have investigated the linguistic nature of mediation, thus focusing on community interpreting, liaison and conference

interpreting (Wadensjö, Brunette, Mack); whereas other researchers, such as Favaro, Luatti and Castiglioni considered mediation as mainly an intercultural activity, thus exploring socio-cultural and anthropological issues (Tonioli, 2016).

Following this distinction, some scholars analysed and compared the functions performed by interpreters and mediators and drawn the conclusion that both these professions aim at promoting good communication and understanding. However, interpreters mainly focus on overcoming the language gap between the two parties and on transferring the linguistic content, by paying attention to idiomatic expression, local references etc; whereas mediators focus on both language and culture, they learn to recognize non-verbal communication and play a more active role in the communication, since they pay attention to the relationship between participants and to their needs, thus becoming a sort of third party in the exchange (Russo and Mack, 2005, Vaccarelli, 2024).

Furthermore, it is important to note that in 2011 the Council of Europe published a series of guidelines titled *"Methodological guide for constructing an inclusive institutional culture"*, which suggested to draw a distinction between cultural mediators, interpreters and community interpreters, according to the area of specialisation and to the role played in the communication. Moreover, the guide provides the following definition of mediation and of cultural mediators:

A multifaceted role in which the mediator acts essentially as an outside third party and cultural intermediary between a person or community and an institution's departments. [...] Cultural mediators provide immigrants and public service professionals with easily understandable information about cultural differences, the different rules of the social and political systems in the host country, and different ways of behaving. In so doing, they build bridges between immigrants and education/support systems, thus facilitating understanding between doctors and patients, lawyers and clients, and teachers and parents (Council of Europe, 2011, p. 81-86).

Given this framework and the heterogenous definitions, for the purpose of this dissertation it has been decided to use the expression "linguistic and cultural mediation/mediator", since it is both concise and exhaustive in representing the main function of this profession, i.e. promoting and facilitating the understanding of cultural and linguistic aspects in a communicative exchange between speakers of different languages.

2.2.2 Historical and legal overviews of mediation in Italy

In Italy the legal recognition of the profession of the linguistic and cultural mediator is recent: starting from the 1980s Italy, which had always been a country of emigration, began to witness the first immigration flows and started to become a host country for an increasing number of migrants.

The multicultural and multilingual nature of the Italian society led to the urgent need to provide professional linguistic and cultural mediation services to enable migrants to have an equal access to public services, especially to healthcare, school and employment services (Antonini, 2014).

Initially, language services were provided by NGOs, local and private associations, such as Caritas Catholic Organisation, which still nowadays help migrants during the acculturation and integration process.

The first institutional mention to linguistic and cultural mediation as a profession is found in the Ministry circular letter no. 205 published in 1990 and titled *Scuola dell'obbligo e alunni stranieri* (Compulsory Education and Foreign Pupils), in which the Italian government, in light of the growing requests of linguistic services, expresses the need to employ mediators, referred to as “esperti di madre lingua” (native experts), who had to participate in initiatives aimed at promoting the linguistic and cultural heritage (Tonioli, 2016). The norm mentioned above is fundamental since it provides the first guidelines to coordinate mediation activities in Italian schools.

After this initial acknowledgement, other decrees were approved to give further instructions regarding linguistic and cultural mediation: in 1996 the legislative decree no. 286 titled *Testo Unico sull'Immigrazione* (Consolidated Act on Immigration) was published in which the profession of linguistic and cultural mediator was officially recognised. In the following years, as the migratory flows continued to rise, the government attempted to provide further instructions on how to deal with the growing numbers of migrants: in the Ministry Circular Letter of 1 March 2006 the topic of linguistic and cultural mediators, as defined in the norm, is once again addressed; in particular the Circular Letter specifies that mediators need to be present in schools in order to support foreign pupils and provide translation and interpreting services. Then on 29th October 2009 the CNEL (National Council for Economics and Labour) published a

document titled *Mediazione e mediatori interculturali: indicazioni operative* (Mediation and intercultural mediators: operative guidelines), which defines intercultural mediators as agents who actively participate in the integration process and facilitate communication and understanding between individuals with different cultural, linguistic and religious backgrounds. This document attempted to define the mediators' roles, functions and areas of intervention and also included guidelines regarding their training (Tonioli, 2016).

Gradually the government acknowledged the need for language services not only in schools but also in healthcare institutions, in the job market and in legal proceedings: for example on 10th June 2010 the Council of Ministers adopted the *Piano per l'integrazione nella sicurezza : identità e incontro* (National Plan for Integration and Security), which included the provision of language services to help immigrants integrate into the job market; while in 2014 the European directive 2010/64 was implemented by the Italian government in order to guarantee the right to have interpreting services in the legal field.

Therefore, in the last decades there have been attempts to provide a regulatory framework regarding mediation services both at a national and local level, since the role and functions of mediators are also defined by means of regional laws. However, despite the presence of various norms, a comprehensive and national regulation outlining the roles, functions and training of this profession is still needed. Three decades after the first immigration waves this profession is still not fully recognised on a national level, even though some local institutions do have an official register listing all the qualified mediators. Moreover, the lack of adequate and well-implemented linguistic services is also because the funds granted by the government are not sufficient to properly meet all the requests and as a result mediators are often employed temporarily for occasional collaborations in emergency situations, thus making this profession even more invisible (Antonini, 2014). The lack of a clear and unambiguous definition of linguistic and cultural mediation is a telling example of the invisibility of this practice.

Given this framework, to overcome the language barrier, immigrants, public officials and teachers are forced to resort to non-professional interpreting and translation services provided by bilingual employees, family members or other available individuals, as explained in the previous sections.

2.2.3 The role of mediators in Italian schools

The need for language services is extremely widespread and concerns every area of our society in which people from different cultural and linguistic backgrounds interact, from education and healthcare institutions to public offices, refugee hubs and integration centres.

However, the present section will be dedicated to analysing the role of linguistic and cultural mediators in Italian schools, given the importance of mediation in this setting: educational institutions, especially primary and secondary schools, play a fundamental role in promoting the acculturation process and the inclusion of immigrant children and their families (Vaccarelli, 2024).

As mentioned in Section 2.2.1, mediators not only facilitate communication between people from different linguistic backgrounds, but they also promote the acculturation process and social cohesion, since they provide support to immigrants and help them understand the cultural and legal norms of the host country, thus becoming a third party in the communicative exchange.

When it comes to outlining the relationship between educational institutions and mediators, it is important to mention the guidelines for the integration of foreign students, which were first published by the Ministry of Education in 2014 and then in 2022 they were updated in accordance with the recent developments in migratory flows: these guidelines, titled *Orientamenti Interculturali. Idee e proposte per l'integrazione di alunne e alunni provenienti da contesti migratori* (Intercultural Orientations. Ideas and suggestions for the integration of pupils from migrant backgrounds), address the issue of guaranteeing immigrant children equal access to education, especially to immigrant children between the age of 0-6 years and after the age of 14 years, since in these two age groups there is a high rate of non-schooling and drop out. More specifically, the document provides operative instructions to school staff to efficiently include foreign students by means of different strategies: teaching Italian as a second language, organising intercultural training courses for school personnel, involving foreign families in school projects and providing mediation services. However, it must be noted that some of these tools have already been implemented in Italian schools over the years, such as seeking the assistance of mediators, organising lessons on intercultural citizenship, translating

school communications in various languages, etc. (Catarci, 2016) and therefore, the government guidelines simply provide further instructions on how to promote and implement intercultural education in schools.

Nowadays mediators are often called when new foreign students are enrolled in the school, since they not only provide linguistic services, but they also play an educational role: in the initial phase mediators welcome newly arrived pupils, explain how the school system works, and they help immigrants express their needs. In this regard it is important to mention the “Interpres” project, which was funded by the European Commission and was carried out by Italian, German and Greek associations with the aim of raising awareness on the role and the characteristics of intercultural mediators. Every association participating in the project organised focus groups to gather information regarding the experiences and points of view of mediators, but also of professionals, such as doctors, researchers and educators, who often deal with the subjects of immigration and inclusion. The Italian results, collected in 2008 in the regions of Tuscany and Piemonte, are particularly interesting: as for the role of mediators in schools, teachers stated that they act as a sort of “cultural bridge”, helping not only immigrant students but also the school staff, since they gather useful information regarding the background of migrant students and they promote a mutual understanding between foreign parents and teachers, especially during parent-teacher conferences. Considering these fundamental aspects regarding this profession, teachers noted that mediators should be present throughout the schoolyear and not only in the welcoming phase, as it often happens, and they should also be included in specific workshops and activities dealing with the subject of interculturality. Teachers also suggested to organise activities coordinated by mediators and dedicated to parents to both build a trusting relationship between schools and families and to make foreign parents feel included. Moreover, participants claimed that mediators should be included in the school staff meetings as experts on intercultural communication, given their experience and competence in dealing with conflicts, and they could also support teachers in learning how to implement interculturality and inclusion strategies in their lessons (Albertini and Capitani ,2010).

Another interesting study was carried out in 2017 by Assenza, who discusses cultural mediation as an educational methodology to be implemented in schools to successfully promote the inclusion of foreign pupils. The project was conducted in Sicilian schools

and addressed three main issues: teacher training, participation of linguistic and cultural mediators and the cooperation with local institutions. In this regard various seminars were carried out regarding various themes, such as the role and importance of cultural mediators in schools and how to successfully implement integration and acculturation strategies. Teachers were then asked to fill out a questionnaire regarding the efficiency of the project: the data collected showed that to guarantee equal access to education and to successfully integrate foreign students, it is fundamental to translate teaching materials and school communications, rely on mediators and cooperate with local institutions in order to develop intercultural educational programs,

Despite the studies carried out and the increasing interest in implementing a culturally inclusive education, the relationship between teachers and immigrant parents is challenging, since school staff is often confronted not only with language difficulties and cultural differences but also with non-Western educational styles they cannot understand. Foreign families, for their part, do not often agree and/or comprehend school's demands and educational aims and they often do not participate in parent-teacher conferences and school meetings, thus leading teachers to form a distorted and negative representation of immigrant families. As a result, foreign parents cannot properly express their needs and teachers continue to develop communication and relational models which are essentially based on Western norms and do not take into consideration cultural differences. Furthermore, teachers are often left alone in solving these problems and are forced to rely on ad hoc emergency strategies, since, as previously mentioned, schools do not have the necessary funds to employ mediators or they only have a limited number of hours of professional help, which is not sufficient to successfully implement acculturation and integration projects (Silva, 2008).

Considering this situation, it becomes clear that the goodwill of school staffs, local institutions and researchers is not enough: it is fundamental to adopt a regulatory framework aimed at recognizing the role and functions of mediators on a national level, ensuring proper working conditions and eliminating the widespread view that mediation is only needed in emergency situations. The formal recognition of this profession and the definition of the necessary qualifications would allow educational institutions to rely on professional mediators more frequently, thus enabling teachers and school staff to have the necessary resources to implement intercultural programs and this would consequently

enhance the integration process. However, the path towards a formal recognition is still long and at the same time there are concerns regarding whether the profession of linguistic and cultural mediator is likely to disappear, as it is going to be explained in the following section.

2.2.4 The linguistic and cultural mediator: an outdated profession?

Working as a mediator is not easy. I was employed as a precarious worker by cooperatives for a year or two. Then fortunately I found a private medical centre that had many Chinese patients and was looking for a person who could speak Chinese and answer the phone. So, I finally got a contract (Bai, 2022).

These are the words of Hong Yanyan, a Sino-Italian mediator, who in an article published in 2022 by the Italian newspaper *L'Espresso* describes one of the main issues related to this profession, namely, contractual precariousness: mediation services are usually provided on call, i.e. at the request of schools, public offices, hospitals, cooperatives and/or within the framework of temporary projects financed by local institutions or the Ministry of Education.

As mentioned in Section 2.2.2, there are no national regulations regarding working hours, retribution and the types of contracts offered and as a result many mediators work without a fixed salary and are employed precariously by organisations offering mediation services at low prices: for example some agencies sell language services for 16 euros per hour and only about half of this sum goes to the mediator, but there are also schools in Italy that offer a salary of 4 euros per hour. (Ciobanu and Nedanovska, 2009).

The precarious condition of this profession is also determined by the lack of a national official register of mediators: some regions, such as Veneto, Sicily, Valle D'Aosta, Friuli Venezia Giulia and Lazio have proceeded to open their own registers, which, however, are only valid on a regional level; whereas in other regions, such as Lombardia, this profession is still not officially recognised.

In this regard it is worth mentioning the words of Karina Vergara Scorzelli, a Spanish-speaking mediator and president of the Crinali cooperative¹⁰, who states that

¹⁰ Crinali is a Milan-based cooperative founded in 2002 with the aim of promoting the psycho-physical health and the quality of life of migrant families and refugees.

mediators of Lombardia have been fighting for years to have a regional register, a fixed salary and a defined code of ethics; however, they are always at a standstill.

Furthermore, she states that not even the establishment of the bachelor's degree in Linguistic and Intercultural Mediation led to an official recognition of the profession, highlighting how in the degree there are often various courses in Economics, which seem to encourage students in pursuing a career in corporations. In addition, it must be noted that most universities focus on the study of European languages, such as Spanish, French, English and German, whereas little to no attention is given to Arabic or Albanian, which are the languages spoken by the two most numerous foreign communities in Italy (Annual Report on Italian migrant communities, 2024).

This lack of diversity can have severe consequences in the event of emergency situations. In this regard an interesting example is the refugee crisis caused by the war in Ukraine: in 2022 when the war started almost 17 thousand Ukrainian citizens fled to Italy. However, there were not enough professional mediators who knew the language and therefore some school principals resorted to Ukrainian in home-nurses, who had been living in Italy long enough to know both Italian and Ukrainian and could therefore act as mediators (Corlazzoli, 2022).

However, it is also important to point out that migration flows change according to the evolution of geopolitical situations, therefore it is difficult to predict which languages would be more requested in the future: nowadays, for example, there is a high demand for experts in Ukrainian, while some time ago the knowledge of Farsi and Afghan languages was more requested.

Another problem is the lack of funds and the discontinuity of government loans: for example, in the summer of 2022, due to funding issues, there was a temporary suspension of mediation services in the police headquarters of many Italian cities. This event caused numerous protests from mediators and police unions, who wrote a letter to the then Prime Minister Lamorgese, pointing out that the lack of professional mediators made it impossible to continue with the integration procedures (Attanoli, 2023).

All these factors, combined with the anti-immigration rhetoric pushed by the government, are endangering this profession, despite the existence of various organizations, such as CIES Onlus and A.M.M.I. (Multiethnic Association of Intercultural Mediators), which are fighting to make this profession visible and stable and to give

mediators the acknowledgement they deserve. However, it is difficult to understand how this situation will evolve and sometimes, as Scorzelli stated, it is as if institutions are waiting for this job to become outdated.

A first step towards a solution of the issues concerning the provision of mediation services could be the long-awaited establishment of a national register, which would recognise this profession on a national level and would prevent possible exploitation by setting minimum wage parameters.

2.3 Summing up: the importance of a terminology database in this context

This chapter illustrated the complex situation regarding the provision of language services in Italy: the previous sections have explored the two main issues characterising this situation, namely the widespread presence of child language brokering and the growing invisibility of linguistic and cultural mediators.

These two phenomena are intertwined: the lack of proper recognition and regulation of the profession of the cultural mediator paves the way for the spread of non-professional interpreting and translation practices, such as child language brokering, which becomes a fundamental part in the integration process of many immigrant families, since children and adolescents learn the host language and integrate into the new country at a faster pace than their parents and are also easily available. Therefore, they become the perfect resource when trained mediators are not available or when institutions do not have enough funds to rely on professional help.

Given this framework and the government's lack of interest regarding the situation, public offices, schools, healthcare institutions and society in general are often left alone in dealing with newly arrived families and often do not know how to implement the integration procedures and to communicate with migrants, especially when it comes to specific terminology and difficult concepts.

One of the main settings affected by this issue is the school: the funds received are not enough to cover all the foreign students' needs and as a result teachers need to find alternative solutions to communicate with newly arrived families. This creates a frustrating and difficult environment, and the situation worsens when teachers need to talk with parents about childhood disorders pupils may suffer from: these are contexts in

which rather complex terminology is used and therefore in cases where mediation between two languages is required, communication may become impossible if the necessary resources are not available.

Therefore, the development of a terminology database relating to the field of childhood disorders could improve the situation, providing teachers and cultural mediators with a tool facilitating the communication of specialised information to the families of non-Italian pupils.

The next chapter will then describe the project in detail, and it will focus in particular on the main steps characterising the preparation phase, which consisted in overviewing the existing terminology databases in the selected domain and in identifying the database's main features and potential users, who were then asked to fill in a questionnaire in order to have a better understanding of their needs.

3. Development of the terminology database: project preparation

This chapter describes the main steps characterising the preparation process of the terminology resource. First, we will analyse the domain chosen for this project: after explaining the reasons that led to choice of the selected domain, Section 3.1 aims at providing an overview of childhood disorders, with a special focus on the three most frequent diagnostic grouping, i.e., neurodevelopmental disorders, anxiety disorders and disruptive, impulse-control and conduct disorders, whose categorization, aetiology and recommended therapy will be the object of discussion in the first part of this chapter.

The second part of the chapter will be dedicated to the next phase of the project preparation. Section 3.2 focuses on identifying the characteristics of the database and the potential users: therefore, we will reflect on which professionals would benefit from using a terminology resource and which data categories could be included. Then, in Section 3.3 we will directly address the future users of the database through the creation of a questionnaire to gather their opinions on the terminology resource and on the phenomenon of child language brokering, analysed in Chapter 2. Therefore, the last part of this chapter will analyse the questionnaire's structure, the data collected, and the main difficulties encountered during the administration process.

3.1 Choice and description of the analysed domain: an overview of childhood disorders

Before delving into the description of the main steps characterising the preparation phase of the terminology resource, it is important to provide a framework of the domain chosen for this project. Given the complex situation Italian schools are facing from the point of view of language services and presence of children coming from migrant families, we have decided to develop a tool which could ease the difficulties educational and social institutions are dealing with. Therefore, after careful considerations, we have decided to include in the terminology resource terms belonging to the domain of childhood disorders. The reason behind this choice is twofold: the number of children suffering from these disorders is increasing, as it will be explained in the next sections,

and this subject field uses complex terminology which is difficult to understand and to translate. Thus, a multilingual resource containing terms relating to childhood disorders could promote the communication between professionals and non-Italian families in cases where a mediation between two languages is required and an interpreting service is not available.

Once the subject field has been selected, it is important to investigate it, starting with the definition and categorization of childhood disorders, which are usually described as serious changes in the behaviour, emotional regulation, social skills, and/or cognitive development of children and adolescents. These changes do not correspond to the normal stages of childhood development and cause distress and problems in carrying out daily activities. In this regard it must be noted that isolated episodes, which are a normal part of a child's development, do not necessarily indicate the presence of a disorder, which instead can be diagnosed if the disruptive behaviours are persistent and cannot be stopped by adult interventions (Baptism Health and Western Washington Medical Group).

Furthermore, according to the Turin Centre of Psychology and Psychotherapy (2019) childhood disorders fall into 8 main categories: neurodevelopmental disorders, depressive disorders, anxiety disorders, obsessive-compulsive disorders, trauma and stressor-related disorders, feeding and eating disorders, elimination disorders, disruptive, impulse-control and conduct disorders. However, we will focus only on three most common diagnostic grouping: neurodevelopmental disorders, anxiety disorders and disruptive, impulse-control and conduct disorders (Hansen et al., 2018).

3.1.1 Neurodevelopmental disorders: categorization, aetiology and recommended therapy

Neurodevelopmental disorders (NDDs) are a group of heterogenous clinical conditions which specifically emerge during the developmental period, typically in the early stages of development and often before the child enters school (DSM-5-TR, 2022). These disorders lead to a developmental deficit and subsequently to an impairment of personal, social, school and/or work functioning. This may range from very specific limitations in learning, up to the global impairment of social skills and/or intellectual abilities. In this regard, it must be noted that NDDs frequently occur in comorbidity,

meaning that they co-occur with one another: for example, it is not uncommon to diagnose in a child both an autism spectrum disorder and an intellectual disability or to make a dual diagnosis of ADHD and a specific learning disorder. In addition to this homotypic comorbidity, which indicates the presence of disorders belonging to the same diagnostic grouping, there are also cases of heterotypic comorbidity, i.e. the coexistence of disorders of a different nature, for example, a dual diagnosis of a neurodevelopmental disorder and a bipolar disorder (Aro et al., 2024).

The DSM-5, the Diagnostic and Statistical Manual of Mental Disorders, whose latest edition was published in 2022, identifies, among individuals under the age of 18, the following categories of disorders, which are in turn divided into specific subtypes:

- Intellectual Developmental Disorder: this disorder is characterized by deficits in mental abilities, including reasoning, problem solving, abstract thinking, planning and academic learning. As a result, children show impairments in one or more aspects of daily life, such as social participation, communication and personal independence. One of the potential causes of this disorder may be an acquired insult during the developmental period from, for example, a severe head injury. This category also includes the so-called “global developmental delay”, which it is diagnosed when the child does not meet the expected developmental milestones in one or more areas of intellectual functioning.
- Communication Disorders: this category includes various types of disorders, such as language disorder, speech sound disorder, social (pragmatic) communication disorder, and childhood-onset fluency disorder (stuttering). The first three disorders are characterized by deficits in the development and use of language, speech and social communication, including verbal and non-verbal communication. Childhood-onset fluency disorder, on the other hand, includes difficulties in the normal fluency and production of speech (broken words, repetition of sounds and syllables, blocking).
- Autism Spectrum Disorders: it is diagnosed when the child shows deficits in social communication and interactions, resulting in impairments in developing, maintaining and understanding relationships and emotions. Moreover, this disorder is characterized by the presence of limited and repetitive behaviours (e.g., lining up toys or flipping objects, echolalia, idiosyncratic phrases) interests and

activities (e.g. strong attachment to or preoccupation with unusual objects). Children with an autism spectrum disorder often show a hyper- or hypo-responsiveness to sensory stimuli or an unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, aversion towards specific tactile sounds or textures, sniffing or touching objects excessively, being fascinated by lights or movements).

- Attention-Deficit/Hyperactivity Disorder (ADHD): it is defined by the lack of attention, organization and/or by impairing levels of hyperactivity-impulsivity. This results in the inability to stay on the task, to stay seated and to wait, along with other characteristics, such as seeming not to listen, intruding in other people's activities and losing materials with levels that are excessive for the age or developmental stage. ADHD often overlaps with the so-called "externalizing disorders", such as oppositional defiant disorder and conduct disorder and it usually persists into adulthood, causing difficulties in the social, academic and occupational life.
- Specific Learning Disorder (SLD): it usually manifests during the first years of schooling, and it is characterised by persistent and impairing difficulties with learning skills related to reading, writing and/or math. As a result, the academic skills shown by the child are well below average for age or are achieved at an acceptable level only with extreme effort. Moreover, it is important to point out that children considered intellectually gifted may suffer from a specific learning disorder, which manifests only when the learning or assessment procedures, such as timed tests, present obstacles which cannot be overcome by compensatory strategies and intellectual abilities. SLD can result in lifelong impairments in activities depending on the affected skills, including occupational performance.
- Motor Disorders: this category includes developmental coordination disorder, stereotypic movement disorder, and tic disorders. The first one manifests when the child shows deficits in acquiring and executing coordinated motor skills and it is characterised by clumsiness, slowness and inaccurate motor skills which interfere with the activities of daily life. Stereotypic movement disorder, on the other hand, manifests with repetitive and seemingly purposeless motor behaviours such as hitting, self-biting, hand flapping, body rocking and/or head banging

which interfere with daily activities. Lastly, tic disorders are a diagnostic grouping diagnosed in the presence of sudden, recurrent and stereotyped movements or vocalisations and include Tourette's disorder, persistent (chronic) motor or vocal tic disorder, provisional tic disorder, other specified tic disorders, and unspecified tic disorder.

- Other Neurodevelopmental Disorders: this category applies in cases where symptoms belonging to neurodevelopmental disorder predominate but do not meet the full criteria for a diagnosis. We can distinguish between other specified and unspecified neurodevelopmental disorders: in the first case the clinician specifies the reasons why the criteria are not met, which are not communicated in the case of an unspecified neurodevelopmental disorder.

In regard of the aetiology, i.e. the cause behind the onset of NDDs, it must be noted that these disorders are caused by the interaction of different genetic and environmental factors. Moreover, due to a complex interplay between biological and socio-cultural factors, the male gender has a two to four times higher risk of presenting NDDs: the studies in this regard are still unclear, however, it appears that the two different XY sex chromosomes confer greater genetic variability. In addition, the male brain develops more slowly than the female brain, which leads it to be more exposed to damaging and stressful events. In contrast, the female gender seems to be protected by its second X sex chromosome (May et al., 2019).

Furthermore, it is important to note that the overall prevalence rate of neurodevelopmental disorders ranges globally from a minimum of 4.70% in Scotland to a maximum of 88.50% in Japan. These fluctuations are due to various reasons, such as the activity of the different governments in detecting and diagnosing these disorders, which tend to be underdiagnosed in developing countries. However, these statistics do not consider the very frequent co-morbidities between the various disorders, which, in most cases, are analysed individually (Francés et al., 2022). An example contrary to this tendency is provided by a study carried out by two Norwegian CAMHS (Child and Adolescent Mental Health Services), with the administration of the K-SADS-PL¹¹

¹¹ The K-SADS-PL is a diagnostic interview designed to assess current and past episodes of psychopathology in children and adolescents according to the criteria of DSM-5 (Diagnostic and Statistical Manual of Mental Disorders). Psychologists and neuropsychiatrists administer the K-SADS-PL by

interview to parents. According to the data collected 55.5% of the total number of patients between the ages of 7 and 13 were found to have a neurodevelopmental disorder: among these patients 31.4% had no comorbidity, while 21.2% were diagnosed with more than one neurodevelopmental disorder (homotypic comorbidity) and 58% showed heterotypic comorbidity, i.e., suffered from one or more non-NDDs (Hansen et al., 2018).

In addition to this, it appears that in the last decade in Italy the number of children suffering from NDDs has increased. The Italian National Institute of Health (ISS) reports that neurodevelopmental disorders in childhood and adolescence are on the rise: between 10 and 20% of the child and adolescent population between the ages of 0 and 17 are diagnosed with a neurodevelopmental disorder, mostly determined by a complex interweaving of genetic predisposition, neurobiological vulnerability and environmental and social variables (ISS, 2022). This situation is confirmed by another factor: in Italy, pupils certified under Law 104/92 have increased by 40% in the last ten years. In this regard it is important to point out that this law aims at guaranteeing the assistance, social integration and rights of disabled individuals and allows them to be supported at school by a special education teacher. According to the ISTAT (2024) the number of children benefiting from the Law 104/92 has increased from 1.89% in the 2004/2005 school year to 4.1% in the 2022/2023 school year, a 7% increase compared to the previous year.

As previously mentioned, the aetiology of NDDs is multifactorial, with several genetic and environmental conditions that interact with each other, and, as a result, neurodevelopmental disorders are caused by several factors, which have been divided into two macro categories:

- Aetiological: one of the potential causes behind the onset of NDDs may be air pollution and in particular, high exposure to particulate matter (PM), which can lead to respiratory and cardiovascular problems and can damage the developing brain, particularly the central nervous system, causing oxidative stress and neuroinflammation, which can potentially contribute to the onset of neurodevelopmental disorders (Costa et al., 2020). Other aetiological risk factors include highly traumatic living conditions, such as abuse and maltreatment, the

interviewing the parent(s), the child, and finally achieving summary ratings which include all sources of information (parent, child, teachers, chart and other). This interview consists of 6 parts: an unstructured introductory interview; diagnostic screening interview; the Supplement Completion Checklist; the appropriate Diagnostic Supplements; the Summary Lifetime Diagnoses Checklist; and the Children's Global Assessment Scale rating (Ferretti 2020).

presence of serious physical health problems or a psychiatric disorder in a parent, sibling or significant family member or a family history of neurodevelopmental disorders (Tick et al., 2016). Furthermore, another risk factor is the Covid-19 pandemic, which had a negative effect on the mental health of individuals, since during the pandemic there has been an onset of new disorders in vulnerable children and the worsening of those already diagnosed (Bentenuto et al., 2021).

- Non-aetiological: this category includes factors which have helped to correctly diagnose these disorders, such as the introduction of screening and early detection strategies, the development of better diagnostic tools and procedures, a better definition of diagnostic criteria in manuals and greater awareness and sensitivity on the part of health professionals, teachers, families and the population in general, with greater ability to observe and identify the so-called red flags (Cainelli and Bisiacchi, 2023) .

Lastly, it is important to highlight that the treatment of neurodevelopmental disorders is variable and depends on the needs of each child: a careful assessment and personalised approach is fundamental since there are several intervention options that can be applied, depending on the type and severity of the disorder. For example, one of the most common approaches consists in relying on cognitive behavioural therapy (CBT), which is a structured, goal-oriented type of talk therapy that teaches individuals how to control their thoughts so they can better manage their unwanted feelings and prevent troublesome behaviours. “CBT differs from other therapy approaches by focusing on the ways that a child or adolescent’s thoughts, emotions, and behaviours are interconnected, and how they each affect one another” (Society of Clinical Child and Adolescent Psychology, 2017). Moreover, a child diagnosed with NDDs benefit from specialized educational programs that are tailored to their specific need and in some cases, in particular for the treatment of ADHD, some medications may be prescribed, which have to be carefully selected and administered (Kodish et al., 2011).

3.1.2 Anxiety disorders in children: categorization, aetiology and recommended therapy

The Dictionary of Psychology, developed by the American Psychological Association (APA) defines anxiety as:

an emotion characterized by apprehension and somatic symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune. The body often mobilizes itself to meet the perceived threat: Muscles become tense, breathing is faster, and the heart beats more rapidly. Anxiety may be distinguished from fear both conceptually and physiologically, although the two terms are often used interchangeably. Anxiety is considered a future-oriented, long-acting response broadly focused on a diffuse threat, whereas fear is an appropriate, present-oriented, and short-lived response to a clearly identifiable and specific threat (APA, 2018).

As mentioned by the APA, anxiety includes a variety of somatic symptoms, such as tremors, muscle tension, profuse sweating and increased heartbeat and breathing, but it also manifests through cognitive symptoms, like mental emptiness, increasing feeling of alarm and danger, negative thoughts and predictions and anxious beliefs (Rector et al. 2016). To diagnose an anxiety disorder these symptoms must be persistent and severe: they must continue for more than 6 months, causing distress and impairing normal thinking to the point that studying, working, socialising and daily activities are negatively affected (Rector et al., 2016; Pop-Jordanova, 2019).

Anxiety disorders are divided into 11 categories, identified by the DMS-5-TR (2022) and ordered according to the age at which the disorder usually manifests:

- Separation Anxiety: it is diagnosed when a child feels excessively fearful or anxious about being separated from attachment figures with reluctance to move away from them, with nightmares and physical symptoms of distress and a persistent fear or concern that these figures could be harmed or/and that accidents may happen resulting in a loss or separation.
- Selective Mutism: children suffering from this disorder constantly fail to speak in social situations when they are supposed to interact with others and respond to questions, for example at school. This lack of speech manifests in interactions with children and/or adults and it is not caused by a lack of knowledge of the spoken language or by a communication disorder. Children with selective mutism speak at home with their parents and siblings, but not with close friends or second-degree relatives, like grandparents or cousins. Moreover, this disorder is often

found in comorbidity with social anxiety. Selective mutism leads to educational impairments, since teachers find it difficult to assess certain skills (e.g., reading), and it interferes with social communication, even though children may rely on nonverbal language to communicate.

- Specific Phobia: it is characterised by fear or anxiety towards specific objects and situations, which are avoided by the child or endured with great discomfort. These feelings of fear, avoidance and/or anxiety are persistent and out of proportion compared to the actual risk posed by the specific object/situation. This disorder causes significant distress, and it negatively affects social and occupational areas of functioning. Moreover, specific phobias are divided into five subtypes: animal, natural environment (e.g., heights, water), blood-injection-injury, situational (e.g., airplanes, elevators, enclosed places) and other (e.g., loud sounds, costumed characters).
- Social Anxiety Disorder: it is marked by fear or anxiety regarding social situations, which are avoided or endured with great difficulty. Examples are social interactions, such as conversations or meeting unfamiliar people, and contexts in which the child is observed (e.g., eating or drinking) or has to perform in front of others (e.g., giving a speech). Children suffering from a social anxiety disorder express their distress through crying, freezing, clinging or failing to speak.
- Panic Disorder: it is diagnosed when the child experiences recurrent and unexpected panic attacks, i.e. “an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes” (DSM-5-TR 2022, p. 235), which can occur whether there is a calm or anxious state and presents symptoms, such as palpitations, sweating, chest pains, accelerated heart rate and fear of dying. Furthermore, the child may manifest a persistent worry about experiencing additional panic attack, which leads to adopting certain behaviours to avoid further episodes (e.g., avoiding unfamiliar situations).
- Agoraphobia: this disorder is marked by fear or anxiety relating to using public transportation (e.g., automobiles, buses, trains, ships, planes), being in open spaces (e.g., parking lots, marketplaces, bridges) or enclosed places (e.g., shops, theatres, cinemas) and being in a crowd or outside of the home alone. These situations are avoided and endured only with the presence of a companion, since

the child believes that something terrible might happen and escaping from such situations might be difficult.

- Generalized Anxiety Disorder: it manifests through excessive anxiety and concern about various events and activities. These feelings interfere with daily activities and are associated with symptoms like irritability, difficulty concentrating, muscle tension, restlessness and sleep disturbance.
- Substance/Medication-Induced Anxiety Disorder: it is characterised by panic attacks or anxiety caused by intoxication or withdrawal from a substance or exposure or withdrawal from a medication.
- Anxiety Disorder Due to Another Medical Condition: in this case panic attacks or anxiety are the physiological consequence of another medical condition, such as endocrine disease, cardiovascular disorders, respiratory illness and neurological illness, which are known to cause anxiety.
- Other Specified and Unspecified Anxiety Disorders: this category applies to cases in which the symptoms of an anxiety disorder predominate but “do not meet the full criteria for any of the disorders in the anxiety disorders diagnostic class, and do not meet criteria for adjustment disorder with anxiety or adjustment disorder with mixed anxiety and depressed mood” (DSM-5-TR 2022, p. 262). Clinicians can decide to communicate the reason why the manifestation fails to meet the criteria for a specific anxiety disorder (other specified anxiety disorder) or they can choose not to specify it (unspecified anxiety disorder).

Anxiety disorders, especially generalised anxiety disorder, separation anxiety disorder and specific phobias, represent one of the most common pathologies in childhood and adolescence, with a prevalence of 9.3% up to 39.9%, if a comorbid psychopathology is present (Walsh et al., 2021). Furthermore, it is also important to point out that anxiety disorders are more frequent in girls than boys, since they are more prone to develop specific phobias, panic disorder, agoraphobia and separation anxiety disorder (Al-Biltagi and Sarhan, 2016): differences in parenting style, temperament and coping styles, as well as cultural factors and gender stereotypes, are all factors that may lead to a higher prevalence of anxiety in girls (Bodden et al., 2009).

As for the aetiology of anxiety disorders, it must be noted that they are not caused by a single gene or psychological factor, as their onset is typically due to various biological, psychological and environmental factors: as Pop-Jordanova (2019) explains, several variables can contribute to the onset of an anxiety disorder, such as genetic inheritance, but also parenting style, possible parental psychopathologies and the child's inhibited temperament. As a matter of fact, we can identify two mechanisms which explain the reason behind the tendency of anxiety disorders to run in families: first, the presence of a childhood characteristic known as “behavioural inhibition”, which is linked to a higher incidence of anxiety problems in adolescence and seems to be partially inherited; and second, certain parent modelling and/or early traumatic experiences can transmit social fears and avoidance to children. In this regard it is important to highlight that premature exposure to traumatic events, such as natural disasters, early hospitalisation, parental loss, abuse, neglect, as well as parental divorce and separation, increase the risk of developing anxiety disorders and depression (Elmore and Crouch, 2020; Barnhill, 2023). Moreover, parent modelling plays a fundamental role, since overprotective, hyper-controlling, hypercritical and neglectful parenting styles are risk factors, especially if the child presents an inhibited temperament (Al-Biltagi and Sarhan, 2016). According to certain theories, these experiences and a genetic predisposition prime certain kids to be exceptionally aware of their own mental and physical responses to stress, which might subsequently result in panic disorder and social anxiety disorder (Barnhill, 2023).

Other risk factors include a lack of protective relationships with adult reference figures and stressful environmental events, such as high expectations from parents and teachers, unrealistic ambitions and school pressures, which can lead children to develop psychosomatic symptoms, such as fatigue, headaches, stomach-ache, sweaty palms and crying, nervous, avoidant behaviour, aggressive, defensive and self-consolation (Pop-Jordanova, 2019).

Furthermore, it must be noted that the Covid-19 pandemic played a fundamental role: economic hardship, uncertainty regarding the future, fears of infection, loss of relatives and loved ones, restrictions and isolation (e.g., masks, social distancing) created an environment of anxiety and fear which led to an increase in the rates of anxiety disorder, especially in children (Shafran et al., 2021).

When treating these disorders, clinicians usually rely on a variety of interventions, such as relaxation techniques (e.g., muscle relaxation, breathing management, yoga, and/or meditation), which prove to be very useful, as they provide patients with a tool to control anxiety. Another treatment typically employed is cognitive-behavioural therapy (CBT), which is also used for neurodevelopmental disorders (see Section 3.1.1) and consist of two parts: cognitive restructuring and exposure therapy. The first part focuses on analysing the thoughts, behaviours and triggers of the patient, who usually overestimates the danger and underestimates their ability to overcome it. Then, exposure therapy involves gradual exposure to the trigger to desensitize the patient (Bandelow et al., 2017).

Lastly, clinician may decide to adopt pharmacotherapy: in this case antidepressants and benzodiazepines are prescribed, as they proved to be particularly helpful in treating anxiety disorders, especially when used in combination with cognitive-behavioural therapy and relaxation techniques (Cuijpers et al., 2014).

3.1.3 Disruptive, Impulse-Control and Conduct Disorders: categorization, aetiology and recommended therapy

The ability to act appropriately in accordance with the current social norms and to regulate one's own behaviour and emotions autonomously and effectively are two fundamental aspects of a child's development. These are, however, complex skills that are acquired gradually throughout childhood: according to the present literature on developmental psychology, a key stage of the child's development is when they move from regulation based on external adult support to true self-regulation, i.e., when the child no longer needs to rely on external help and can control themselves even when the adult is not present. The acquisition of this ability usually happens between 24 and 36 months, the age at which the child begins to internalise the rules of the adult world and becomes aware of the presence of social norms and the consequences of breaking them. While it is common for children and adolescents to show irritable or aggressive behaviours, if said episodes are frequent, i.e., last for at least 6 months, and cause severe problems in various aspects of these children's lives, a behavioural or emotion regulation disorder may be present (Matthys and Lochman, 2017).

According to the DSM-5-TR (2022), disruptive, impulse-control and conduct disorders represent a diagnostic grouping, which includes

Conditions involving problems in the self-control of emotions and behaviours. While other disorders in DSM-5 may also involve problems in emotional and/or behavioural regulation, the disorders in this chapter are unique in that these problems are manifested in behaviours that violate the rights of others (e.g., aggression, destruction of property) and/or that bring the individual into significant conflict with societal norms or authority figures (DSM-5-TR 2022, p. 522).

We can identify 8 specific subtypes belonging to this category:

- **Oppositional Defiant Disorder (ODD):** this disorder is characterised by a pattern of irritable mood, argumentative behaviour and vindictiveness which are evidenced by symptoms such as often losing temper, deliberately annoying and provoking others, refusing to follow rules and arguing with peers, adults and/or authoritative figures (e.g., teachers). In mild cases this disorder is confined to only one setting, most likely the home; however, in more severe cases the symptoms of ODD manifest in multiple settings (e.g., school, home, etc.). Furthermore, it is interesting to note that individuals with this disorder do not perceive themselves as angry or oppositional, but rather justify their behaviours as a response to unreasonable demands.
- **Intermittent Explosive Disorder:** it is marked by recurrent outburst, which last 30 minutes and represent a consequence of failing to manage aggressive impulses in response to a minor provocation. These outbursts are not premeditated and manifest through verbal or physical aggression towards property, animals or other individuals, which may result in damages or injuries.
- **Conduct Disorder:** children with this disorder violate the rights of others and/or societal norms and rules, as shown by the presence of symptoms such as bullying, threatening or intimidating others, being physically cruel to people and/or animals, running away from home overnight, stealing and destroying others' property. Individuals diagnosed with conduct disorder do not feel guilty about their actions and do not express feelings or show emotions to others, to the point of completely lacking empathy. Furthermore, there are three subtypes of conduct disorder, depending on the age of its onset: childhood-onset types, if the symptoms show prior to age 10 years, adolescent-onset type, if they show after age 10, or unspecified onset, if it is not possible to determine the age of onset.

- Antisocial Personality Disorder: it is characterised by a recurrent pattern of violation of the rights of others, failure to respect social norms, disregard for the safety of others, aggressiveness and deceitfulness. Moreover, individuals with antisocial personality disorder do not feel remorse for their actions and often blame the victims or superficially rationalise their behaviour. It is important to note that this diagnosis is given when the individual is at least 18 years old and has shown symptoms of conduct disorder before the age of 15.
- Pyromania: children diagnosed with this disorder are attracted to fire and feel pleasure or relief when setting or witnessing fires. In this regard it is important to point out that fire setting is not done in response to intellectual disability or to express anger or vengeance. Other symptoms of this disorder include setting off fire alarms, spending time at the fire department.
- Kleptomania: it is marked by an irresistible impulse to steal objects, even though the items are not needed for personal use and do not hold monetary value. The individual diagnosed with this disorder feels pleasure, gratification and relief when committing the theft, which is not done to express anger or vengeance and is not explained by the presence of a conduct disorder.
- Other Specified and Unspecified Disruptive, Impulse-Control, and Conduct Disorder: this category applies to cases in which the symptoms of a disruptive, impulse-control, and conduct disorder predominate but “do not meet the full criteria for any of the disorders in the disruptive, impulse-control, and conduct disorders diagnostic class.” (DSM-5-TR 2022, p. 542). Clinicians can decide to communicate the reason why the manifestation fails to meet the criteria (other specified disruptive, impulse-control, and conduct disorder) or they can choose not to specify it (unspecified disruptive, impulse-control, and conduct disorder).

It is important to point out that, among the diagnostic grouping described above, the oppositional defiant disorder is one of the most frequent diagnoses in childhood. Even though the DSM-5 has provided indications regarding the diagnostic criteria, prevalence rates vary enormously since these criteria are still highly subjective: on one hand, according to some studies, the prevalence of disruptive, impulse-control, and conduct disorders has increased in recent decades with rates ranging between 6 and 16% in males

and between 2 and 9% in females (Ruglioni et al., 2009). On the other hand, the most recent literature notes a prevalence of no more than 15% and points out that before puberty, males are much more affected than females, while during adolescence the difference diminishes (Elia, 2023). However, these rates vary widely depending on the nature of the population and the methods of assessment (Bassarath, 2001).

As with many other psychopathologies in the field of childhood development, when analysing the aetiology of disruptive, impulse-control and conduct disorders, it is important to consider that various factors contribute to their onset, which can be caused by biological, socio-environmental and psychological elements. For example, some characteristic traits of these disorders can be inherited, since children whose families have suffered from such disorders or other pathologies, such as learning disabilities, anxiety, depression or bipolar psychosis may be at greater risk of presenting and/or developing behavioural and emotional disorders (Matthys and Lochman, 2019). Moreover, research has shown that children suffering from disruptive, impulse-control and conduct disorders present a particular form of the 5-HTTLPR gene allele, which reduces the activity of the amygdala and leads to more calculated and cooler manifestations of aggression. Another risk factor is the socio-economic background: children whose families have experienced abuse, financial difficulties, exposure to violence, alcohol and drugs are more likely to show symptoms of a disruptive disorder (Sadeh et al., 2010 in Lambruschi and Muratori, 2013). Psychological factors also play a fundamental role in the onset of these disorders: children with temperamental vulnerability often show aggressive behaviours as a response to negative emotions (such as anxiety and sadness) that are easily activated even after minor provocations. In these cases, aggression becomes a functional regulation mode for a system that is poorly regulated (Lambruschi and Muratori, 2013).

These disorders can be treated with both pharmacological and psychological techniques. The most effective treatment options integrate psychosocial, psycho-educational, psychotherapeutic and family interventions; however, individuals with more severe diagnoses may show resistance to these treatments. In these cases, a pharmacological intervention is required, since it reduces the intensity of the symptoms, and it improves the effectiveness of other associated treatments (Lambruschi and Muratori, 2013).

Among the most widely used psychological techniques, Lochman's Coping Power Program (CPP) is particularly important: the CPP consists of 34 group sessions during which therapists teach patients to manage their anger, use appropriate problem-solving strategies, developing emotional awareness and using relaxation techniques. A first phase is devoted to identifying the signals that constitute negative emotions, which is a fundamental prerequisite for their subsequent regulation. In the next phase, the patient is trained to assume the perspective of others: the aim is to increase the patient's willingness to consider the others' point of view by accepting that it may be characterised by hostility, as well as by learning to consider that it may not be threatening (Buonanno, 2016).

3.2 Project preparation: identification of the database's characteristics and potential users

After having provided an overview of childhood disorders and having clarified the reasons behind the choice of this specific domain, the next phase of the project began, which consisted in identifying the characteristics of the database and the potential users.

First, we reflected on which professionals would benefit from using this terminology resource and identified three main categories of potential users: the resource is going to be addressed firstly to language professionals, such as interpreters, translators and cultural and linguistic mediators, since these experts often rely on terminology resources when dealing with specialized domains and we believed that this database could facilitate their work.

The second category of users includes teachers. This decision stems from our experience as a special education teacher: between 2021 and 2022 we worked in a kindergarten located in the province of Vicenza, in the Veneto region. The school had a high number of pupils who had been diagnosed with childhood disorders and, moreover, most children attending the kindergarten came from families in which parents did not have a proper command of Italian. As a result, parent-teacher conferences were difficult to carry out and communication was possible only with the help of a small group of teachers who had some basic knowledge of English. In this regard, it must be noted that meetings between parents and teachers are fundamental, since during these conferences the pupil's eventual difficulties are described along with the possible strategies that can

be adopted to improve the situation. Thus, it is fundamental that the communication is clear and precise. However this aim is often impossible to achieve, since, as explained in Chapter 2, schools do not have enough funds to rely on language experts and, therefore, teachers are often left alone to find alternative and creative solutions to communicate with migrant families. In addition to this, the situation described is not limited to the school where this phenomenon was observed, but it also concerns other institutions, as emerged from the analysis of the provision of language services in Italy and of the phenomenon of child language brokering (see Chapter 2).

Furthermore, from the observations collected during our work experience, we thought that this phenomenon might also affect other areas, hence our decision to include social workers, as the potential users of the resource, since these professionals might come into contact or work with migrant families who do not speak and/or understand Italian.

Thus, the aim of the project is not only to create a resource for translators, interpreters and mediators, but also for teachers and social workers, so that they could have a tool to facilitate the communication of specialised information to non-Italian families, in cases where an interpreting service is not available.

After defining the potential users, we moved on to the second part of the preparation phase, which consisted in identifying the characteristics of the database. First, we selected the languages in which the information on the resource would be available: we decided to include the languages we have command of, i.e. Italian, English and Russian, to create a trilingual database that could reach a vast number of users. In this regard, we decided to include the possibility for language professionals to add other terminological records and other languages, so that the database can be expanded and can reach a larger audience.

Then we began to identify the potential categories to include in the resource: first, we decided to apply the FAIR principles, which have been explained in the first chapter (see Section 1.4.2), to guarantee the quality and efficient management of data included in the database. In this regard we adopted part of the categories included in the terminological records of the FAIR term Web application (see Chapter 4). However we decided to leave out some categories, such as the ones relating to the semic analysis, etymology, meronyms and holonyms, since the objective is to create a terminology resource which all the addressed professionals could easily use: therefore, the categories

specific to the language field were excluded in order to avoid confusion among teachers and social workers.

As a result, we initially selected the sixteen following categories which then would have to be divided into three sections, namely formal features, variation and usage:

- Definition
- Pronunciation
- Part of speech
- Gender
- Number
- Hypernym
- Abbreviation
- Acronym
- Common name
- Full form
- Subject field
- Subdomain
- Register
- Context
- External cross-reference
- Source

As for the category related to the pronunciation, we decided to include not only the phonetic transcription, but also an audio, so that in cases in which an interpreting service is not available, teachers and social workers can correctly pronounce the English and Russian equivalents of the given term.

However, as our research continued, we began to think about the possibility of including in the resource other information apart from the term categories: we believed that in order to develop a resource that could be useful to all the potential users, we would also have to include useful information about the disorders, so that language professionals, teachers and social workers can rely on a tool that provides them not only with the equivalent in English and Russian of the given term but also with the information about the disorder. In doing so users have all the necessary data in one database without

having to collect it from other sources. After careful consideration we decided to add four additional categories providing information about the disorder, namely causes, symptoms, therapy, diagnostic tools.

Once we identified all the categories to include in the database, we grouped them into three main sections. The first one, titled *Overview*, is going to contain all the main information: the term with the relative pronunciation, the definition of the disorder, the name of the source on which we rely to write the definition along with the external link, referred to as external cross-reference. We also included a category titled *Note*, in which it is possible to clarify certain aspects of the term or definition, for example if the latter has been taken from an external source or it has been created by the person responsible for the record.

The second section is called *About the disorder* and contains the categories providing information about the disorder, i.e., causes, symptoms, therapy diagnostic tools. This section also includes the name of the source used to collect the data and the external link.

The last section is titled *Features of the term*, and it is divided into three subsections: the first one includes the formal features of the term, namely the part of speech to which it belongs, the gender, number and hypernym. Another subsection is dedicated to collecting data regarding the possible variations of the terminological unit, for example if it has an abbreviation, an acronym, a common name, i.e., a name used by laypeople, or, if the term is an acronym, if it has a full form. Lastly, we decided to include categories relating to the term's usage, since we believed it would be useful to indicate the subject field and subdomain to which the term belongs, along with the register, i.e., whether it is formal or informal. Furthermore, we decided to include a category in which a sentence or part of a sentence containing the given term will be shown with the aim of providing information regarding the context in which the term is used.

The table below represents the main sections and subsections in which initially we thought to organize the database. However it is important to note that this table represents a starting point, since, as the project proceeded, the work has been refined and thus, the sections in which we grouped the data categories changed, as we will explain in Chapter 5.

Overview	About the Disorder	Features of the term		
Term	Causes	<u>Formal features</u>	<u>Variation</u>	<u>Usage</u>
Pronunciation	Symptoms	Part of speech	Abbreviation	Subject field
Definition	Therapy	Gender	Acronym	Subdomain
External cross-ref	Diagnostic tools	Number	Common name	Register
Source	External cross-ref	Hypernym	Full form	Context
Notes	Source			External cross-ref
				Source

3.3 Preparation of the questionnaire and analysis of its results

After the initial phase of the project, in which we identified the data categories and the potential users of the terminology resource, the next step consisted in addressing social workers, teachers and language experts, i.e., the future users of the database, with a threefold objective: examining the provision of language services in Italian schools and investigating the extent to which child language brokering (CLB) is practiced, with the purpose of verifying whether the information presented in the second chapter regarding the role of cultural mediators and the spread of the CLB phenomenon were indeed observed by professionals working in the linguistic and educational field. Furthermore, the other objective was to gather the users' opinions and preferences on the terminology resource with the aim of ensuring that the data categories identified in the initial phase of the project could be useful for the intended users.

As for the data collection tool used for the purpose of this project, it was decided to rely on a self-reported questionnaire, since it is a cost-effective and quick way to collect quantitative data from a large number of respondents belonging to different contexts. Moreover, questionnaires are versatile instruments, as they can be used to cover numerous

topics and they allow participants to respond at their own convenient time and in their own words, in the case of open-ended questions, thus eliminating the interviewer bias and ensuring the impartiality of the collected data. Another advantage of relying on this type of research instrument lies in the fact that the collected data can be efficiently analysed and interpreted through statistical methods.

However, questionnaires may also bring some disadvantages: for example, the response rates could be quite low, especially when questionnaires are administered through electronic mail (Saunders, 2016 in Mazikana, 2023). Furthermore, the researcher is often not present when participants respond to the questions, thus he/she cannot explain eventual issues or doubts, and this can lead to incorrectly filled or incomplete answers which comprise the quality of the gathered information. Another considerable issue with questionnaires is that they need to be simple and answerable in a short time, otherwise participants could lose interest and stop responding halfway through (Mazikana, 2023).

Having considered both the advantages and disadvantages of surveys, the questionnaire was considered to be the most efficient research tool in this case, since it is cost and time-effective and it is easy to administer, allowing to reach professionals belonging to different fields and different regions of Italy.

3.3.1 The questionnaire's structure

After selecting the data collection tool, the next phase consisted in creating the questionnaire, which was designed in Italian with Google Forms and was administered via e-mail. It contained mostly close-ended questions and only a few open questions, organised in well-structured sections so that its completion could be straightforward for the respondents. Furthermore, great attention was given to the structure of the questions, which were carefully worded to maintain a neutral and formal register and to avoid any ambiguity. The target population included social workers, teachers, interpreters, mediators and translators, i.e., the potential users of the terminology database. In this regard, it is important to point out that, since the questionnaire addressed not only language experts, but also professionals belonging to other fields, we ensured to clarify terms which could be unclear: for example, in the last section of the survey, dedicated to the data categories, we decided to explain the terms “full form” and “common name” by

providing a simple definition along with an example. In doing so, the questionnaire could be accessible to all participants.

The questionnaire was introduced by a brief explanation of the project, along with the information regarding personal data protection, and contained 18 questions, divided into 5 different sections: the first section included one close-ended question, which aimed at obtaining information regarding the profession of the respondents, and one open question, addressed to teachers with the aim of gathering data relating to the type of school in which they teach (e.g., elementary school, kindergarten, middle school, etc.). Based on the participants' choice, the system would direct them to the section related to their profession: as for teachers, their section included 6 questions aimed at investigating how many students coming from immigrant families are present in the class and if there are parents who did not have a proper command of Italian. The fourth and fifth questions were designed to investigate the provision and perception of language services and the presence of child language brokers in the school. A final question was then dedicated to investigating if teachers believe that a terminology resource would be useful to their profession and why.

The third section of the questionnaire was addressed to interpreters, translators and cultural and linguistic mediator and contained 3 questions: the first one asked these professionals if they have ever been employed to mediate in a school during parent-teacher conferences or in other occasions, such as during lessons. The aim in this case was to analyse the presence of language professionals in Italian schools. Then, the other two questions related to the database and were dedicated to gathering language professionals' opinions regarding the usefulness of a terminology resource and the possibility of expanding the database by adding other languages and terminological records.

As for social workers, their section included 4 questions which had the objective of investigating whether during their work they have ever come into contact with families in which parents did not have a proper command of Italian and if, in such cases, a mediator was employed in order to facilitate the communication. The third question was dedicated to inquiring whether social workers have ever witnessed a child language brokering event, while the last question had the purpose of ensuring that the present terminology database could be useful for these professionals.

The last section was addressed to all participants who were asked to choose the data categories they found useful to include in the terminology resource: the categories contained in the questionnaire were the ones we identified during the preparation phase of the project (see Section 3.2). Respondents were provided with two multiple-choice questions: the first one listed the categories relating to the features of the term, while the second one included the categories regarding the disorder.

Lastly, we decided to include a final open-ended question in which participants could write any suggestions and/or requests regarding the terminology resource, for example if they thought it would be useful to include a category not listed in the previous questions.

3.3.2 Questionnaire data analysis and main difficulties

Once the questionnaire's structure has been outlined, we started to administer it via e-mail to the intended users: firstly, as for social workers and language experts, we carried out an online search aimed at identifying associations, organizations, institutions, translation/interpreting agencies and freelancers working in educational and social fields. After gathering enough information, we send an e-mail to all the professionals previously identified with the purpose of describing the project which we are developing and the relative questionnaire. Our objective was to keep the e-mail short, as we feared that an overly long and detailed text would have discouraged the potential respondents. Furthermore, we decided to highlight some keywords to allow the receivers to quickly read through the text.

After a careful drafting, it was decided to include in the e-mail's body the following text, along with a link redirecting to the survey:

Buongiorno,
sono una **studentessa universitaria** e frequento la facoltà di lingue moderne per la comunicazione e cooperazione internazionale presso l'Università degli Studi di Padova. Mi sto occupando di un **progetto di tesi** che consiste nel creare una **risorsa terminologica** di tipo **database** contenente **termini relativi ai disturbi dell'età evolutiva in inglese e russo**. Tramite la compilazione di questo **breve questionario** potrete fornire il **vostro contributo**. I dati saranno trattati in forma aggregata e anonima in conformità alle normative sulla privacy vigenti¹².

¹² Translation: Good morning, I am a university student attending the Faculty of Modern Languages for Communication and International Cooperation at the University of Padua. I am working on a thesis project which consists in creating a terminology resource containing terms related to developmental disorders in English and Russian. By filling in this short questionnaire, you can provide your contribution. Data will be processed in aggregate and anonymous form in accordance with current privacy regulations.

Secondly, as far as teachers are concerned, we distributed the survey among our colleagues, since in November we began to work as a special education teacher in an elementary school, and we also contacted some former colleagues from the school where we worked between 2021 and 2022, explaining the project and providing indications regarding the compilation and distribution of the questionnaire.

After a brief period of waiting, we began to collect the first answers: thanks to the contribution provided by our former colleagues and by the Association of Social Workers of the Veneto region, which published the survey on their forum and Facebook page, we gathered a satisfactory number of answers from teachers and social workers.

However, one of the main difficulties we encountered was the lack of interest shown by interpreters, translators and cultural-linguistic mediators: despite having contacted freelancers, translation and interpreting agencies and non-profit organizations specialized on cultural mediation, we were able to collect only a few responses, as we will later clarify. A telling example of this situation is the e-mail we received from a translation agency, in which the manager stated that they did not understand my project and were not sure how their experience as a translation agency could have been useful to the terminology database we were developing. Since we feared that the initial e-mail we sent was unclear, we provided a more detailed explanation of the project and the reasons behind the choice of the domain; however, this e-mail remained unanswered.

With the purpose of collecting the perspectives of language experts we contacted Professor Fata, from the Department of Linguistic and Literary Studies of the University of Padua, asking if she could help distributing the survey among interpreters and translators. Despite the contribution of Professor Fata, who published the questionnaire on the AITI (the Italian Association of Interpreters and Translators) forum, the number of language experts responding to the questionnaire was still unsatisfactory.

The questionnaire data were processed and analysed by using Google Forms, which turned the answers provided by the respondents into graphics. In total we collected 83 responses, as shown in the chart below.

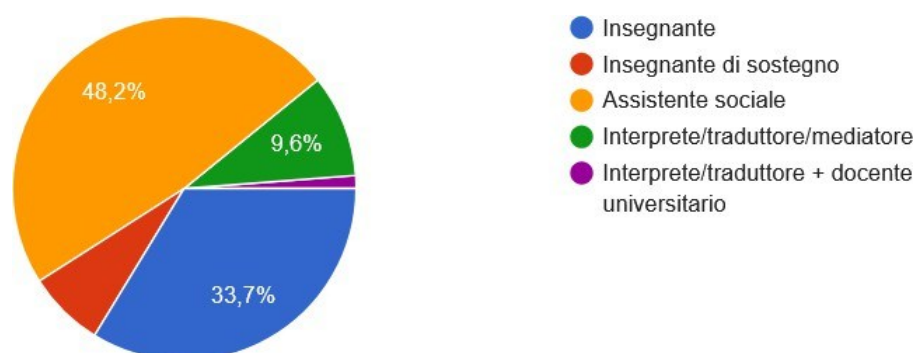


Figure 1 The pie chart shows the number of answers collected from teachers (blue and red part), social workers (orange part) and language experts (green and purple part).

As previously mentioned in Section 3.3.1, the first question aimed at gathering information regarding the profession of the respondents: according to the data, most participants were social workers (48.2%), while 28 teachers (33.7%) and 6 (7.2%) special education teachers (represented by the red part of the chart) filled in the questionnaire, representing together 40.9% of the total respondents. In this regard it is also important to underline that 27 of the responding teachers work in an elementary school, whereas the rest work in kindergartens, middle schools or at the university.

Unfortunately, the number of language experts is very low: only 9 interpreters, translators and/or cultural mediators participated (10.8%), as can be seen from the green and purple parts of the chart. This lack of responses raises questions on what could have been improved or done differently to reach a larger audience: it is likely that the usage of a questionnaire discouraged language professionals from answering, and therefore, relying on another research tool, such as interviews, could have brought better results. Nonetheless, we managed to collect interesting information regarding the experience of interpreters, translators and cultural-linguistic mediators, who stated that they have never been employed to mediate during parent-teacher conferences or classes (75%).

As for the survey section dedicated to teachers, an interesting piece of data regards the number of pupils coming from migrant families: according to 88.2% of teachers, in average in their class less than half of students have foreign parents, whereas only in four cases children coming from non-Italian families represent more than a half or half of the class. As stated above, this information is quite interesting since in the next question 73.5% of respondents stated that in their class there are pupils whose parents do not

possess a proper command of Italian. From these data, we can infer that in most classes the number of foreign students does not exceed that of Italian students. However, some of the parents do not understand and/or do not speak Italian, and as a result communication with the teachers and school staff can be difficult or even impossible: nonetheless in these cases the school has never employed an interpreter or cultural-linguistic mediator, as confirmed by 81.5% of teachers, who also stated that they have witnessed a child language brokering event (79.4%) and believe that a language expert is necessary to promote good communication with foreign parents (100%).

In the case of social workers, the data collected confirmed the situation described in Chapter 2 and the experiences of teachers: children of migrant families very often mediate for their parents, as stated by 68.3% of social workers, who in 97.6% of cases during their work have met families in which parents did not have a sufficient command of Italian. However, it is interesting to note that most social workers (72.5%) have also reported that in these cases a language expert had been employed to facilitate communication with foreign families. This raises questions on how the work of mediators is perceived by other professionals, since, as stated above, most social workers (68.3%) have also witnessed a minor mediating for his/her parents. Therefore, it is likely that social workers consider child language brokers as cultural mediators “employed” to promote the successful result of the communicative exchange. This situation is not to be underestimated, since CLB is a widespread phenomenon, and the profession of cultural-linguistic mediators struggles to be properly recognised and regulated, as we thoroughly discussed in Chapter 2 (see Section 2.2).

As for the questions regarding the terminology resource, the questionnaire received a positive response: all the intended users are in favour of the development of a terminology resource and consider it to be useful for properly carrying out their work. In particular, teachers believe that this tool could improve the quality of both communication and education and could even promote a better inclusion of pupils suffering from childhood disorders.

Furthermore, participants stated that a terminology resource could help avoiding mistranslations, which very often occur in these situations, since teachers are left alone in communicating with non-Italian parents. In this regard, it is interesting to report the opinion of a special education teacher, who shared their experience communicating with

a Chinese family during a parent-teacher conference, held to inform the family of the educational plan developed for their son, who suffers from various disabilities:

Durante l'ultimo PEI¹³, al fine di poter comunicare al meglio con la famiglia, ho creato un ppt con riassunte le attività svolte dal bambino a scuola e gli obiettivi di lavoro; ho preso dei singoli termini che reputavo significativi e li ho tradotti nella lingua utilizzata dalla famiglia. Ritengo pertanto che utilizzare una risorsa terminologica possa rivelarsi molto utile.¹⁴

Moreover, teachers also expressed the need for a tool that is easy and intuitive to use and, in this regard, a section explaining how to use the resource or a FAQ section could be included, to solve eventual doubts users may have.

Language experts also agreed on the usefulness of a terminology resource, as it could be used to correctly translate communicative situations regarding childhood disorders; additionally, they believe that this recourse should include the possibility to add other languages and terminological records.

An interesting perspective came from the opinions of social workers, who pointed out that terminology resources can be used to avoid children from acting as language brokers and to explain procedures or documents, which are not present in the language and country of origin of the foreign family. Furthermore, they also noted that promoting good communication has positive consequences, as migrants would feel at ease and understood and this is fundamental to make the inclusion process easier.

Further food for thought came from the answers of two social workers: when asked if a terminology resource could be useful in their work and why, they replied with the following statements:

Sì, molto, i mediatori linguistico-culturali spesso non hanno sufficienti competenze per muoversi agevolmente nella terminologia specialistica di psicologi dell'età evolutiva e neuropsichiatri infantili. Questo vale sia per la mediazione durante gli incontri sia per la traduzione di materiale scritto¹⁵.

¹³ The acronym PEI stands for Individual Educational Plan (IEP): it is a document aimed at promoting the school inclusion of students with disabilities during various stages of their education from pre-school to high school. The IEP must set out the educational objectives, the tools and activities that will be used to achieve them and the evaluation criteria.

¹⁴ Translation: During the last PEI, to be able to better communicate with the family, I created a power point summarising the activities carried out by the child at school and the work objectives; I took individual terms that I considered significant and translated them into the language used by the family. I therefore believe that using a terminology resource can be very useful.

¹⁵ Yes, very much so, cultural-linguistic mediators often lack sufficient skills to move easily within the specialised terminology of developmental psychologists and child neuropsychiatrists. This applies both to mediation during meetings and to the translation of written material.

Si, per chiarire le diagnosi e i percorsi terapeutici senza la mediazione/traduzione di una persona durante il colloquio, che potrebbe non tradurre in modo fedele un linguaggio tecnico¹⁶.

On one hand, the first comment sheds light on an interesting phenomenon: the lack of linguistic experts with sufficient training and knowledge to properly deal with the topic of neurodevelopmental disorders. On the other hand, however, the second comment shows mistrust of cultural mediators and suggests that a terminology resource could replace language experts, who may not faithfully translate technical language: this is not the aim of this project, and it is not the reason behind the choice of developing this resource. The objective is to help professionals in cases in which an interpreting service is not available, not to replace language experts because they are untrustworthy.

As previously mentioned in Section 3.4.1 the last section of the questionnaire aimed at collecting the respondents' opinions about the data categories to include in the database. As for the information relating to the term, most participants chose to include the following categories: definition (56.6%), full form (51.8%), pronunciation (50.2%) and common name (48.2%). Whereas gender, number, register, hypernym, domain and sub-domain are the least chosen categories, as it is shown in the graph below; however, we believe this is due to the fact that these are mainly useful for language experts, whose participation numbers in the questionnaire are low.

¹⁶ Yes, to clarify diagnoses and therapeutic paths without the mediation/translation of a person during the interview, who may not faithfully translate technical language.

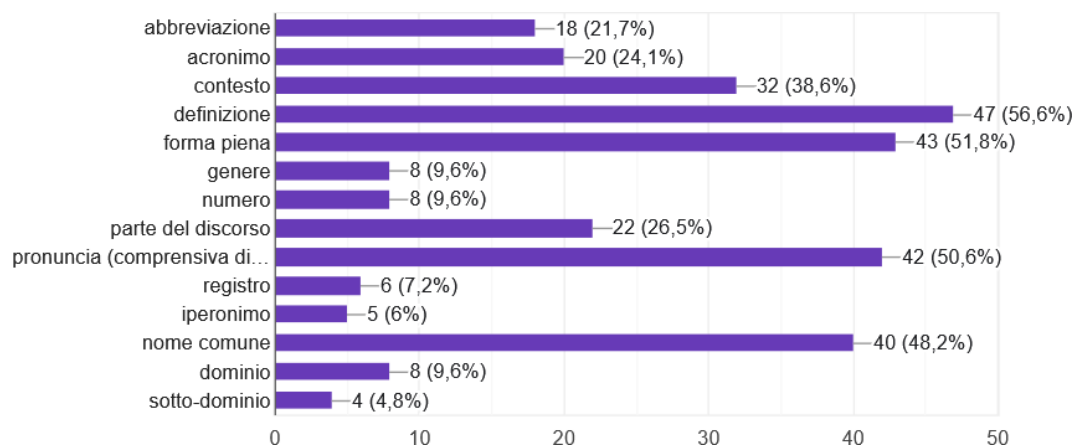


Figure 2 The graph indicated the data categories relating to the term. Translation of the categories starting from the top: abbreviation, acronym, contexts, definition, full form, genre, number, part of speech, pronunciation, register, hypernym, hyponym, common name, domain and subdomain.

Lastly, when asked to select the categories providing information on the disorder, participants mainly chose to include categories relating to the symptoms (81.9%) and therapy (66.3%), mainly because these are the first topics teachers and social workers discuss when explaining to parents the disorder their child may suffer from.

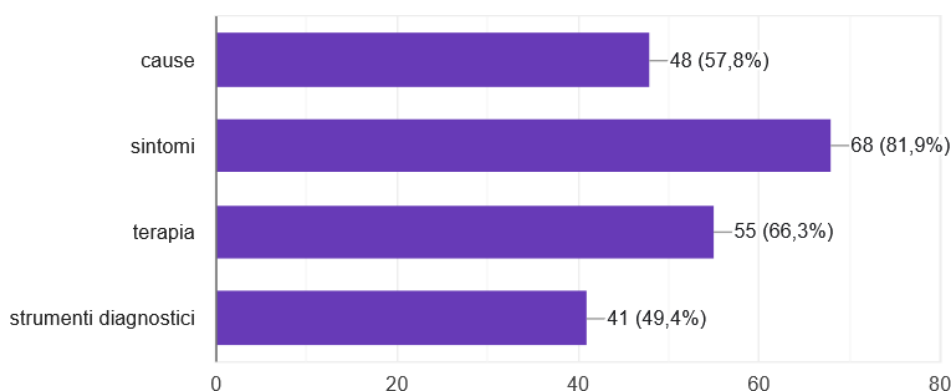


Figure 3 The graph indicates the data categories relating to the disorder. Translation of the categories starting from the top: causes, symptoms, therapy, diagnostic tools.

Therefore, from the data collected, we can imply that a terminology resource regarding the domain of childhood disorders not only could be useful, but it is also much needed by the intended users, as we thoroughly explained in this section. Thus, once we have gathered the opinions and suggestions of the professionals we contacted, the next

phase of the project can start, which will be described in the next chapters of this dissertation and consists in four main steps: first, we will create a corpus of texts related to the chosen domain, from which the candidate terms will be extracted and then selected according to their appropriateness. Then, through a semasiological approach (see Chapter 1, Section 1.3), we will identify the concepts designated by the selected terms and represent their relations through the creation of concept systems and lexical networks. Finally, we will proceed to compile and analyse the terminological records.

4. Development of the terminology database: project workflow

This chapter illustrates the preliminary steps preceding the development of the terminology resource: in the first half of the chapter, we will focus on the creation of the three trilingual corpora, one for each of the selected languages. Section 4.1 will provide an overview of corpus-based terminology and the ATE methodology: we will investigate the definition of corpus, along with the various types of existing corpora and the fundamental role they play in terminology activities. We will also analyse the process of Automatic Term Extraction (ATE) and its subtasks.

Then Section 4.1.1 will introduce Sketch Engine, a corpus analysis tool which has been used for the creation of the Italian, English and Russian corpora: we will explain how the software works and which functions and options it provides. After these premises, we will describe the steps we followed in the compilation of the corpora and the main difficulties we encountered during that process.

In the second half of the chapter, we will focus on another fundamental preliminary phase, namely the creation of the concept system and the three lexical networks. First, Section 4.2 will provide a theoretical overview of this aspect of terminology work: we will analyse the various types of concept systems identified by the ISO 704:2022 and then we will proceed with the description of lexical networks and the importance of adopting a dual approach to terminology.

Then, in Section 4.2.1 we will introduce Miro, the software we rely on for the creation of the concept system and lexical networks and we will describe its features and advantages.

Lastly, we will analyse the diagrams created with the software: first, we will present the concept system and then we will investigate how the concepts and relations identified are designated in the three lexical networks.

4.1 Working with corpora: corpus-based terminology and ATE methodology

Once we have gathered the opinions and suggestions of the intended users, we can proceed with the next phase of the project, which consists in creating three different corpora, one in Italian, one in English and one in Russian with the aim of collecting texts relating to the analysed domain.

However, before delving into this phase of the project, it is important to clarify some important notions regarding corpus-based terminology and how to build and work with corpora, starting from the definition of corpus. According to the ISO 1087:2019 (p. 14), a corpus, also referred to as text corpus, is a “collection of natural language data” which can be used for various activities, from text analysis to terminology work. Another interesting definition is provided by Sinclair (2005, p. 12), who specifies that “a corpus is a collection of pieces of language text in electronic form, selected according to external criteria to represent, as far as possible, a language or language variety as a source of data for linguistic research”. This definition allows us to introduce some key features of corpora: first, they are created in electronic form, since an electronic corpus is larger than a printed one and can be consulted, managed and created in a quicker way thanks to computer technology.

Another important feature of corpora is that they contain authentic texts, which represent real communication between people and have not been created artificially with the purpose of being included in a corpus. As a matter of fact, corpus analysis, whose object of analysis are corpora, studies language in use, meaning that “it involves studying examples of what people have actually said, rather than hypothesizing about what they might or should say” (Bowker and Pearson, 2002, p. 9).

Moreover, corpora are not randomly collected: the texts are selected according to specific criteria, since a corpus must be representative of a language, a subset of that language or a subject-field. The criteria used to design a corpus depend on the purpose of the study, as we can decide to analyse written or spoken language, general or specialised language or we may want to investigate how language evolved over a long period of time (Bowker and Pearson, 2002). In this regard, it is important to point out that there are different types of corpora, depending on the aspect of language being analysed:

- General reference corpus vs. special purpose corpus: a general reference corpus is representative of a language as a whole and thus, it is used to make general observations, whereas a special purpose corpus aims at analysing a given LSP or on a particular subject field, text type or language variety and, for example, it can be used to identify the features characterising a specialised language and how it differs from general language.
- Written vs. spoken corpus: a written corpus contains written texts, whereas a spoken corpus consists of transcripts of spoken communication, such as conversations, lectures, etc.
- Monolingual vs. multilingual corpus: the first one contains texts in one language, while the texts in a multilingual corpus are written in two or more languages. Furthermore, multilingual corpora can be parallel, if they contain texts in a target language along with their translation in the source language, or comparable, if the texts are originally written in different languages but all belong to the same subject field or text type.
- Synchronic vs. diachronic corpus: a synchronic corpus contains texts produced during a specific and limited time frame, while a diachronic corpus aims at analysing how language has changed during a long period of time and thus, it contains texts belonging to different time periods.
- Open vs. closed corpus: the difference between these two types of corpora lies in the fact that an open corpus is constantly being expanded, while a closed corpus does not undergo any changes once it has been compiled (Bowker and Pearson, 2002).

When it comes to analysing a domain-specific corpus, containing texts of a specialised subject field, one of the most important tasks is extracting terms with the aim of identifying the core vocabulary of the given specialised domain. While this process was once carried out manually by terminologists, who listed potential term candidates and then consulted with domain experts, nowadays computer technology allows us to carry out an Automatic Term Extraction, also referred to as ATE. This process is based on five different subtasks: first, we need to compile a representative domain-specific corpus which will be analysed through pre-processing procedures, such as lemmatization, part-

of-speech tagging (POS tagging) or full syntactic parsing. If the term extraction is carried out through a contrastive approach, a general reference corpus also needs to be compiled. Then the second subtask, called Detection of Unithood, starts and consists in identifying the linguistic elements that refer to a single concept; these elements will then be classified according to their Termhood, meaning that the software ranks them according to their likelihood of being a valid term for the domain in question. This process is called Detection of Termhood and is followed by the Detection of Term Variants, which aims at identifying the different terms designating the same domain-specific concept. Lastly, a domain expert is consulted with the purpose of evaluating the quality of the ATE process (Heylen and De Hertog, 2015).

Automatic Term Extraction is fundamental, since it has various practical applications: for example, it is used in terminography with the aim of providing a list of terms to include in a specialised dictionary or in a terminology resource. ATE can also be used to retrieve information regarding domain-specific topics, or as a support for translation projects, since the list of extracted terms can function as an ad hoc glossary (Heylen and De Hertog 2015).

Furthermore, it is important to point out that this type of extraction is available in all corpus analysis tools, along with two other main features: word-lister and concordancer. The first one allows to carry out a statistical analysis of the corpus, so for example, it calculates the total number of words, i.e. tokens, contained in the corpus, but it also counts the frequency with which different words, referred to as “type”, appear. The list of words can be sorted according to their frequency or in alphabetical order.

Another interesting feature is the concordancer, that shows all the contexts in which a given word occurs. The format typically used to display this information is keyword in context (KWIC), which provides a list of all the occurrences lined up in the centre of the screen with the contexts showing in the left and right side, as can be seen in the figure below (Bowker and Pearson, 2002).

sser, who believes promoting fast food to kids should be ba
 ys Eric Schlosser, author of Fast Food Nation, out this mon
 he inexpensive appearance of fast food is an illusion." Sti
 The simple answer is, yes, a fast food meal can be okay. Th
 s, you pull into the nearest fast food restaurant for a qui
 u or your kids are eating at fast food restaurants more tha
 d to the commercial kitchen, fast food was born, and with I
 althy diet. To help you make fast food choices and be an in
 said is not new. Though the fast-food giant has been sayin
 time before consumers force fast-food chains to tame their

Figure 4 A concordance for 'fast' (Bowker and Pearson, 2002, p. 15)

Compiling a corpus is a fundamental step in the development of a terminology resource: it allows us to identify the core vocabulary of the analysed domain and it also provides data regarding the contexts of use, the potential collocations and the frequency of a given term, along with authentic and reliable information on the domain itself, since the texts included in the corpus are usually written by subject fields experts. Furthermore, through the usage of corpus analysis tools, we can create large corpora in electronic form, which makes them easier to update, consult and analyse, as we are going to explain in the following section dedicated to the description of Sketch Engine, the corpus analysis tool used for this project.

4.1.1 Sketch Engine: a web-based tool for corpus analysis

As mentioned in the previous section, we decided to choose Sketch Engine for the compilation and analysis of the project's corpora. In this section we will provide an overview of the tool along with the description of its main features. In this regard, it is important to note that the information regarding this software, along with the screenshots found below, has been taken directly from the official website¹⁷.

¹⁷ <https://www.sketchengine.eu/>

The Sketch Engine platform is a web-based tool for corpus analysis, developed in 2003 by Lexical Computing and founded by Adam Kilgarriff, who carried out various studies regarding corpus linguistics, computational linguistics and lexicography. This software allows users to create and analyse their own text corpora or use already existing ones available on the platform, since Sketch Engine contains 800 ready-to-use corpora in more than 100 languages, each including texts of billions of words extracted from websites and online archives.

This software is used by various experts, from linguists and translators to terminologists, students and even historians, since it provides users with a wide range of features: for example, it allows to perform both single and multi-word term extraction, it aligns parallel corpora, which can be used as a source of suggestions in translation projects, but it also detects neologisms and trending words thanks to time annotation in diachronic corpora. Therefore, there are various functions available, as shown in the screenshot below: these features are found in the dashboard of the website in the central box with a light blue background (highlighted in yellow). Starting from the top of the left side Sketch Engine offers the following functions: word sketch, thesaurus, parallel concordance, n-grams, trends, oneclick dictionary, word sketch difference, concordance, wordlist, keywords, text type analysis, and bilingual terms.

In this regard it is important to point that to unlock these functions, a corpus must be selected: in the screenshot below a pre-built corpus has already been chosen (highlighted in green). As mentioned before, it is also possible to create a new corpus by clicking on “new corpus” on the upper right side of the screen (highlighted in purple), as we are going to explain in the following section. Another interesting feature of Sketch Engine is “corpus info” (highlighted in red), which shows the total number of words, tokens, sentences, paragraphs, documents, text types and common tags contained in the corpus.

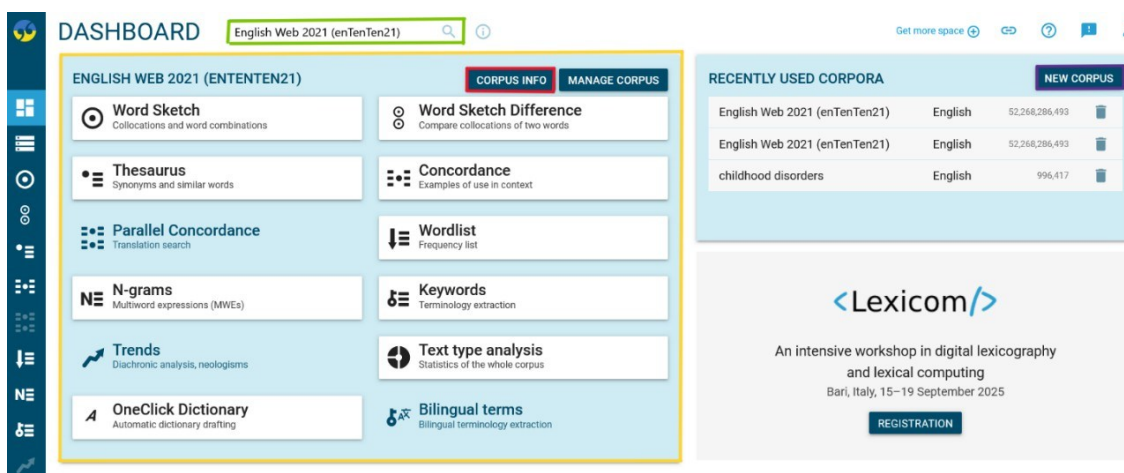


Figure 5 Sketch Engine homepage

Before delving into the description of the corpora created for this project, we will briefly explain some of the main features we used during the analysis of our corpora, starting from Word Sketch. This function summarises a word's grammatical and collocational behaviour and shows the collocations and the modifiers of the analysed word, for example, which nouns, adjectives, prepositional phrases are modified by the given word, which verbs have the analysed term as an object, etc.

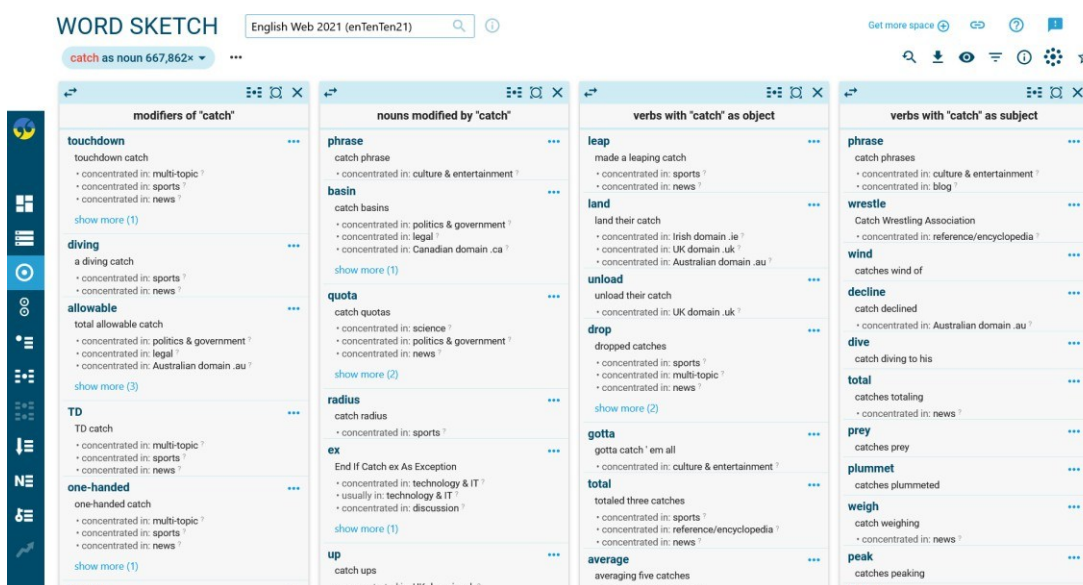
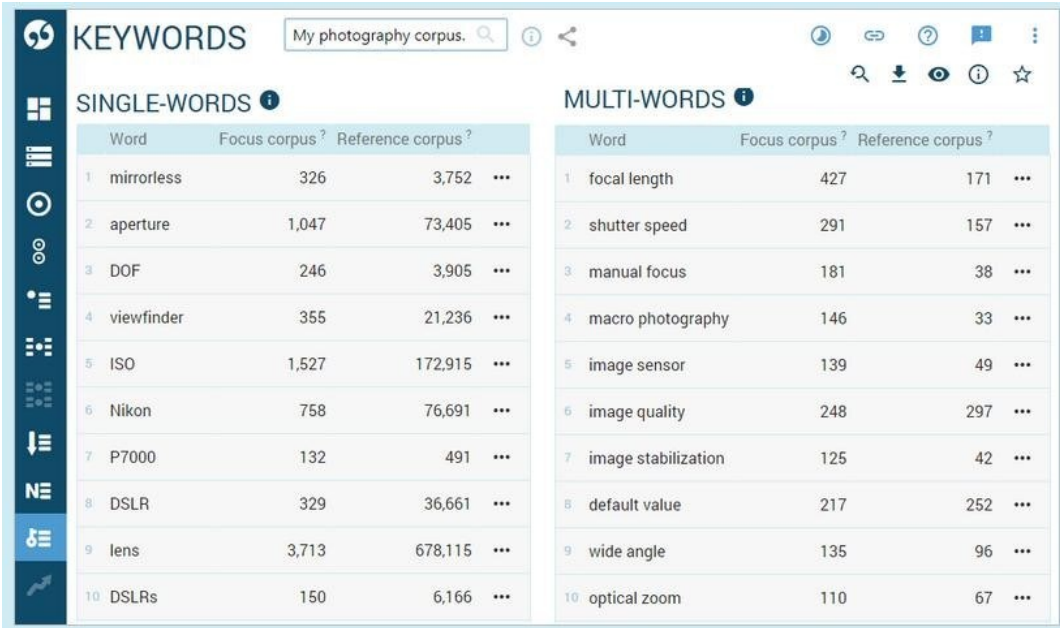


Figure 6 Word Sketch features with examples of the word "catch"

Another fundamental option typically used when developing a terminology resource is Keywords, which is used to extract single word and multi-word units: this feature

compares two corpora, a focus corpus, which is the corpus being analysed and from which terminology is extracted, and a reference corpus, i.e., a general language corpus used for comparison. The software contrasts both corpora and identifies which words appear more frequently in the focus corpus compared to the general language one. The words appearing more frequently are identified as terms. The results of the term extraction are displayed as lemmas and are divided into keywords, i.e., single word units, and term, i.e., multi-word units, which are displayed together.



The screenshot shows the KEYWORDS interface with a search bar containing "My photography corpus." The interface is divided into two main sections: SINGLE-WORDS and MULTI-WORDS. Each section contains a table with columns for Word, Focus corpus, and Reference corpus. The SINGLE-WORDS table lists 10 items, and the MULTI-WORDS table lists 10 items.

Word	Focus corpus	Reference corpus
1 mirrorless	326	3,752
2 aperture	1,047	73,405
3 DOF	246	3,905
4 viewfinder	355	21,236
5 ISO	1,527	172,915
6 Nikon	758	76,691
7 P7000	132	491
8 DSLR	329	36,661
9 lens	3,713	678,115
10 DSLRs	150	6,166

Word	Focus corpus	Reference corpus
1 focal length	427	171
2 shutter speed	291	157
3 manual focus	181	38
4 macro photography	146	33
5 image sensor	139	49
6 image quality	248	297
7 image stabilization	125	42
8 default value	217	252
9 wide angle	135	96
10 optical zoom	110	67

Figure 7 Examples of keywords and terms extracted from a corpus of texts about digital photography.

Furthermore, as mentioned in the previous section, many corpus analysis tools, Sketch Engine included, offer a concordance function which looks for words, phrases, text types and tags and shows the different contexts in which the analysed item appears. As depicted in the screenshot below, the word is displayed in red as keyword in context. The search starts from the beginning of the corpus and the results are displayed in the order in which they are found. Moreover, it is important to note that to obtain better results the corpus needs to be tokenized, lemmatized and tagged: in Sketch Engine these processes are carried out automatically when the corpus is created, if the chosen language is supported by the software.

The screenshot shows the CONCORDANCE tool interface. At the top, there's a search bar with 'English Web 2021 (enTenTen21)' and a search icon. Below the search bar, there's a status bar indicating 'simple easy • 14,946,276' and '242.69 per million tokens • 0.024%'. The main area displays a list of search results, each with a checkbox, a source URL, and a snippet of text. The word 'easy' is highlighted in red in the snippets. The interface also includes a sidebar with various tool icons and a top navigation bar with options like 'Details', 'Left context', 'KWIC', and 'Right context'.

Figure 8 Examples of the concordance feature with the word "easy"

Lastly, another important tool is the thesaurus, which generates a list of potential synonyms or words belonging to the same semantic field, that are identified according to the context they occur in. The theory at the basis of this feature is distributional semantics, which states that words appearing in the same context have a similar meaning: in Sketch Engine this means that words that keep similar collocations are identified as synonyms. However, it is important to note that to obtain a reliable list of synonyms the corpus needs to contain at least 100,000 words and, furthermore, the list provided may contain words which are not actual synonyms, since the software cannot directly recognise the similarity in meaning, but it can only compare the collocates.

The screenshot shows the THESAURUS tool interface. At the top, there's a search bar with 'English Web 2021 (enTenTen21)' and a search icon. Below the search bar, there's a status bar indicating 'drink as noun 2,479,322'. The main area displays a list of synonyms for the word 'drink', each with a frequency count. The interface also includes a sidebar with various tool icons and a top navigation bar with options like 'Get more space', 'KWIC', and 'Right context'.

Lempos	Frequency ?	Lempos	Frequency ?	Lempos	Frequency ?	Lempos	Frequency ?
1 beer	2,110,752 ...	14 lunch	2,234,798 ...	27 recipe	2,839,591 ...	40 egg	2,460,139 ...
2 coffee	2,658,954 ...	15 dish	2,068,105 ...	28 bag	3,883,799 ...	41 ingredient	2,173,499 ...
3 tea	2,018,234 ...	16 cake	1,486,332 ...	29 dessert	605,704 ...	42 sandwich	697,784 ...
4 beverage	760,553 ...	17 treat	851,827 ...	30 soup	781,275 ...	43 mix	2,509,173 ...
5 wine	3,876,439 ...	18 breakfast	2,045,273 ...	31 stuff	5,678,020 ...	44 fish	3,894,395 ...
6 meal	3,056,944 ...	19 cream	1,958,526 ...	32 entertainment	1,880,075 ...	45 cheese	1,474,963 ...
7 cocktail	771,823 ...	20 chocolate	1,648,526 ...	33 flavor	1,554,073 ...	46 vegetable	1,741,289 ...
8 food	14,906,417 ...	21 juice	1,224,767 ...	34 cookie	1,294,711 ...	47 gift	4,223,160 ...
9 bottle	2,469,106 ...	22 alcohol	1,903,761 ...	35 taste	2,303,521 ...	48 pot	1,517,644 ...
10 snack	852,920 ...	23 glass	3,962,657 ...	36 pizza	769,066 ...	49 clothes	1,817,059 ...
11 cup	2,352,855 ...	24 fruit	3,234,918 ...	37 toy	1,453,664 ...	50 sugar	2,049,473 ...
12 dinner	2,950,333 ...	25 meat	2,182,640 ...	38 bar	5,371,143 ...		
13 milk	2,131,367 ...	26 bread	1,463,295 ...	39 fun	7,868,089 ...		

Figure 9 List of synonyms of the word "drink" provided by the thesaurus feature

4.1.2 Creation and analysis of the three trilingual corpora

After having analysed the domain chosen for this project (see Chapter 3) and having confirmed that a terminology resource on childhood disorders is a much-needed tool for the intended users, i.e., teacher, language experts and social workers, the next step of this project consisted in creating three different corpora using Sketch Engine: one in Italian, one in English and one in Russian, the languages in which the resource will be available.

Before illustrating the steps we followed in the compilation of the corpora, it is important to point out that, since we already possess a background knowledge in the selected domain, thanks to our experience as a special education teacher, we used the corpora with a threefold purpose: investigate how the concepts related to the chosen domain are designated in the selected languages, extract the relevant terminology and compare our knowledge of childhood disorders with the information collected by the software. Therefore, we first adopted a semasiological approach (see Chapter 1), since once we extracted the terms, we identified the related concepts and created a concept system representing the relationships between such concepts. Then, through an onomasiological approach, we focused on the linguistic dimension, thus creating lexical networks displaying how the identified concepts are designated in English, Russian and Italian.

As mentioned in the previous section, in Sketch Engine you can decide to use one of the pre-built corpora offered by the platform or create a new personalized one. We opted for the second option: in this case the user needs to choose a name for the corpus as well as if it will be monolingual or multilingual. We opted for the creation of three monolingual corpora, one in Italian, one in English and one in Russian. Then the languages that will be used are selected and at this point the software offers two options: the user can upload the texts that will constitute the corpus directly from the computer folders, or they can allow the software to browse texts from the web. We relied on this second feature and we chose to select the option “web search”, where the user types a list of keywords, and then the software finds a series of websites and documents containing those words. We chose this option to compile corpora that could be as representative as possible. Furthermore, it must be noted that Sketch Engine also offers other two input types, as shown in the screenshot below: “URLs”, where the user provides a list of URLs and the software

uploads all the words included in the given URLs, and “websites”, where the user pastes links of various websites and Sketch Engine creates a corpus with the words contained in the pages of the uploaded websites.

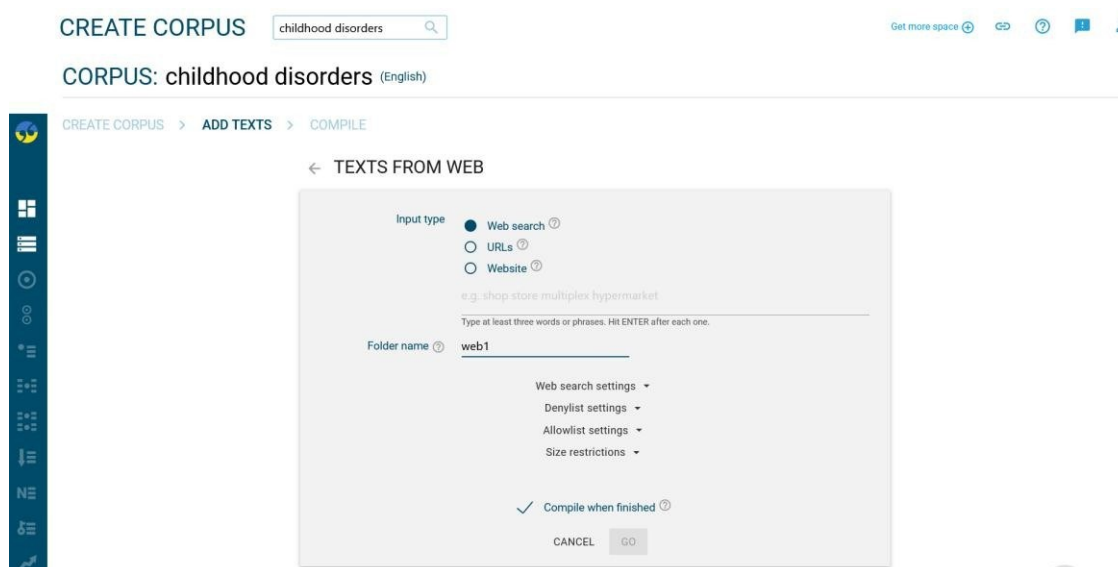


Figure 10 Example of the feature "texts from the web"

As mentioned above, we employed the feature “web search”, which, after having chosen and entered some keywords, allows us to access a wide range of websites, archives and documents. We started with the compilation of the Italian corpus and in this case, the keywords that have been used are “disturbi dell’età evolutiva”, “disturbi d’ansia”, “disturbi del neurosviluppo”, “disturbi da comportamento dirompente, del controllo degli impulsi e della condotta”, “terapia farmacologica per i disturbi dell’età evolutiva”, “terapia cognitivo-comportamentale”, “sintomi dei disturbi dell’età evolutiva”, “strumenti diagnostici” and “coping power program”.

After this first step the software provided a long list of websites containing these keywords: the texts suggested by the software were analysed and selected based on their relevance, while those from unreliable sources or not relevant to the analysed domain were discarded. Furthermore, it is important to emphasise that the selected texts mostly came from research institutes, psychological science journals and recently published research by experts.

The same procedure has been followed for the compilation of the English and Russian corpora: in the first case the inserted keywords were “childhood disorders”,

“neurodevelopmental disorders”, “anxiety disorders in children”, “disruptive, impulse-control and conduct disorders”, “pharmacological treatment for childhood disorders”, “cognitive-behavioural therapy”, “symptoms of childhood disorders”, “diagnostic tools” and “Lochman’s coping power program”. Lastly, for the Russian corpus the keywords chosen were “тревожные расстройства”, “деструктивные расстройства, расстройства импульсивного контроля и расстройства поведения”, “нейроразвивающие расстройства”, “когнитивно-поведенческая терапия”, “диагностические критерии”, “детские психические расстройства”, “симптомы детских психических расстройств”, “фармакотерапия” and “диагностика детских психических расстройств”.

As a result, three different corpora were created, containing around 400.00 words each: in this regard it must be noted that when performing a corpus analysis, it is better to work with larger corpora, however, Sketch Engine in the free trial version offers a storage limit of only one million words for all corpora, which can be extended with a premium subscription. Thus, we decided to restrict the word count of each corpus at around 400.000.

Once the three corpora have been created, we looked at the corpus info in the homepage of the platform, which displays general information regarding the number of counts, common tags, lexicon sizes and text types included in the corpus. The Italian corpus contains 504,148 tokens, i.e. items found between two spaces, including punctuation, 416,786 words, 18,396 sentences, 6,653 paragraphs and 94 documents. On the other hand, the English corpus contains 475,964 tokens, 331,826 words, 23,187 sentences, 9,173 paragraphs and 52 documents, while the Russian one presents 460,785 tokens, 362,411 words, 27,208 sentences, 9,285 paragraphs and 100 documents.

After investigating the counts contained in the compiled corpora, we proceeded with the terminological extraction, which was carried out using the Keywords function. As for the Italian and English corpora, we noticed that most of the extracted terms were complex, i.e., constituted by multiple words, and not always relevant to the analysed domain. In addition to this, by means of an external search, it was noted that the system failed to extract some relevant terms, concerning, for example, the different therapies employed to treat childhood disorders, or the various tools used to diagnose these disorders, even though these terms were present within the corpora, as revealed by using the Concordance

function. On the other hand, we noticed that with the Russian corpus the keyword function extracted the same number of simple and complex terms, and moreover, the terms extracted from the Russian corpus were more relevant compared to the ones extracted from the Italian and English corpora. Nonetheless, even in this case, the software still failed to extract some relevant terms.

Another difficulty we encountered related to the Thesaurus function, which, once entered a term, is supposed to provide a list of potential synonyms: in this case we noticed that the software could not find synonyms for the terms we selected, even though these synonyms exist and are used by domain experts, as we found out through further investigation. These difficulties may be caused by the fact this function works more efficiently with larger corpora, while the ones we compiled only contain 400,000 words. Furthermore, as we mentioned in the previous section, the software cannot directly recognise the similarity in meaning, since it compares words with similar collocations and perhaps, it offers better results with words belonging to the general language, rather than with specialised terminology, as suggested by the fact that in all three languages the software was able to provide a list of synonyms for simple terms and general language words, but not for complex and more specialised terms.

Therefore, to accurately select the terminology and to confirm the existence of certain synonyms, we carried out a search outside the corpora with the aim of identifying further candidate terms and confirming the relevance of those suggested by Sketch Engine.

4.2. Theoretical overviews of concept systems and lexical networks

Once the candidate terms have been extracted, the next step consisted in identifying the related concepts and creating a concept system with the purpose of representing the relationship between said concepts. According to the ISO 1087:2019 (p. 6), a concept system is a “set of *concepts* structured in one or more related *domains* according to the *concept relations* among its concepts”. When carrying out terminology work, it is fundamental to develop a coherent concept system, which serves various purposes: for example, it clarifies concept relations, it provides the basis for a uniform terminology and facilitates the writing of definitions. Furthermore, creating a concept system is a

fundamental step in the development of a multilingual terminology resource, since it helps to compare concepts and their designations across the selected natural languages (ISO 704:2022).

According to the ISO 704:2022, when developing a concept system, there are a series of operations that should be followed, starting with the selection of the concept field and of the concepts which will be object of analysis. The next step consists in investigating each concept and representing, within a concept system, its relations with the other analysed concepts. Lastly, after the concepts' definitions have been analysed, the final operation involves identifying and assigning the terms to each concept.

Furthermore, it is important to note that concept systems must be clear, so that users can quickly view the domain or subject field in question, and intelligible, i.e., they must be understandable by terminology users and thus, the number of concepts and concept relations displayed should be limited to avoid complexity. In addition, concept systems should meet the criteria of transparency and extensibility, meaning that they should clearly show the types of concept relations and should be easily modified and expanded (ISO 704:2022).

Another interesting notion regards the various types of concept systems that can be developed. According to the ISO 704:2022, concept systems can be divided according to three main criteria: the type of concept relation involved, the number of criteria of subdivision and the number of superordinate concepts. In the first case, we can identify four types of concept systems:

- Generic, which displays only the relations between generic and specific concepts.
- Partitive, in which only the relations between comprehensive and partitive concepts are shown.
- Associative, which includes only associative relations.
- Mixed: this type of concept system displays various types of concept relations.

As for the category related to the number of criteria of subdivision, we can identify two types of concept systems: monodimensional and multidimensional, depending on whether superordinate concepts are divided according to one or more than one criterion of subdivision.

The last group includes monohierarchical and polyhierarchical concept systems: in the first case there is only one immediate superordinate concept, while in the second type of system two or more immediate superordinate concepts are found.

In Chapter 1 we mentioned that there are two ways to approach terminology: the onomasiological approach, which focuses on concept systems and conceptual relations, and the semasiological approach, in which terms are extracted from their contexts and then mapped to their meanings. Since terminology is a twofold science, characterised by the presence of a linguistic and a conceptual dimension, the development of a concept system with an onomasiological approach can be a starting point when analysing the terminology of a domain or subject field, but it is not sufficient and has to be combined with the semasiological approach. The importance of a complementary approach to terminology has been highlighted by Kageura (2015), who points out that:

As long as terms are a functional class of lexical items and the function of terms is to represent concepts inside a domain, it is almost logically not possible to take a pure semasiological approach in terminology, as the process of identifying terms as terms involves recognition of concepts (p. 54).

While Kageura advises against exclusively relying on semasiology, Roche (2015), on the other hand, does not recommend adopting a pure onomasiological approach, since concept systems do not always align with the networks developed by experts:

Only conceptualization, which is not a matter of linguistics but of science in that it attempts to extra linguistically model a reality, is standardized. Natural language itself cannot be standardized, and terms may be polysemic. The one element about which a consensus must be reached – as is the case in all sciences – are the concepts' formal definitions and their identifiers. Linguistic diversity is preserved and, provided the same *view* of the world is shared (conceptualization), it becomes much easier to create multilingual terminologies and find linguistic equivalents (Roche 2015, p.133).

In this regard, it is interesting to quote Santos and Costa (2015), who defined lexical networks as the result of “a cognitive transfer process between linguistic data and conceptual data graphically represented” (p. 170). In their article, titled *Domain specificity*, they demonstrated that the conceptual and linguistic approaches are complementary by analysing the domain of biological treatment of wastewaters through both onomasiology and semasiology: first, they developed a concept system focusing on generic and partitive relations and then they focused on the linguistic dimension by developing lexical networks that could reflect the concept system and possibly enrich it.

The scholars relied on a corpus-management software which allowed them to automatically extract a list of term candidates and to analyse concordances, which they then used to build the linguistic networks representing the relations between the selected terms. After comparing both the concept system and the lexical networks, Santos and Costa noticed that the latter did not always reflect the concept system and, in some cases, it was necessary to add or delete terms to improve both networks. Therefore, Santos and Costa highlighted the importance of employing a mixed approach, possibly starting from the conceptual dimension and then focusing on the linguistic one to compare and confirm the concept representations, since specialised texts, from which terms are usually extracted, can contain inaccuracies.

Therefore, given that terminology is a twofold science characterised by a conceptual and linguistic dimension, we decided to combine the onomasiological and semasiological approaches, as we previously mentioned: first, we created the domain concept system and then we investigated how the identified concepts are designated in the languages selected for the terminology resource; thus, we represented the relationship between the analysed terms through the development of lexical networks.

4.2.1 Miro: a software for developing concept systems and lexical networks

As mentioned in the previous section, once the corpora have been compiled and the term candidates have been extracted, the next step of the project consisted in identifying the related concepts and analysing how said concepts are designated in the selected languages. The results of this process will be represented through the development of one concept system and three lexical networks, one in Italian, one in English and one in Russian.

The software used for building these networks is Miro¹⁸, a web application founded in 2011 by Andrey Khusid with the purpose of efficiently sharing his ideas with clients. During the following years, the software evolved into a visual workspace used by various organizations, such as Idea and Nike, to develop strategies, design products and services, promote collaboration between workers and manage designing processes. One of the main advantages of Miro is its versatility, since it allows users to design different types

¹⁸ <https://miro.com/it/>

of maps, diagrams, workflows and models, which can be developed from a default template offered by the software or built from scratch. Another interesting feature of this software is its interactivity, meaning that the application can be used in collaborative online teams to carry out different tasks, from ideation and brainstorming activities to the presentation of research, reports, maps and diagrams. Furthermore, a Miro whiteboard can be expanded and modified at any given time, which is one of the criteria that concept systems must fulfil (ISO 704:2022, see Section 4.2), and it also allows to add supporting contents, such as images, videos and documents.

Another fundamental option provided by the software is the possibility to create UML diagrams, which are “a way to visualise systems and software using the Unified Modeling Language (UML)”¹⁹. This type of diagram is used to model workflows and business processes, but also to understand the designs and code of the architecture of software systems:

Coding can be a complicated process with many interrelated elements. There are often thousands of lines of programming language that can be difficult to understand at first glance. A UML diagram simplifies this information into a visual reference that’s easier to digest. It uses a standardized method for writing a system model and capturing conceptual ideas (ibid).

For these reasons, UML diagrams provide a clear overview of the relationships and hierarchies existing between software components and thus, they help engineers to track and communicate the various procedures of the software development process.

These diagrams are mainly used by software engineers, but they are also very useful in terminology work for developing concept systems and lexical networks, since, as stated by the ISO 704:2022, concept systems can be represented through diagrams or UML-based models: the difference between the two lies in the fact that, while a concept diagram is a graphic representation of the concept system, a concept model represents concepts and their relations by means of a formal language, i.e. “*language* whose rules are explicitly established before its use” (ISO 1087:2019, p. 2). From a graphic point of view, in UML-based concept models, concepts are written inside rectangular shapes and are connected through arrows, as shown in the picture below.

¹⁹ <https://miro.com/diagramming/what-is-a-uml-diagram/>

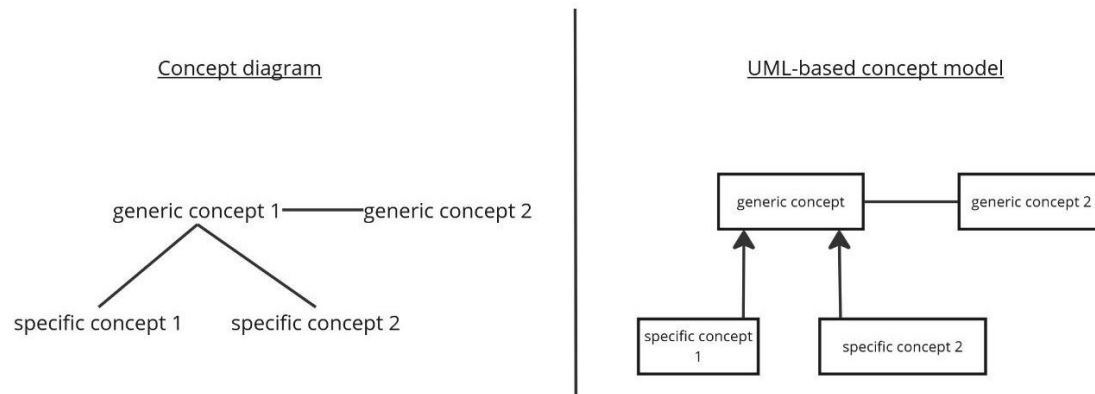


Figure 11 Examples of concept diagram and UML-based concept model

In the case of UML diagrams, as for other models, the user can decide to employ one of the templates provided by Miro or they can develop it from scratch. In this case, to start creating a diagram, users need to log on the website and create a free account, which allows them to use Miro without any charge, but with limited features, which can all be unlocked by purchasing one of the three available premium plans. Once the account has been created, the website redirects to the dashboard shown below, where users can start their project by clicking on blank board or on create new (highlighted in yellow).

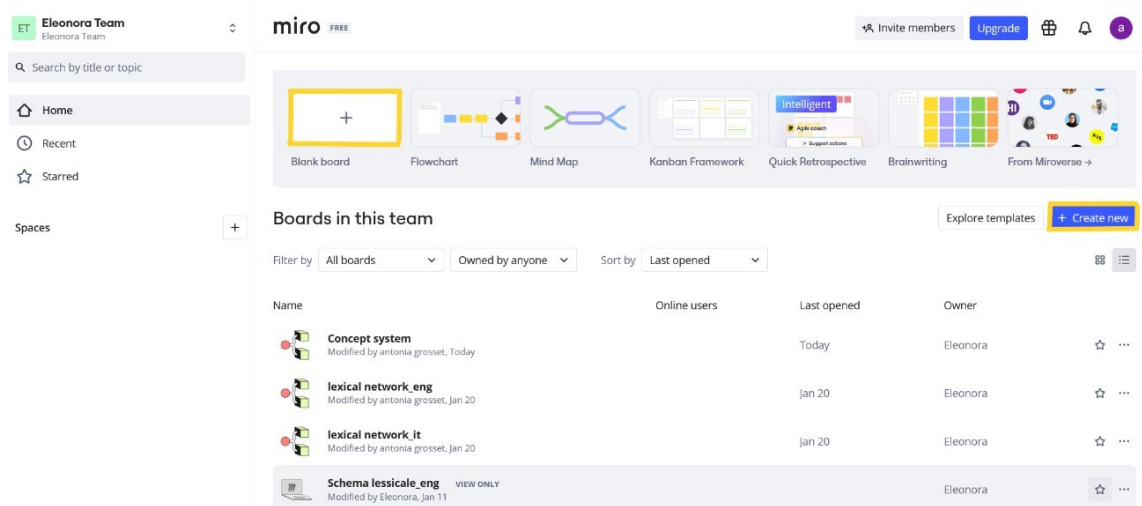


Figure 12 Miro's dashboard

At this point, they can choose to use one of the provided templates or build the diagram, map or model from scratch: in this last case, on the left side of the screen

(highlighted in yellow) the software shows all the available tools, such as select, templates, text, sticky notes, shape, connection line, pen, comment, frame, upload, more apps, undo and redo.

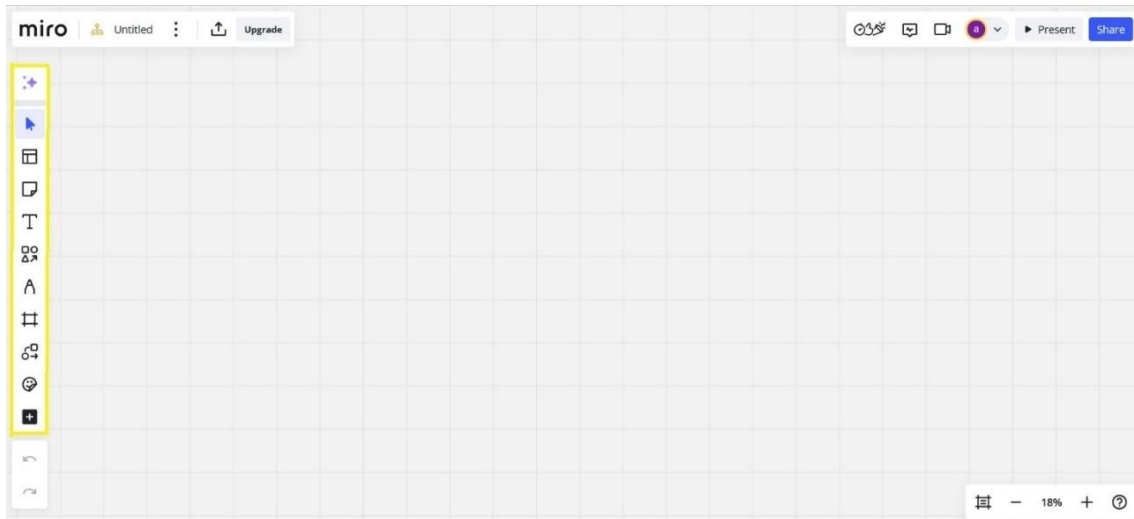


Figure 13 Miro's available tools

Then, once the user has decided the shape, they need to double click on it to add the text, which can be modified in its font, font size and colour by clicking one time on the shape (highlighted in green in the screenshot below). Another interesting feature is the possibility to add a text in the middle of the arrow connecting two shapes, as shown in the example below: this option was used in our project to clarify the types of relationships between concepts and between terms.

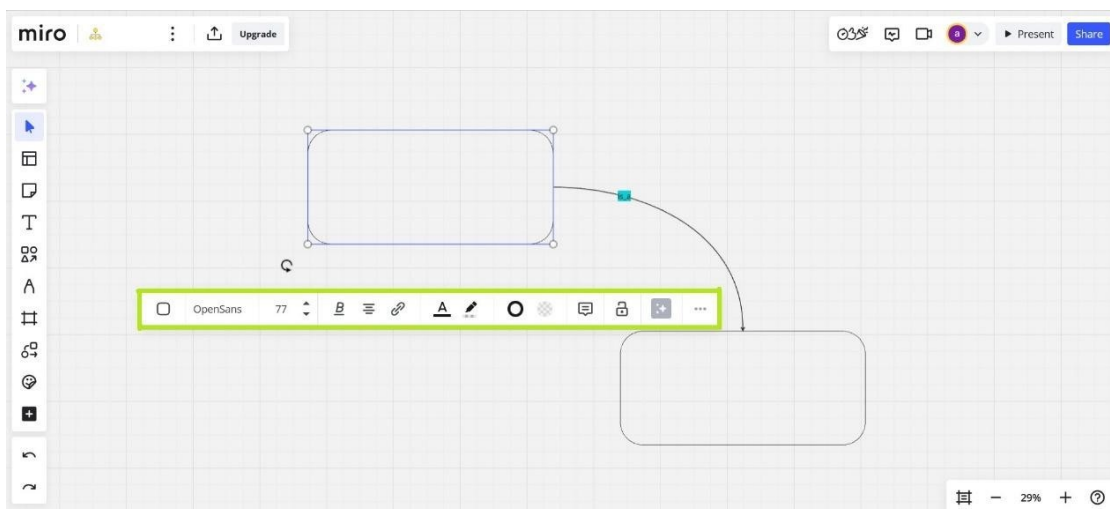


Figure 14 Example of a diagram built from scratch

4.2.2 Building the concept system and lexical networks

After analysing the three trilingual corpora, presented in Section 4.1.2, the next phase began, which consisted in investigating the conceptual dimension, identifying the concepts relating to the chosen domain and analysing the relationships between them, which were represented through the creation of a concept system that would consider the different aspects of the chosen domain, i.e., the diagnostic groupings of childhood disorders, their symptoms, causes, and recommended therapies. Furthermore, for the development of the concept system and lexical networks we relied on the software Miro, which has been presented in the previous section.

Before presenting the concept system, it is important to point out that in order to distinguish between conceptual and linguistic sign systems, we relied on two different graphical means: concepts are written with the capital letter and between single chevrons (<...>), while terms are presented with a small letter and between double quotation marks (“...”), as suggested by Roche (2015).

As for the concept system, hierarchical relations have been highlighted in light blue with the wording “is_a”, while associative relations have been highlighted in light green and indicate the symptoms of the disorder (with the label “have_symptoms”), the causes of its onset (with the label “have_causes”) and the therapies used (with the label “have_a_therapy”). In doing so the distinction between the two types of relations identified would be more immediate even at a visual level. In this regard, it is important to point out that this distinction is also highlighted by the direction of the arrows connecting the various shapes: the arrows representing hierarchical relations point towards the superordinate concept, while in associative relations the arrows point towards the associative relation.

After these clarifications, we can proceed with the presentation of the concept system, which, for a matter of space, into three different screenshots, as shown in figures 13, 14 and 15²⁰: first, we identified a starting concept, namely <Childhood disorders>. Then we noticed that these disorders are classified into 8 different diagnostic grouping,

²⁰ The concept system can be consulted in its entirety at the following link: https://miro.com/welcomeonboard/ODNJTINSRUFHbVZHZGo1R2MyRGczWEIFSlpY1ViNiQ0eG0wbTBDYkNZQWdrbi9MYUorZFN5SzNhMi9JVGHektTaLA5RCtuR1I0ZHZySjJzMDlTc0w2Z0c5enNwNy80UDRabU85Wk1FN3dJMTdsNGZUS242dTZTMmZ6cFU4MFZ0R2lncW1vRmFBVnlLcVJzTmdFdlNRPT0hdjE=?share_link_id=520071252509

as explained in Chapter 3, and therefore, once the terms relating to the various types of childhood disorders were extracted, they were traced back to the concepts designated by them, namely <Neurodevelopmental disorders>, <Anxiety disorders>, <Elimination disorders>, <Feeding and eating disorders>, <Obsessive-compulsive disorders>, <Depressive disorders>, <Trauma and stressor-related disorders> and <Disruptive, impulse-control and conduct disorders>. These are subordinate concepts that present a hierarchical relationship with the starting superordinate concept <Childhood disorders>.

After this initial classification, we further investigated the three most common diagnostic grouping, namely neurodevelopmental disorders, anxiety disorders and disruptive, impulse-control and conduct disorders, which have been the object of discussion in Chapter 3. Therefore, we focused on exploring the categories, symptoms, causes and therapies of each diagnostic grouping. In this regard, we also noticed that each type of disorder has its own diagnostic tools, however, for a matter of time and space, we decided to not further investigate this area.

Therefore, starting with neurodevelopmental disorders (figure 17), we identified 7 subordinate concepts: <Other neurodevelopmental disorders>, <Intellectual developmental disorder>, <Specific learning disorder>, <Communication disorder>, <Attention-deficit/hyperactivity disorder>, <Autism spectrum disorder> and <Motor disorder>. Each of these disorders is divided into sub-categories and thus, the subordinate concepts identified above present several hierarchical relations: for example, the concept <Communication disorders> is a subordinate concept of <Neurodevelopmental disorders>, but it is also a superordinate concept of <Speech sound disorder>, <Language disorder>, <Social communication disorder> and <Childhood-onset fluency disorder>, i.e., the categories in which communication disorders are divided. The same type of relation was identified for the other subcategories.

As for the concept <Anxiety disorders> (figure 16), we identified 10 subordinate concepts, namely <Separation Anxiety>, <Selective mustism>, <Specific phobia>, <Social anxiety disorder>, <Panic disorder>, <Agoraphobia>, <Generalized anxiety disorder>, <Substance/medication-induced anxiety disorder>, <Anxiety disorder due to another medical condition>, <Other specified anxiety disorders> and <Other unspecified anxiety disorders>. While for the last analysed category (figure 15), we noticed that the concept <Disruptive, impulse-control and conduct disorders>, presents the following 8

subordinate concepts: <Oppositional defiant disorder>, <Intermittent explosive disorder>, <Conduct disorder>, <Antisocial personality disorder>, <Pyromania>, <Kleptomania>, <Other specified disruptive, impulse-control, and conduct disorders> and <Other unspecified disruptive, impulse-control, and conduct disorders>.

As for the symptoms, each type of disorder manifests through the onset of different types of symptoms: for example, the concept <Social anxiety disorder>, which is a subordinate concept of <Anxiety disorders>, presents an associative relation, marked as “has_symptoms”, with the concepts <Fear of social situations>, <Avoidance of social interactions>, <Failure to speak in social situations>, <Clinging>, <Freezing>, and <Shrinking>.

As for the therapies, we noticed that, among the analysed diagnostic grouping, pharmacological and psychological interventions, along with specialised educational programs, are employed for the treatment of all the analysed disorders: for example, for neurodevelopmental, anxiety disorders and disruptive, impulse-control and conduct disorders, cognitive-behavioural therapy is employed, as can be seen from the concept system in the figures below, in which the concepts <Anxiety disorders>, <Neurodevelopmental disorders> and <Disruptive, impulse-control and conduct disorders> present an associative relation with the concept <Cognitive-behavioural therapy>. However, the type of psychological intervention varies according to the type of disorders being treated, since for anxiety disorders, clinicians mainly rely on the Cool Kids Program, which is a type of cognitive behavioural therapy, whereas disruptive, impulse-control and conduct disorders are usually treated with the Coping power program, which is also a type of cognitive behavioural intervention: in the concept system, the concepts <Coping power program> and <Cool kids program> present a hierarchical relation with <Cognitive-behavioural therapy>.

Furthermore, it is important to point out that in the case of other specified and unspecified disorders, we did not include the relative symptoms in the concept system, since, as explained in Chapter 3, this diagnosis is given when the symptoms characteristic of a disorder are present but are not sufficient to elaborate a full diagnosis.

Lastly, we noticed that among the causes for the onset of the analysed disorders, the biological factors are found in all three diagnostic groupings: as a matter of fact, the concept <Genetic predisposition> presents an associative relation with <Anxiety

disorders>, <Neurodevelopmental disorders> and also <Disruptive, impulse-control and conduct disorders>, while the influence of the Covid-19 pandemic played a fundamental role in the onset of neurodevelopmental and anxiety disorders, as shown in the figures below, where the concepts <Covid-19 pandemic>, <Neurodevelopmental disorders> and <Anxiety disorders> are in an associative relation.

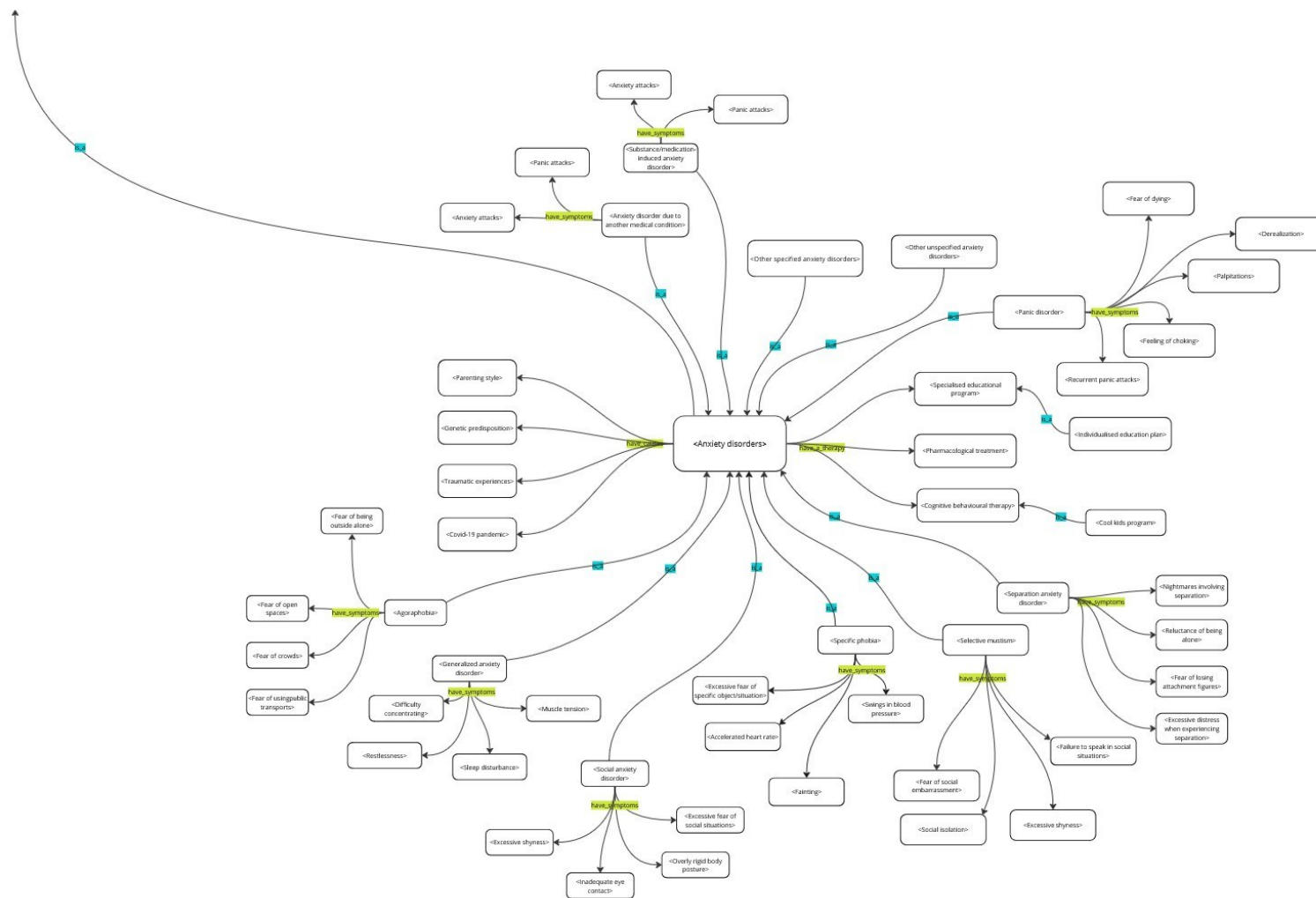


Figure 16 Anxiety disorders - Concept system

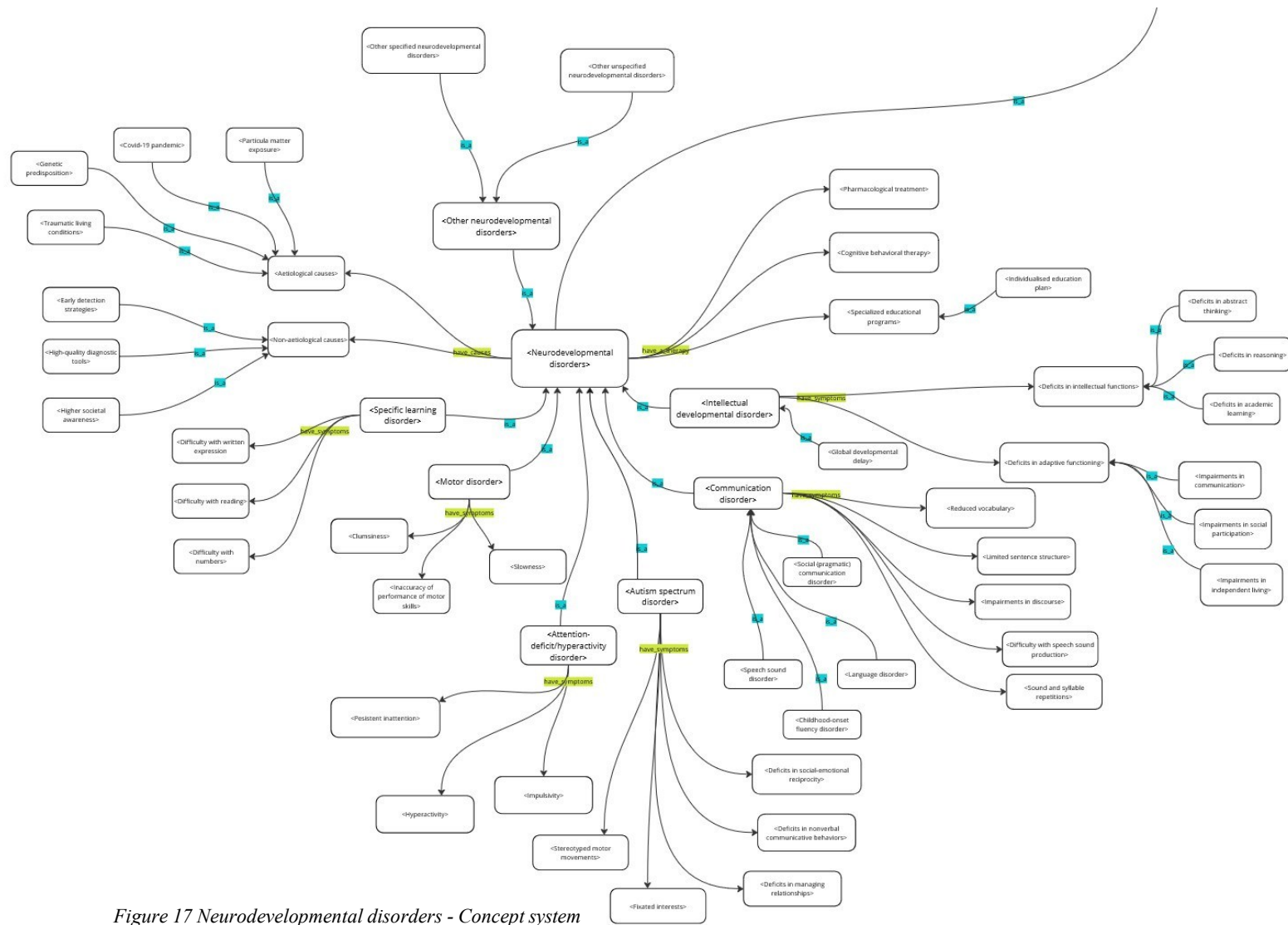


Figure 17 Neurodevelopmental disorders - Concept system

After the production of the concept system, depicted in the figures above, we developed three lexical networks with the purpose of analysing how the identified concepts are designated in the selected languages. As previously mentioned, the terms in the lexical networks are written between inverted commas and without the capital letter. Moreover, the hierarchical relations are highlighted in light blue and expressed through hyponyms, while the associative relations are still highlighted in light green with the wording “have_causes”, “have_a_therapy” and “have_symptoms”, depending on whether the terms refer to the causes of the disorder, the therapies used to treat it or the symptoms. In the lexical networks we also included synonymic relations, which are highlighted in light green and present the label “synonym”, with the arrow pointing to both shapes. In the following pages the three lexical networks are shown, starting with the Russian one in figures 18-20, then the English one in figures 21-23 and lastly the Italian network in figures 24-26. As in the case of the concept system, the three lexical networks have been divided into nine screenshots, for a matter of space²¹.

First, we noticed that the hierarchical and associative relations regarding the symptoms, therapies, causes and categories of the analysed disorders are quite similar in all the three lexical networks and do not differ from the concept system, except for a detail in the Russian network, which will be discussed later in the chapter. For example, in the Italian network the term designating the concept <Neurodevelopmental disorders> is “disturbi del neurosviluppo”, which is a hyponym of the term “disturbi dell’età evolutiva”, designating the concept <Childhood disorders>. The same applies for the

²¹ The lexical networks can be consulted in their entirety at the following links:

Italian lexical network:

https://miro.com/welcomeonboard/dkZ1S2d5SG5OSkhdz1J4dURvNmRZNksxSTIxS2ZDTk5heXBZRm1zRjJnV2xiZndRcTFNSINadnlyQ3VzdTBiYmNuMmRJRGljTEVCZyt1U2NOL0ZJN1BNbG9lY2t3dEFna2g4ZHBUBdHtTlhlZkozbtRFMWYwU25lZ3FlQXJNa293VHhHVHd5UWtSM1BidUtUYmxycDRnPT0hdjE=?share_link_id=442191478248

English lexical network:

https://miro.com/welcomeonboard/azA3K0lETExnZHJ2d2hWNXXZFcfM4M1OreTNUdFVVN1hLNHF CUEY1dEsvTmFrWkZRVm9NeGFoa0RNd3pRenRqZENzY1hXQmk2d0VBVEFVdlIFZTliQzc2Z0c5e nNwNy80UDRabU85Wk1FN3hEOXhwRk9nYys5VWNJNnBONlINWndhWWluRVAxeXRuUUgwWD13Mk1qRGVRPT0hdjE=?share_link_id=589205648691

Russian lexical network:

https://miro.com/welcomeonboard/Q0FHjYjJpOGozK0grU1Jmbk1Kb2ovV2hJMjdiK0l2dkxmSEY4TEN oYit3NUZNNWk15QUdFVnlCdFFBY2s2dEFqMXk3cno2YW5Malc2eHlyOHFUb1FaZHZNbG9lY2t3dEFna2g4ZHBUBdHtTlglcFg4Nmt6NE5QWEgwNjl0L241b0phWWluRVAxeXRuUUgwWD13Mk1qRGVRPT0hdjE=?share_link_id=797032987202

English and Russian networks, since the terms designating <Neurodevelopmental disorders> are respectively “neurodevelopmental disorders” and “нейроразвивающие расстройства”. These terms are hyponyms of “childhood disorder”, in the English network, and of “детские психические расстройства” in the Russian one, which both designate the concept <Childhood disorders>.

Another interesting similarity concerns the therapies used to treat the analysed disorders: we noticed that in all the three lexical networks, there are terms designating the concepts <Pharmacological treatment>, <Cognitive-behavioral therapy>, <Specialized educational programs>, whose subordinate concept is <Individualised education plan>. In the Italian network, these concepts are designated respectively by the terms “terapia farmacologica”, “terapia cognitivo-comportamentale”, “programmi educativi personalizzati” and its hyponym “piano educativo individualizzato”; while in the English network, the terms are “pharmacological treatment”, “cognitive-behavioral therapy” and “specialized educational programs”, with its hyponym “individualised education plan”. Lastly, in the Russian network, the concepts above are designated by the following terms: “фармакологическая терапия”, “когнитивно-поведенческая психотерапия”, “адаптированные образовательные программы” and its hyponym “индивидуальный учебный план”. This information is interesting, since it leads us to infer that in the Italian, English and Russian-speaking countries the therapies used to treat the analysed disorders are the same. This piece of data is very helpful for the compilation of the records of the terminology resource: when it comes to treating childhood disorders, the employed therapies may differ from one country to another and there may be cases in which a given therapy is widely used in a country, but it is unknown in another one. In our case, the Italian terms designating the identified therapies have a recognized equivalent in English and Russian: this quickens the translation process and improves the communicative exchange. However, there is an exception, since we did not find the Russian term designating the concept <Coping power program>, which is a subordinate concept of <Cognitive-behavioural therapy>: the Coping power program is a type of behavioural therapy specifically employed for the treatment of disruptive, impulse-control and conduct disorders. Nonetheless, despite carrying out extensive research, we did not find a Russian equivalent for this concept: this may be a problem when illustrating to Russian-speaking parents the recommended therapies for these disorders, since the users of the

terminology resource would not have an official equivalent and thus, would need to resort to other strategies, for example they could use the English term “coping power program” and then provide an explanation for this therapy.

As for the synonymic relations, we noticed that both in Italian and in Russian there are cases in which an English acronym is used: for example, in the Italian network the concept <Neurodevelopmental disorders> is designated by the term “disturbi del neurosviluppo” and by the English acronyms “NDD” and “NDDs”. The same applies for the Italian term “disturbo d’ansia generalizzata”, which present two synonyms: the Italian acronym “DAG” and the English one “GAD”. The same situation was noticed in the Russian network: the concept <Global developmental delay> is designated by the term “глобальная задержка развития”, which presents two synonyms, i.e. the Russian acronym “ГЗР” and the English one “GDD”. Another example is the term “перемежающегося взрывного расстройства”, which designates the concept <Intermittent explosive disorder> and presents a synonymic relation with the English acronym “IED”.

Furthermore, in the English network we observed various phenomena of orthographic variation: for example, the concept <Generalized anxiety disorder> is designated by the terms “generalized anxiety disorder” and “generalised anxiety disorder”: the first one is mainly used in American English, as can be inferred from the presence of the letter *z* in the adjective “generalized”. Whereas the term “generalised anxiety disorder” is used in British English, as suggested by the letter *s* in the adjective “generalised”. This is an example of diatopic variation, i.e., variation on a geographical level, which can also be observed in the terms “cognitive behavioural therapy” and “cognitive behavioral therapy: the first is found in British English, as can be seen from the use of the diphthong ‘ou’ in the adjective ‘behavioural’; whereas the variant ‘cognitive behavioural therapy’, which has only the letter *o* and no diphthong, is typical of American English. In this regard, it is important to emphasise that the term ‘cognitive behaviour therapy’ is also attested: in this case, it may be a diachronic variant, as the term was coined in the late 1970s by the psychiatrist Aaron Beck and is mainly used in contexts in which reference is made to his work, whereas nowadays experts prefer to use the terms “cognitive behavioural therapy” or “cognitive behavioural therapy”.

After having presented and explained the concept system and the three lexical networks, the following chapter will focus on the next and last phase of the project, which consists in developing the terminology resource: starting from the web application FAIRterm 2.0, we will describe the various steps we followed while developing the resource. Lastly, we will select a list of terms which will be used as a reference point for the compilation of the terminological records.

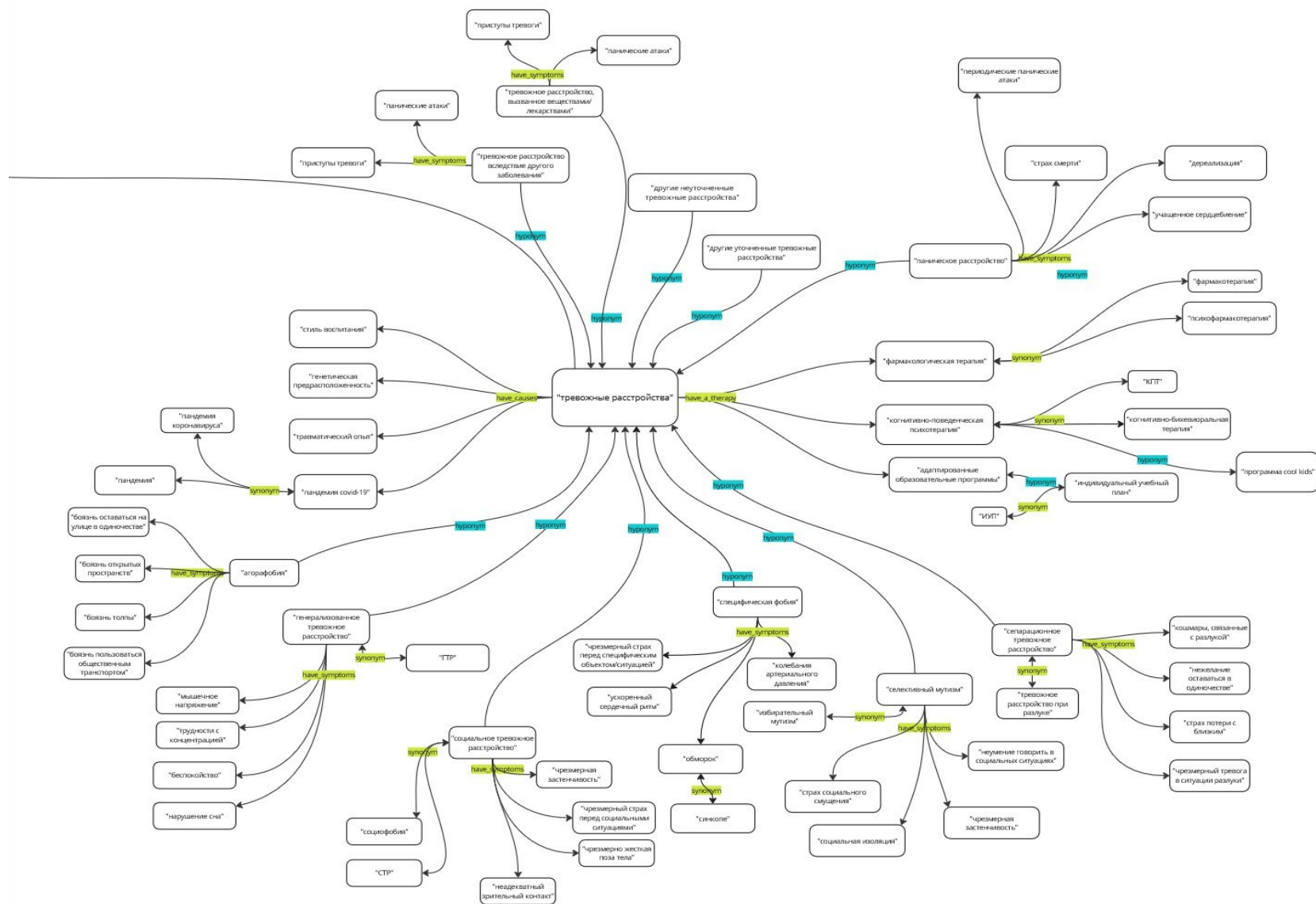


Figure 18 Anxiety disorders - Russian lexical network

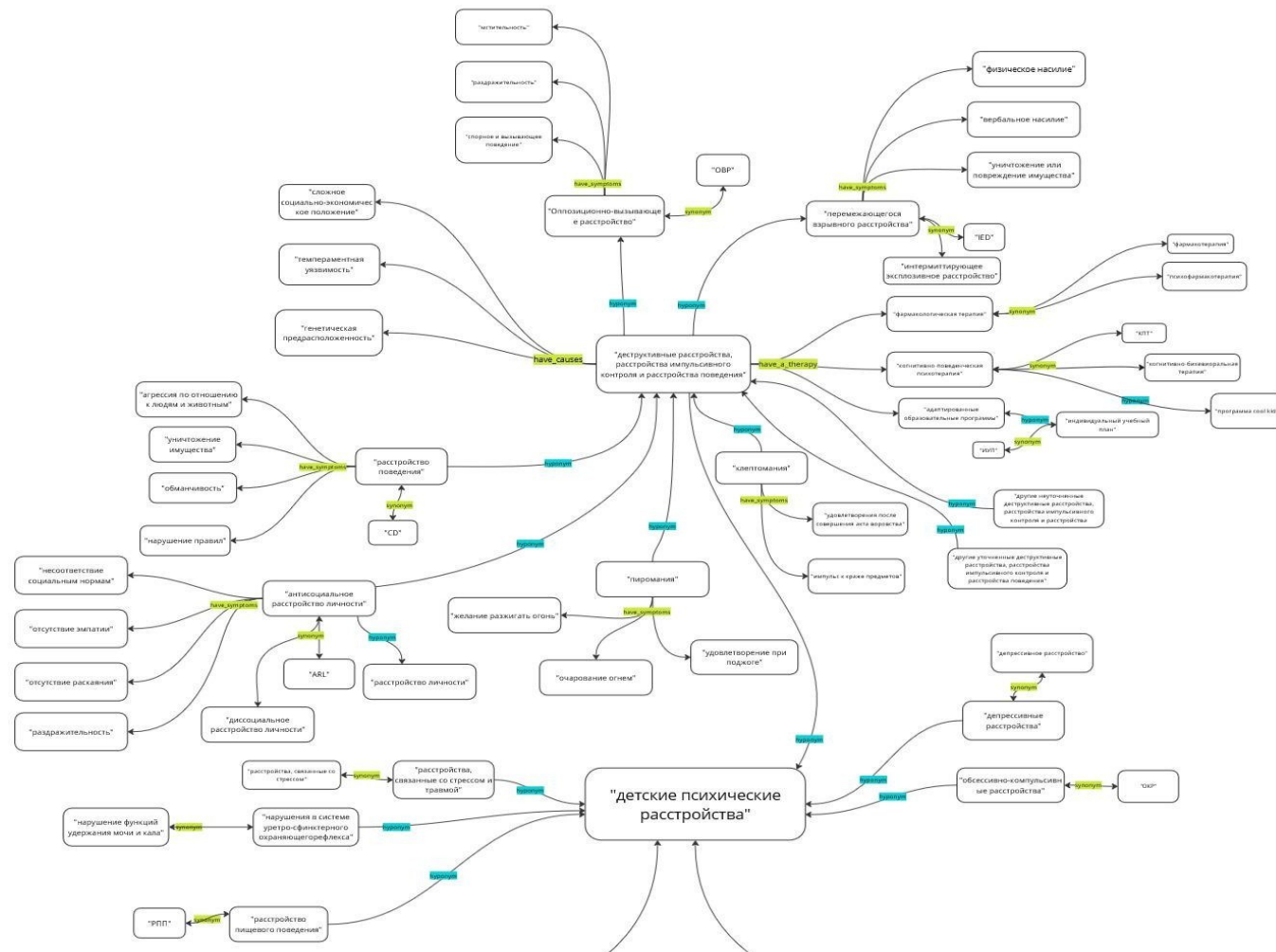


Figure 20 Disruptive, impulse-control and conduct disorders - Russian lexical network

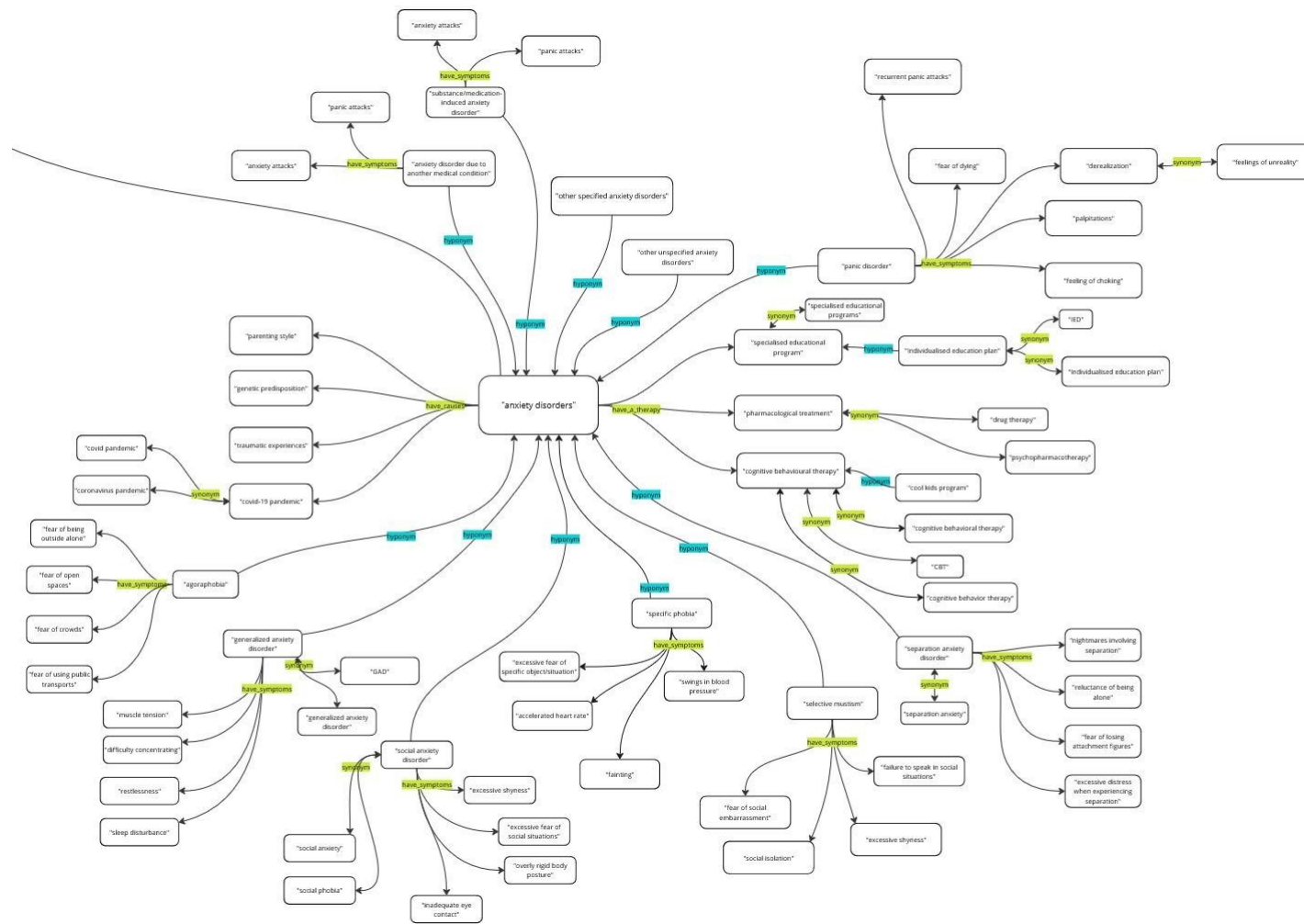


Figure 21 Anxiety disorders - English lexical network

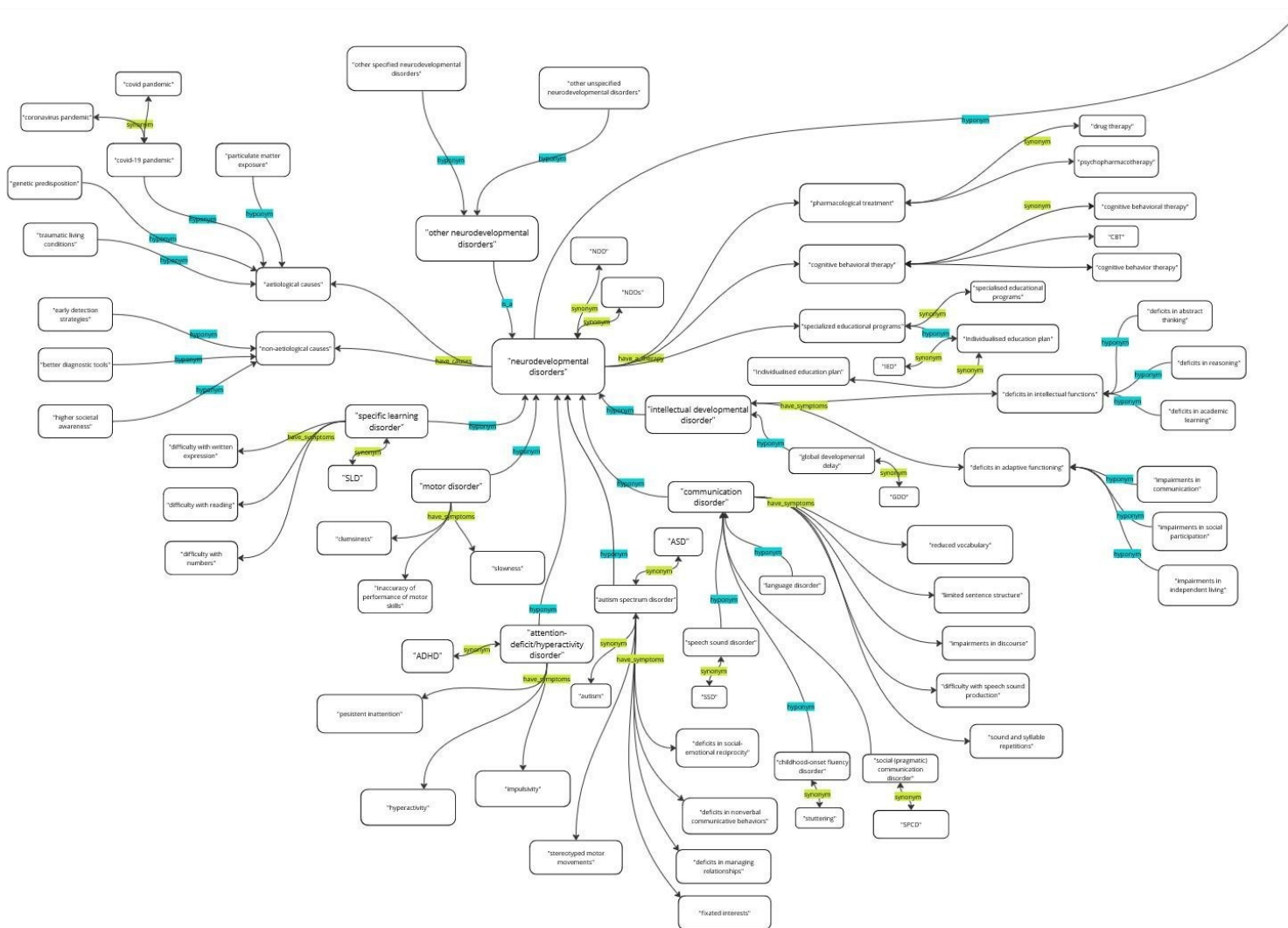


Figure 22 Neurodevelopmental disorders - English lexical network

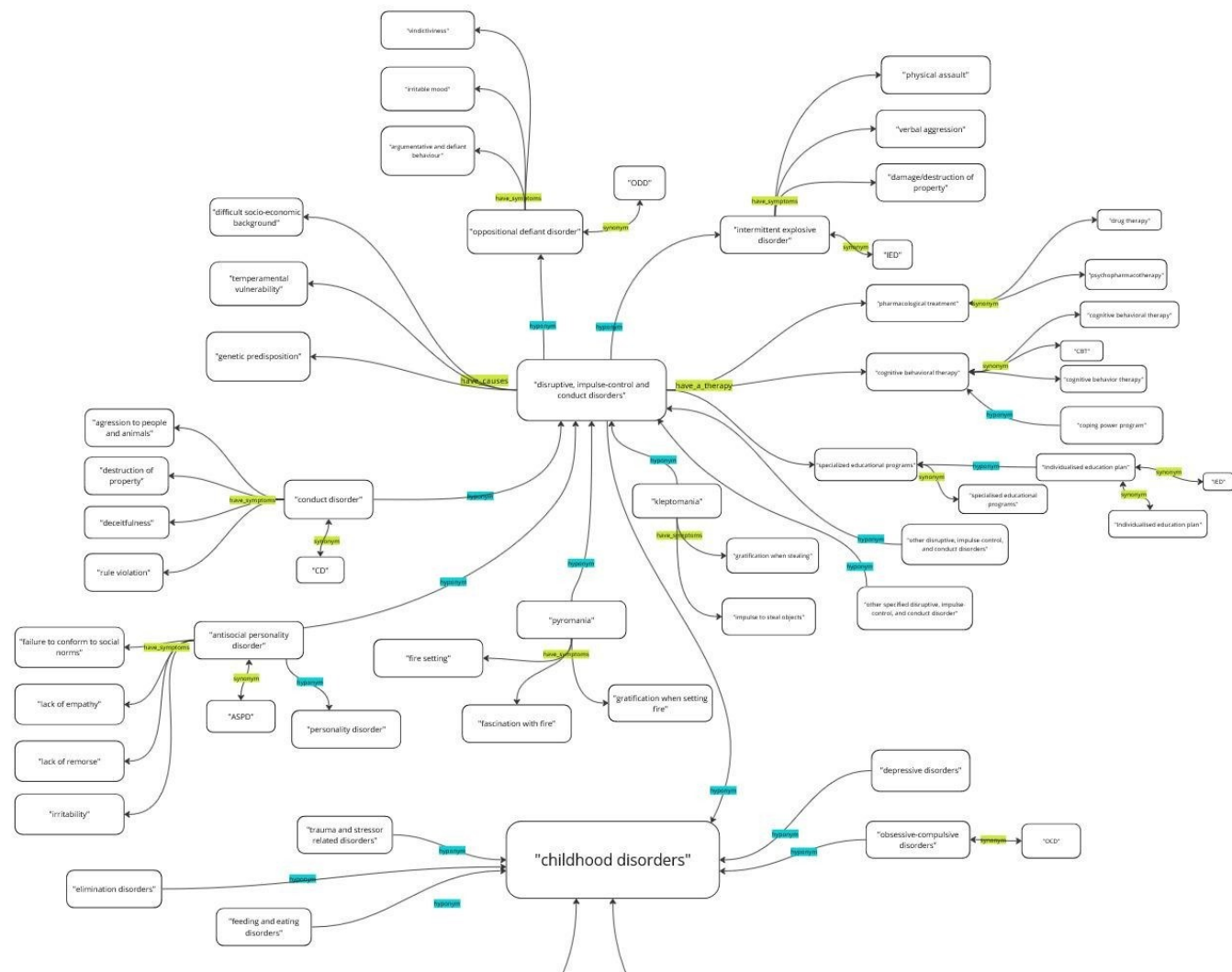


Figure 23 Disruptive, impulse-control and conduct disorders - English lexical network

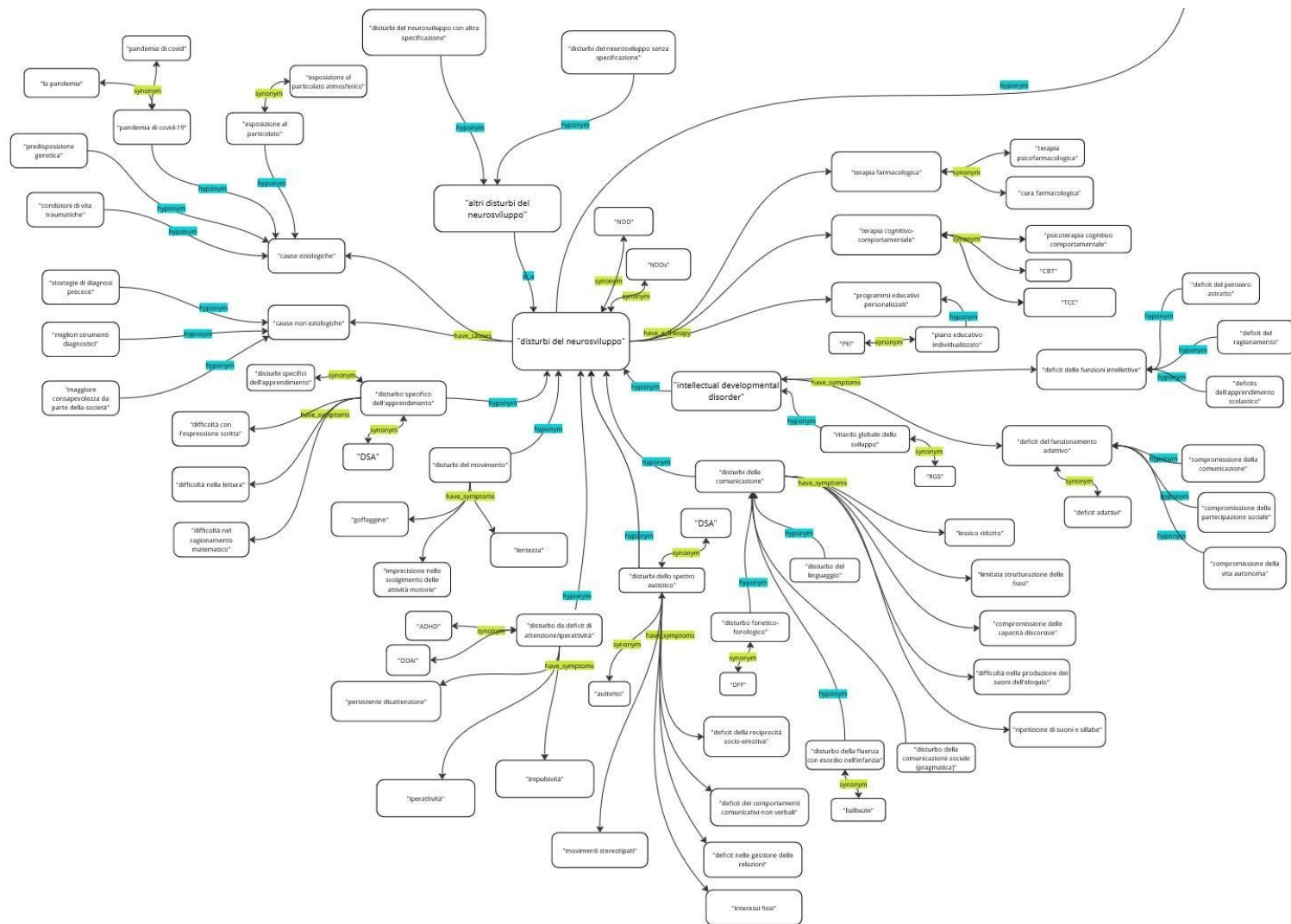


Figure 25 Neurodevelopmental disorders - Italian lexical network

5. Designing and implementing the terminology resource: the final steps

In the final chapter of this thesis, we will describe the last phase of development of the terminology resource: first, we will provide a brief overview of FAIRterm 2.0, from which we draw inspiration for the creation of our database. After illustrating how the compilation process works in this new version of FAIRterm, we will proceed with the creation of the final list of data categories and characteristics we want to include in the resource. In this regard, Section 5.2 will be dedicated to presenting the data categories: some of these such as part of speech, definition, gender, number etc., have been taken from FAIRterm 2.0 and its previous version, while others were added by us, since our aim is to develop a resource that will provide information regarding not only the term, but also the disorder being analysed. For the new categories we added, i.e. pronunciation, causes, symptoms, therapy and diagnostic tools, we included a definition to clarify what information the data category will provide.

Then, in Section 5.2.1 we will focus on another fundamental step, which consists in determining at which level the categories should be positioned in the terminological entry: first, to better understand this process we will reintroduce the notion of the TMF meta-model, which we briefly described in Chapter 1, and then, we will illustrate which data categories we decided to position at the concept level and which were instead positioned at the language and term levels, along with an explanation of the reasons behind this choice.

Finally, in Section 5.3 we will present our resource: we will illustrate how the database works, its features and the changes made during the development process. We will also present and explain the name we decided to give to our project, i.e. MISO. Lastly, we will provide some examples of terminological records compiled with the resource.

5.1 FAIRterm 2.0

The final step of this project is the creation of the terminology resource: first, we need to select the data categories we will include in the resource. In this regard, it is important to note that an initial list of categories has already been created and

administered to the potential users through a questionnaire, as we thoroughly explained in Chapter 3. After confirming that the users of the resource consider the selected categories useful, we further investigated FAIRterm 2.0, which we briefly introduced in Chapter 1 and from which we draw inspiration for the development of our project.

As mentioned in Chapter 1 (see Section 1.4.2), FAIRterm is a software developed by professors Federica Vezzani and Giorgio Maria Di Nunzio with the purpose of compiling, storing and downloading terminological records in accordance with the FAIR principles. In this first part of the chapter, we will provide a brief overview of how FAIRterm works, starting from pointing out that we relied on the new version of the web application, which differentiates from the previous version because it

offers a conceptual oriented view of the terminological entry: starting from the concept, you can work with any language and compile any number of term entries for that language. The data categories provided in our model allow the user to have a broad linguistic and conceptual framework of the terminology under study²².

After filling a form and receiving the log in credentials, users can access the web application, whose homepage is shown in the screenshot below.

Figure 27 FAIRterm 2.0 - homepage

By clicking the button “show/hide” (highlighted in green) further data categories appear, as depicted in figure 28. These categories, which are highlighted in blue, refer to the conceptual level, meaning that they describe the concept. Once the users entered all

²² The official website of FAIRterm 2.0 can be consulted at the following link:
<https://shiny.dei.unipd.it/fairterm/compilation20.html#>

the information regarding the concept, such as the subject field and the sub-subject field, they need to click the button “add concept entry” (highlighted in red) to proceed with the compilation process. After this first step, they need to compile the data categories relating to the language section. First, users need to choose among the various languages supported by the software: in our case, as shown in the screenshot below, English was selected. Then they need to click the button “add language section” (highlighted in yellow).

The screenshot displays the FAIRterm 2.0 web application interface. At the top, there is a search bar labeled 'Search Terms' with a 'clear search' button and a checkbox for 'include definition'. Below this are tabs for 'Compile', 'Browse', and 'Export'. The main area is divided into several sections. On the left, there is a 'showhide' button. The central part contains a 'subject field' dropdown menu, a 'concept' dropdown menu, and a 'reset fields' button. Below these are 'sub-subject field' and 'subdomain' text input fields. Further down are four concept type dropdown menus: 'generic concept', 'specific concept', 'comprehensive concept', and 'partitive concept'. At the bottom left is a 'choose language' dropdown menu currently set to 'English', and a 'Save concept' button. On the right side, there is a red-bordered button labeled 'add concept entry' and a yellow-bordered button labeled 'add language section'. A small 'x' icon is visible in the bottom right corner.

Figure 48 FAIRterm 2.0 - Data categories relating to the concept section

To better explain how to use this software we will provide an example: first we chose the concept we wanted to enter, i.e. <Agoraphobia>, then we compiled the data categories relating to said concept and selected English as the language in which we wanted to designate the concept. After we created the concept entry and added the language section, we proceeded with providing a definition of the concept <Agoraphobia>, as depicted in the screenshot below. The definition is written in English, the language we selected in the previous step, and is taken from a psychology institute: in this regard it is important to note that in the data categories “external cross reference” and “source”, shown in the screenshot below, the user needs to include respectively the link/s and the name of the resource/s from which the definition has been taken.

show/hide English

definition

external cross reference

source

notes

Save language

add term section

Last update on: 2025-01-24 13:22:43 UTC

Figure 29 FAIRterm 2.0 - Data categories relating to the language section

After this process is completed, we clicked on the button “add term section”, shown in the figure above (highlighted in purple), and proceeded with entering the English term designating the chosen concept, along with information regarding the term’s characteristics, such as the gender, part of speech, register, number, context etc. Figure 30 shows the features of the English term “agoraphobia”, which designates the concept <Agoraphobia>.

show/hide agoraphobia

usage

part of speech

gender

number

type

context

external cross reference

source

register

collocation

notes

Save term

Last update on: 2025-01-24 13:22:43 UTC

Figure 30 FAIRterm 2.0 - Data categories relating to the term section

It is important to point out that users can add another term section, in cases in which there are two terms belonging to the same language and designating the same concept. Furthermore, users can add other language sections, if they want to analyse how a given concept is designated in two or more languages: for example, we added two language sections, English and Italian, since we wanted to enter the Italian and English terms designating the concept <Agoraphobia>, as depicted in figure 31 (highlighted in orange).

The screenshot shows the FAIRterm 2.0 web interface. At the top, there is a search bar and a 'clear search' button. Below this, there are tabs for 'Compile', 'Browse', and 'Export'. The main form area includes a 'subject field' dropdown set to '2841 - health (28 - SOCIAL QUESTIONS)', a 'concept' dropdown set to '5010', and a 'showhide' button. There is also a 'sub-subject field' dropdown set to 'Childhood disorders'. Below these are four dropdowns for 'generic concept', 'specific concept', 'comprehensive concept', and 'partitive concept', all set to '5010'. A 'choose language' dropdown is set to 'choose language to add'. A 'Save concept' button is at the bottom left. A 'Last update on: 2025-03-24 13:22:45 UTC' message is at the bottom right. The bottom section, highlighted with an orange border, shows two language sections. The first section is for 'English' and contains a 'showhide' button and a text input field with 'agoraphobia'. The second section is for 'Italian' and also contains a 'showhide' button and a text input field with 'agorafobia'.

Figure 31 FAIRterm 2.0 - Entering two or more language sections

5.2 Final selection of the resource's data categories

As explained in Chapter 3, one of the questions included in the questionnaire regarded the type of data categories users would find useful: before delving into this phase of the development process, it is important to provide a definition of data category, which, according to the ISO 12620-1:2022, is a “class of data items that are closely related from a formal or semantic point of view”²³, and thus, it provides information regarding the terminological entry.

²³ This definition has been taken from the preview of the ISO 12620-1:2022, which is available at the following link: <https://www.iso.org/obp/ui/en/#iso:std:iso:12620:-1:ed-1:v1:en>

After analysing the answers collected through the questionnaire, we confirmed that the initial list we compiled meets the needs of language experts, teachers and social workers. This list includes the following data categories:

- Pronunciation
- Definition
- Part of speech
- Gender
- Number
- Hypernym
- Abbreviation
- Full form
- Acronym
- Common name
- Subject field
- Sub-subject field
- Register
- Context
- Causes
- Symptoms
- Therapy
- Diagnostic tools
- External- cross reference
- Sources
- Notes

It is important to note that the data category “sub-subject field” was originally named “subdomain” in Chapter 3; however, we decided to change the label since we believed that the wording “sub-subject field” would be clearer for users, who would immediately understand that the term refers to a distinct subset of a given subject field: for example, childhood disorders is a subset of the psychological subject field.

Furthermore, the data categories “external-cross reference” and “sources” relate to the references consulted during the compilation of the terminological records and were included with the purpose of ensuring the findability of the data provided: “external-cross

reference” will include the link of the resources consulted, while the category “sources” will provide the name of said resources.

In this regard it is important to note that some of the categories listed above, such as part of speech, definition, gender, number etc., have been taken from FAIRterm 2.0 and its previous version, FAIRterm 1.0, while others were added by the author of this project with the aim of creating a terminology resource that would provide information regarding not only the term, but also the disorder being analysed. The data categories we decided to add are listed below, along with the relative definition:

- Pronunciation: “the representation of the manner by which a term or word is articulated”²⁴.
- Symptoms: “any deviation from normal functioning that is considered indicative of physical or mental pathology”²⁵.
- Causes:” the causes and progress of a disease or disorder”²⁶.
- Therapy: “remediation of physical, mental, or behavioral disorders or disease”²⁷.
- Diagnostic tools: “any examination or assessment measure that may help reveal the nature and source of an individual’s physical, mental, or behavioral problems or anomalies”²⁸

The definition regarding the category “pronunciation” is taken from DatCatInfo which is a data category repository, i.e. a digital collection of data category specifications, based on the ISO standards 12620 and developed with the aim of harmonizing data categories to increase interoperability between various types of language resources.

As for the other categories, we encountered some difficulties in finding a proper definition: first, we consulted Snomed CT, which is a multilingual resource, containing standardized terminology relating to the healthcare field. However, after carefully examining the database, we were not able to find a definition of the categories “symptoms”, “causes”, therapy” and “diagnostic tools”. As for the category regarding the causes, we did find a definition in DatCatInfo, which states that the term “cause” refers

²⁴ <https://datcatinfo.net/>

²⁵ <https://dictionary.apa.org/symptom>

²⁶ <https://dictionary.apa.org/etiology>

²⁷ <https://dictionary.apa.org/therapy>

²⁸ <https://dictionary.apa.org/diagnostic-test>

to a “relation which means that \$1 causes/motivates/justifies \$2”²⁹. Nonetheless, we believe that this definition, despite being precise, does not pertain to the psychological domain.

Therefore, we looked for other types of data category repositories pertaining to the medical domain, however we were not able to find any precise definition for the categories “symptoms”, “diagnostic tools”, “therapy” and “causes”; thus, after careful consideration, we decided to rely on the APA Dictionary, which is developed by the American Psychological Association and contains terms pertaining to the medical and psychological field. However, we must point out that, since we could not find a proper definition of “causes” and “diagnostic tools”, we looked for synonyms and thus, the definitions we provided actually refer to the terms “aetiology” and “diagnostic test”. At this point, it is important to note that we could have changed the name of the data categories referring to the causes and diagnostic tools and use the terms “aetiology” and “diagnostic test”. However, we decided to keep the initial terms “causes” and “diagnostic tools”, since we believed they would be clearer for the users, given that the resource addresses laypeople, such as teacher and social workers, who may not understand complex terminology pertaining to the medical domain.

5.2.1 Positioning the data categories

Once we created a final list of the resource’s data categories, we proceeded with another fundamental step, which consists in deciding where the categories will be positioned in the terminological entry.

However, to better understand this process, it is important to reintroduce the notion of the TMF meta-model, which we briefly discussed in Chapter 1, when we investigated the FAIR principles and their implementation in the terminology field. First, we must point out that the design of the resource’s structure is based on the ISO standard 16642:2017, which promotes the employment of the Terminological Markup Framework (TMF), a model for the representation of terminological data collections in eXtensible Markup Language (XML). As explained in the first chapter of this dissertation, the TMF framework was developed with the aim of providing a common model to structure

²⁹ <https://datcatinfo.net/>

terminological entries, so that terminology resources could have the same structure, thus facilitating the interoperability, sharing and reuse of data (Vezzani, Di Nunzio and Costa, 2023). The structure of our terminology resource is based on the TMF framework which has a vertical structure and adopts an onomasiological perspective: a concept is described in n languages and is designated by m terms for each language. In particular, a TMF meta-model is configured as follows: a terminology resource is a data collection containing various terminological records. Each of these records refers to one concept that can be represented in n language sections. For each language section, there can be m term sections, which contain the term that designate the concept in that specific language. Then, each term section can include various term component section(s), which describes the different parts of a term, such as morphemes, phonemes and syllables (Vezzani, Di Nunzio and Costa, 2023; Vezzani and Di Nunzio, 2022).

After clarifying this aspect, we can proceed with explaining in which section of the TMF meta-model we decided to position the categories. First, it is important to note that, during this procedure, we relied on the ISO 12620, whose latest versions were published in 2022: this standard establishes guidelines and recommendations regarding the creation, documentation, harmonization and maintenance of data category specifications in a data category repository (DCR). They also outline the format and content of data category specifications: according to this model, each data category presents a unique administrative identifier and can contain linguistic descriptions, such as data category definitions, statements of associated value domains, and examples (ISO 12620-1:2022). Furthermore, this standard provides criteria for managing data categories and specifies where they should be positioned in the terminological entry: in the case of our project, we decided to position the categories “subject field” and “sub-subject field” in the concept section, since they refer to the concept being analysed and are extralinguistic features. As for the language section, we decided to include the following categories: definition, causes, symptoms, therapy and diagnostic tools. The reason behind this choice lies in the fact that, although these categories provide information regarding the disorder, i.e. the concept, and not the term, they need to be verbalised in Italian, English and Russian, the languages in which the resource will be available. Thus, each of these languages would provide their own definition of the disorder and would have their own way to verbalise its causes, symptoms, therapies and diagnostic tools.

The remaining categories, i.e. register, context, common name, acronym, pronunciation, gender, number, part of speech, hypernym, abbreviation, full form, will be positioned in the term section, since these are features describing the term being investigated.

5.3 Presenting MISO: the terminological resource on childhood disorders

Once all the procedures of preliminary phase were completed, we contacted Professor Di Nunzio from the Department of Information Engineering to discuss the creation of the resource: we sent him a list containing the data categories we wanted to include, along with other features, i.e. the FAQ section, the possibility to add other languages and terminological records and to download them, the possibility to include an audio along with the pronunciation of the terms and to provide Italian and Russian equivalents of the data categories.

After gathering all this necessary information, Professor Di Nunzio proceeded with developing the resource: starting from FAIRterm 2.0, he updated the database and added the data categories relating to the causes, symptoms, therapy, diagnostic tools and pronunciation. The first four categories were included in the language section, while the last one was positioned in the term section, as previously explained. In this regard, it is important to note that some categories that were initially selected were not included in the final version of the resource: for example, the category “hyponym” was left out, since we realized it would not be useful, considering that the purpose of the resource is to provide information regarding the disorders and the terms used to designate them rather than describing the relationship between the analysed terms. Furthermore, we decided not to include the categories “abbreviation”, “acronym” and “full form”, since the term section of FAIRterm 2.0 already includes the category “type”, which according to DatCatInfo, refers to “an attribute describing the morphological, pragmatic or structural type and form of a designation”³⁰. Thus, while compiling the terminological record, users will specify in this category whether the term is an abbreviation, an acronym or a full form. Another category we decided to exclude is “common name”, since we believed that this information can be specified in the sections “notes” or “register”. In addition, it is

³⁰ <https://datcatinfo.termweb.eu/search/terms/1922995>

important to note that, for a matter of time, we did not include the Italian and Russian equivalents of the data categories, and we could not provide the possibility to add an audio along with the IPA pronunciation of the terms.

Moreover, during the development of the resource's final version, we realized that we needed to make further adjustments regarding the visualization of the records: this is a fundamental aspect of a terminology resource, as it must consider the users' needs. In our case, we reflected upon which kind of information users would find useful to see when they look for a term and, after careful consideration, we decided as follow: as shown in Figure 32, when using the "Browse" tab, users first need to select the subject field, which, in our case, is "health" (highlighted in yellow). Then, in the section titled "concept" (highlighted in red), they must select one of listed numbers, which correspond to the concept IDs. After this procedure is carried out, the database will show the disorder's definitions in English, Russian and Italian, along with the relative terms. Then, if users want to acquire more information about the disorder and/or the term(s) designating it, they can click on the button "show/hide" which will show the other data categories. In this regard, it is important to note that this is a preliminary visualization, since further changes will be implemented in the future with the purpose of improving the resource.

FAIRterm 2.0

Search Terms ☐ Include definition

subject field 2641 - health (28 - SOCIAL QUESTIONS) 475

English

Definition: Oppositional defiant disorder is a persistent pattern (e.g., 6 months or more) of markedly defiant, disobedient, provocative or spiteful behaviour that occurs more frequently than is typically observed in individuals of comparable age and developmental level and that is not restricted to interaction with siblings. Oppositional defiant disorder may be manifest in prevailing, persistent angry or irritable mood, often accompanied by severe temper outbursts or in headstrong, argumentative and defiant behaviour. The behaviour pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning. Oppositional defiant disorder is a persistent pattern (e.g., 6 months or more) of markedly defiant, disobedient, provocative or spiteful behaviour that occurs more frequently than is typically observed in individuals of comparable age and developmental level and that is not restricted to interaction with siblings. Oppositional defiant disorder may be manifest in prevailing, persistent angry or irritable mood, often accompanied by severe temper outbursts or in headstrong, argumentative and defiant behaviour. The behaviour pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning.

oppositional defiant disorder

000

Italian

Definition: Il termine disturbo oppositivo provocatorio indica un modello persistente (per esempio, 6 mesi o più) di comportamento marcatamente sfidante, di sottomissione, provocatorio o dispettoso che si manifesta in modo più frequente rispetto a quanto si osserva tipicamente in individui di età e livello di sviluppo simili al paziente e che non è limitato all'interazione con i fratelli. Il disturbo oppositivo provocatorio può manifestarsi con un umore arrabbiato o irraggiungibile prevalente e persistente, spesso accompagnato da forti scatti d'ira, oppure con un comportamento testardo, polemico e provocatorio. Il pattern comportamentale è di gravità tale da determinare una significativa compromissione del funzionamento personale, familiare, sociale, educativo, lavorativo o di altre aree importanti del funzionamento. Il termine disturbo oppositivo provocatorio indica un modello persistente (per esempio, 6 mesi o più) di comportamento marcatamente sfidante, di sottomissione, provocatorio o dispettoso che si manifesta in modo più frequente rispetto a quanto si osserva tipicamente in individui di età e livello di sviluppo simili al paziente e che non è limitato all'interazione con i fratelli. Il disturbo oppositivo provocatorio può manifestarsi con un umore arrabbiato o irraggiungibile prevalente e persistente, spesso accompagnato da forti scatti d'ira, oppure con un comportamento testardo, polemico e provocatorio. Il pattern comportamentale è di gravità tale da determinare una significativa compromissione del funzionamento personale, familiare, sociale, educativo, lavorativo o di altre aree importanti del funzionamento.

disturbo oppositivo provocatorio

DOP

Russian

Definition: Оппозиционно-вызывающее расстройство характеризуется устойчивым (т.е. на протяжении не менее шести месяцев) паттерном нарочито вызывающего, непокорного, провокационного или агрессивного поведения, которое проявляется чаще, чем обычно у лиц аналогичного возраста и уровня развития, и не ограничивается конфликтным взаимодействием с siblingами. Оппозиционно-вызывающее расстройство может проявляться в преобладании стойкого гневного или раздражительного настроения, часто сопровождающегося резкими вспышками гнева, либо в упрямом, своенравном и вызывающем поведении. Такое поведение является настолько выраженным, что приводит к значительным нарушениям в личной, семейной, социальной, учебной, профессиональной или других важных сферах функционирования. Оппозиционно-вызывающее расстройство характеризуется устойчивым (т.е. на протяжении не менее шести месяцев) паттерном нарочито вызывающего, непокорного, провокационного или агрессивного поведения, которое проявляется чаще, чем обычно у лиц аналогичного возраста и уровня развития, и не ограничивается конфликтным взаимодействием с siblingами. Оппозиционно-вызывающее расстройство может проявляться в преобладании стойкого гневного или раздражительного настроения, часто сопровождающегося резкими вспышками гнева, либо в упрямом, своенравном и вызывающем поведении. Такое поведение является настолько выраженным, что приводит к значительным нарушениям в личной, семейной, социальной, учебной, профессиональной или других важных сферах функционирования.

оппозиционно-вызывающее расстройство

OBP

Figure 32 Example of the records' visualization relating to the concept <Oppositional defiant disorder>

Lastly, we decided to add a final touch to our resource and named it “MISO”, which is a combination of the first syllables of the expression “mismatched socks”. This name comes from the fact that on the first Friday of February schools in Italy and other countries celebrate the so-called “Giornata dei Calzini Spaiati”, which translates literally as Mismatched Socks Day: on this day children and teachers wear mismatched socks to promote the acceptance of diversity in all its forms, whether it is physical, cognitive or cultural. In this regard we believed that the name MISO would be a perfect fit, since this

project stems from our experience as a special education teacher and it relates to the field of childhood disorders.

The screenshot below depicts the resource's homepage³¹, which presents four tabs (highlighted in green): the first one, titled “Compile”, is dedicated to the compilation of terminological records, as we will explore in Section 5.3.2. The second tab, which is still under development, is called “Browse” and it is used to visualize the information regarding the terms and the concepts, while the third tab, titled “Export”, is dedicated to the download of the records, which can be exported in TBX or tabular (TSV) format. The last tab includes the FAQ section, which will be described in the following section.

FAIRterm 2.0

Search Terms ☐ Include definition clear search

Compile Browse Export FAQ

subject field show/hide choose subject field concept reset fields add concept entry

FAIRterm 2.0 is the result of a joint collaboration between the Department of Linguistic and Literary Studies (DISLL) and the Department of Information Engineering (DEI) of the University of Padova. This project has been carried out within the activities of the Centre of Studies for Computational Terminology (CENTRICO) of the University of Padova. © Giorgio Maria Di Nunzio and Federica Vezzani. This work is licensed under a Creative Commons Attribution 4.0 International License.

Figure 33 Resource's homepage

5.3.1 The FAQ section

An interesting aspect of MISO regards the FAQ section, which was included with the purpose of making the resource user-friendly, since it addresses not only language experts, but also social workers and teachers, who are not familiar with terminology tools. Therefore, we decided to include a specific section containing a series of guidelines regarding the various features of the resource. After careful consideration, we included the following list of questions and answers:

³¹ The resource can be consulted at the following link: <https://shinyserve.dei.unipd.it/unipd/borinato/>

1. Can I add other languages? Yes, if you are an interpreter, translator and/or cultural mediator, you can help us expand the resource by adding the languages you work with. To add other languages, watch the following video:
2. Can I add other terminological records? Yes, if you are an interpreter, translator and/or cultural mediator and have in-depth knowledge of childhood disorders, you can help us expand the resource by adding other records. To add other records, watch the following video:
3. What is a terminological record? A terminological record is the main element of a terminology resource, comparable to the entry of a dictionary. It contains all information relating to the term, such as gender, number and part of speech. In our case, the terminology record also contains information on the disorder analysed, such as causes, symptoms and therapy.
4. Can I download the records? Yes, the records can be downloaded in TBX or tabular format. To download the record, follow these instructions:
 - got to the tab “Export”
 - click on “Download TSV” if you want to download the records in tabular format
 - or
 - click on “Download TBX” if you want to download the records in TBX format
5. How can I contact you? If you have any suggestions, curiosities or encounter any problems, please contact us at the following e-mail address:
eleonora.borinato.1@studenti.unipd.it

Figure 34 shows the FAQ section: the questions, along with their relative answers, are written in Italian, English and Russian and users can select the language in which they want to visualize the information.

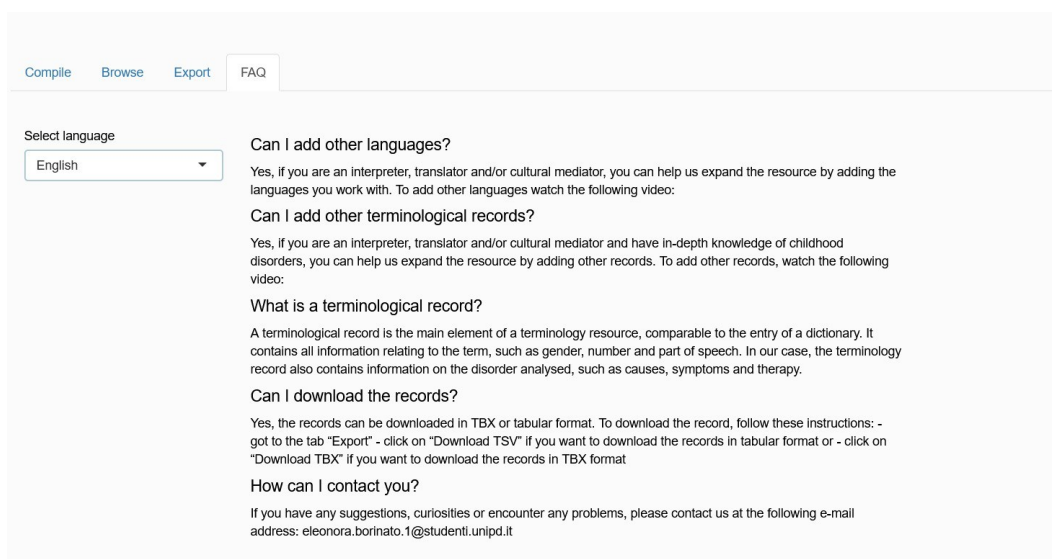


Figure 34 FAQ Section: the videos will be uploaded with the resource's latest update

In this regard it is important to note that, to answer the questions related to the resource's usage, for example, how to add other languages or how to compile the records, we decided to rely on videos, which will be uploaded with the resource's latest update, since we believed that they would be easier to follow and more understandable, compared to written instructions.

5.3.2 Compiling the terminological records

As for the compilation process, it must be noted that it is quite similar to the one we illustrated in Section 5.1: as a matter of fact, our resource shares the same core features of FAIRterm 2.0, since it draws inspiration from it. Thus, when it comes to compiling the terminological records, the process remains the same and the only difference between MISO and FAIRterm 2.0 lies in the fact that, as previously mentioned, in the language section we added the data categories relating to the causes, symptoms, therapy and diagnostic tools (highlighted in red in figure 35), whereas in the term section we introduced the field "pronunciation" (highlighted in green in figure 36).

definition

causes

symptoms

therapy

diagnostic_tools

external cross reference

source

notes

Figure 35 Data categories included in the language section

pronunciation

usage

part of speech

gender

number

type

context

external cross reference

source

register

collocation

notes

Figure 36 Data categories included in the term section

Once the developing phase was completed, we wanted to demonstrate that the resource worked and could be used smoothly and thus, we decided to provide examples of terminological records compiled with MISO. We selected five concepts, corresponding to the five most common childhood disorders we encountered during our work experience as a special education teacher: selective mutism, attention deficit/hyperactivity disorder, oppositional defiant disorder, social anxiety disorder and autism spectrum disorder. In total we analysed 35 terms, since we observed several cases of synonymy in all the languages we worked with: for example, the concept <Social anxiety disorder> is designated in English, Italian and Russian by three different terms. The same applies for all the other concepts we analysed, except for <Selective mutism>, which presents synonyms only in Russian.

As for the compilation process it is important to make a few remarks. First, as previously mentioned, the resource contains data categories which provide information on the definition, causes, symptoms, therapies and diagnostic tools of the analysed disorder. When compiling these categories, we mainly relied on the ICD-11, which is a medical coding system developed by the World Health Organization (WHO) with the purpose of allowing “the systematic recording, analysis, interpretation and comparison of mortality and morbidity data collected in different countries or regions and at different times” (World Health Organization, 2022, p. 26). The ICD, whose eleventh edition was published in 2022, reports and groups conditions and factors that influence health and thus, it is a reliable resource for finding information regarding the medical and psychological domains. We relied on the ICD-11 for collecting data regarding the definition, causes and symptoms of the analysed disorders, while for the therapies and diagnostic tools we resorted to scientific papers, the DSM-5 and the MSD Manual, an online resource containing accurate medical data.

Furthermore, we must note that, since we wanted to provide the same information in all the languages we worked with, we first collected the data from English resources and then we translated them into Italian and Russian: in this regard it is important to point out that some of the resource we consulted, such as the ICD-11 and the MSD Manual, already provided an Italian and/or Russian version of the information regarding the disorder we were analysing, and thus, in these cases, we relied on these translations. Moreover, it is important to point out that in the category regarding the diagnostic tools, we included the

names of the questionnaires used during the diagnostic process: while compiling this field we noticed that in Italian experts use the English acronyms and full forms to refer to these tests. This is a case of linguistic borrowing, since these diagnostic tools, which originated in the English-speaking countries, have been translated into Italian, but without coining new terms. In Russian, on the other hand, we noticed another interesting phenomenon: the full forms of the questionnaires present Russian equivalents, while for acronyms, experts rely on the English terms.

Another aspect we should focus on regards the difficulties encountered during the compilation process: the most challenging sections were the ones relating to the pronunciation and the collocations. In the first case, as previously mentioned, we could not add an audio in the pronunciation field and thus, we only included the phonetic transcription, based on the IPA chart. Since we are aware that a phonetic transcription can be understood only by language experts, we tried to overcome this issue by including in the category “notes” a link that could redirect the user to a resource providing the audio pronunciation of the given term. However, this strategy was successful only with few of the English terms, since we could not find Russian and Italian resources and dictionaries that provided audio pronunciations.

As for the collocations, we initially used the Sketch Engine function “Word Sketch”, which aims at providing information regarding a word’s collocational behaviour; however, the software failed to identify any collocation for the analysed terms. At this point, we performed research outside the corpora, but did not get better results.

In addition, it is important to underline that during the compilation process we noticed various linguistic phenomena. First, we identified several cases of quasi-synonymy, a phenomenon which occurs when two terms share the same meaning in a given context but are not always interchangeable, as they do not point to the same concept and do not have the same meaning in all domains of usage. In particular, we noticed that the Italian acronym “DSA” is used to refer to both the autism spectrum disorder and the specific learning disorders. Furthermore, we observed that to refer to the social anxiety disorder, Italian experts may rely on the acronym “DAS”, which, however, is rarely used and can also indicate the separation anxiety disorder, as revealed not only through corpus consultation but also by carrying out external research.

The same applies to the English term “SAD,” which can be an acronym for the terms “separation anxiety disorder” and “social anxiety disorder”, and it is also used to refer to the seasonal affective disorder. In these cases, we decided not to add a term section dedicated to these acronyms, as we feared it might be confusing for users. Nonetheless, in the “notes” section of the terms “disturbo d’ansia sociale”, “disturbi dello spettro autistico” and “social anxiety disorder”, we clarified that these terms can be referred to by the relative acronyms DAS, DSA and SAD, which, however, are polysemous.

In addition, we noticed that the Italian term “disturbo da deficit di attenzione/iperattività” presents two synonyms: the English acronym “ADHD” and the Italian “DDAI”, even though the first one is more widely used than “DDAI”, as we observed after analysing the occurrences of the two acronyms (over 200 million for “ADHD” and 500 thousand for “DDAI”).

Lastly, the phenomenon of register variation was observed in all the three languages: for example, the Italian term “disturbi dello spettro autistico”, along with the English equivalent “autism spectrum disorder” and the Russian term “расстройство аутистического спектра” all present a synonym, which is typically used by laypeople. In Italian the common name for the disorder above mentioned is “autismo”, whose English and Russian equivalents are respectively “autism” and “аутизм”. Another example is the Italian term “disturbo d’ansia sociale”, whose synonym “ansia sociale” is mainly used in informal situations. The same situation was also observed in English and Russian: in the first case, the English term “social anxiety disorder” presents the synonym “social anxiety”, which belongs to the non-specialised register, whereas in Russian, the term “социальное тревожное расстройство” presents the variant “социофобия”.

To conclude this chapter, we must note that, despite few difficulties, the compilation process proceeded smoothly and allowed us to prove that this recourse works and that, if effectively used, it could promote communication between non-Italian families and professionals working in the language, education and social fields.

This last consideration concludes this project. In the next section we will present the final conclusions, along with the questions included in the questionnaire and a table containing the definitions of the analysed concepts.

6. Conclusions

This project allowed us to implement the skills acquired through the Translation-oriented Terminography course, held by Professor Vezzani, in a real-life setting and to combine our knowledge regarding terminology with our experience as a special education teacher to develop a tool that could help not only language experts but also professionals working in the education and social fields. As for the methodology, we partially relied on the same one we used for the project we created for the final exam of the terminography course: after illustrating the core features of terminology, investigating the world of language services in Italy and the sub-domain we decided to analyse, i.e. childhood disorders, we started to reflect upon the characteristics the resource should contain with the purpose of creating an efficient tool that could be easily used. After compiling an initial list of data categories, we directly addressed the future users of the resource through the creation of a questionnaire with the purpose of gathering their opinions on the terminology resource and on the phenomenon of child language brokering.

Then, we proceeded with the project workflow: we extracted the relevant terms pertaining to the analysed domain from online resources and the three corpora created on Sketch Engine, then we found the relative concepts by a process of inference. Once we completed these procedures, we organized concepts into concept systems and terms into lexical networks. The last part of this project focused on the development of the resource: we created a final list of data categories and characteristics we wanted to include, and we contacted Professor Di Nunzio with the aim of discussing the development of the database. After the resource was created, we proceeded with the last adjustments regarding the visualization of the resource's information and the FAQ section, and lastly, we compiled the terminological records.

In this regard, it must be noted that the aim of this project was to create a prototype of a terminology resource that could address various types of users and meet their needs. Therefore, in this thesis we mainly focused on the fundamental stages that must be followed during the development process, while the compilation of terminological records was carried out as a secondary task with the aim of demonstrating that the resource worked. We compiled five records: all the analysed concepts have been listed alphabetically in a table along with their definitions and can be found in the first appendix

after this section. As for the language used to verbalise these concepts, we decided to rely on English, as it is the writing language of this project and the “lingua franca” of the academic community; however, since concepts are extralinguistic entities and language independent, we could also have relied on Russian, English or any other language. In addition, as mentioned above, the table includes the concepts’ natural language definitions, which have also been written in English.

In addition, it must be noted that our project is preliminary, as we have focused on the three most common groups of disorders, i.e., neurodevelopmental, anxiety and disruptive, impulse-control and conduct disorders; however, the resource could and should be further expanded to include all the different diagnostic groupings. As a matter of fact, this project undoubtedly shows some academic limits: for example, one of the aspects that should be improved regards the participation of language experts to the questionnaire, which can be found in the second appendix after these conclusions. As mentioned in Chapter 3, we were not able to gather enough data from mediators, translators and interpreters, since the answers collected were very few. Thus, in the future, it is important to find possible solutions to this issue, since feedback from language experts is fundamental, as they are among the main users of the resource and could give useful insights on its linguistic dimension. Furthermore, for a matter of time, we were forced to leave out some of the characteristics which we initially wanted to include in the resource, such as the possibility to include an audio along with the pronunciation of the terms and to provide Italian and Russian equivalents of the data categories. In addition to this, we should note that we developed a prototype which still has not been tested by the intended users: thus, this project could be enlarged by adding more terminological records and then administering the resource to language experts, social workers and teachers with the purpose of testing the database’s efficiency and eventually improving it.

Therefore, for the reasons explained above, this project might undoubtedly serve as a foundation for future terminological work in the field of childhood disorders, also considering that this sub-domain has not been the object of much attention, as it is confirmed by the lack of proper terminology resources regarding childhood disorders: as a matter of fact, we carried out an online research with the purpose of looking for projects similar to the one we were developing. However, we only found monolingual Italian and English glossaries which were created by health institutes and analysed only specific

diagnostic categories, such as anxiety disorders or eating disorders. Furthermore, these glossaries were not developed in accordance with the ISO standards' requirements and thus cannot be considered reliable terminology resources.

Nonetheless, despite its limits, this resource presents some interesting traits: first, it was developed considering both the conceptual and linguistic dimensions of terminology, as proved not only by the methodology we used, since we adopted an onomasiological approach as well as a semasiological one, but also by the fact that in the resource we included data categories referring to both the concepts and the terms. Furthermore, we believe that this resource, if effectively used, could have a positive impact and could promote communication between non-Italian families and professionals working in the language, educational and social fields with the hope that in the future cultural mediators, translators and interpreters will receive a proper recognition and regulation: this would eventually lead to an increase in the funds institutions receive to rely on language services with a consequent decrease in the presence of child language brokering, since, as we mentioned in Chapter 2, all these phenomena are intertwined.

Appendix 1: Table of concepts and their natural language definition in English

CONCEPT	NATURAL LANGUAGE DEFINITION (ENGLISH)
<Attention-deficit/hyperactivity disorder>	Attention deficit hyperactivity disorder is characterised by a persistent pattern (at least 6 months) of inattention and/or hyperactivity-impulsivity that has a direct negative impact on academic, occupational, or social functioning. The degree of inattention and hyperactivity-impulsivity is outside the limits of normal variation expected for age and level of intellectual functioning. Inattention refers to significant difficulty in sustaining attention to tasks that do not provide a high level of stimulation or frequent rewards, distractibility and problems with organisation. Hyperactivity refers to excessive motor activity and difficulties with remaining still, most evident in structured situations that require behavioural self-control. Impulsivity is a tendency to act in response to immediate stimuli, without deliberation or consideration of the risks and consequences.
<Autism spectrum disorder>	Autism spectrum disorder is characterised by persistent deficits in the ability to initiate and to sustain reciprocal social interaction and social communication, and by a range of restricted, repetitive, and inflexible patterns of behaviour, interests or activities that are clearly atypical or excessive for the individual's age and sociocultural context. The onset of the disorder occurs during the

		developmental period, typically in early childhood, but symptoms may not become fully manifest until later, when social demands exceed limited capacities. Deficits are sufficiently severe to cause impairment in personal, family, social, educational, occupational or other important areas of functioning and are usually a pervasive feature of the individual's functioning observable in all settings, although they may vary according to social, educational, or other context. Individuals along the spectrum exhibit a full range of intellectual functioning and language abilities.
<Oppositional disorder>	defiant	Oppositional defiant disorder is a persistent pattern (e.g., 6 months or more) of markedly defiant, disobedient, provocative or spiteful behaviour that occurs more frequently than is typically observed in individuals of comparable age and developmental level and that is not restricted to interaction with siblings. Oppositional defiant disorder may be manifest in prevailing, persistent angry or irritable mood, often accompanied by severe temper outbursts or in headstrong, argumentative and defiant behaviour. The behaviour pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning.
<Selective mutism>		Selective mutism is characterised by consistent selectivity in speaking, such that a child demonstrates adequate language competence in specific social situations, typically at home, but consistently fails to speak in others, typically at school. The disturbance lasts for at least one month, is not limited to the first month of school, and is of sufficient severity to

	interfere with educational achievement or with social communication. Failure to speak is not due to a lack of knowledge of, or comfort with, the spoken language required in the social situation (e.g. a different language spoken at school than at home).
<Social anxiety disorder>	Social anxiety disorder is characterised by marked and excessive fear or anxiety that consistently occurs in one or more social situations such as social interactions (e.g. having a conversation), doing something while feeling observed (e.g. eating or drinking in the presence of others), or performing in front of others (e.g. giving a speech). The individual is concerned that he or she will act in a way, or show anxiety symptoms, that will be negatively evaluated by others. Relevant social situations are consistently avoided or else endured with intense fear or anxiety. The symptoms persist for at least several months and are sufficiently severe to result in significant distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning.

Appendix 2: Questionnaire on the terminology resource

Quale professione svolge attualmente?

- Insegnante

→ Specificare il tipo di istituto (ad. esempio: scuola primaria; scuola secondaria di I° grado ecc.):

- Insegnante di sostegno

→ Specificare il tipo di istituto (ad. esempio: scuola primaria; scuola secondaria di I° grado ecc.):

- Mediatore/interprete/traduttore
- Assistente sociale
- Altro (specificare):

Risponda solo alle domande relative alla sua professione.

Per gli insegnanti:

- Quanti sono gli alunni nati da genitori non italiani presenti nella classe?
 - Metà della classe
 - Più della metà della classe
 - Meno della metà della classe
- All'interno della classe sono presenti genitori che parlano poco o non capiscono l'italiano?
 - Sì
 - No
 - Non saprei

→ Se sì, è mai stato chiamato un interprete/mediatore culturale?

 - Sì
 - No
 - Non saprei
- Ritene che la presenza di un interprete sia necessaria per svolgere al meglio i colloqui con i genitori degli alunni?

- Sì
 - No
 - Non saprei
- È mai accaduto che un minore svolgesse attività di interpretariato per conto dei genitori (ad esempio durante i colloqui, riunioni e altre attività scolastiche)?
- Sì
 - No
 - Non saprei
- Ritieni che l'uso di una risorsa terminologica possa essere utile nella sua professione?
- Sì (specificare il motivo)
 - No
 - Non saprei

Per gli interpreti/mediatori:

- È mai stato/a chiamato/a in una scuola per offrire un servizio di interpretariato durante i colloqui con i genitori o in altre occasioni (ad esempio riunioni genitori-insegnanti, lezioni...)?
- Sì
 - No
 - Non saprei
- Ritieni che l'uso di una risorsa terminologica con termini relativi ai disturbi dell'età evolutiva possa essere utile per l'attività di interpretariato/traduzione?
- Sì
 - No
 - Non saprei
- Ritieni utile la possibilità per gli interpreti/traduttori di poter ampliare a loro volta la risorsa aggiungendo anche le loro lingue di lavoro?
- Sì
 - No
 - Non saprei

Per gli assistenti sociali ed eventuali altre professioni:

- Durante il suo lavoro è mai venuta/o a contatto con famiglie in cui i genitori non parlavano o capivano poco l'italiano?

- Sì
- No
- Non saprei

→ Se sì, è mai stato contattato un interprete/mediatore culturale al fine di agevolare la comunicazione?

- Sì
- No

- È mai accaduto che un minore svolgesse attività di interpretariato per conto dei genitori (ad esempio durante i colloqui scolastici)?

- Sì
- No
- Non saprei

- Ritieni che l'uso di una risorsa terminologica possa essere utile nella sua professione?

- Sì
- No
- Non saprei

Selezioni quali delle categorie sottostanti vorrebbe vedere all'interno della risorsa terminologica.

Aspetti linguistici legati al termine con relativa traduzione in inglese e russo:

- abbreviazione
- acronimo
- contesto
- definizione
- forma piena
- genere
- numero
- parte del discorso
- pronuncia (comprensiva di audio)
- registro
- iperonimo
- nome comune
- dominio

- sotto-dominio
- registro

Ulteriori informazioni riguardanti il disturbo analizzato con relativa traduzione in inglese e russo:

- cause
- sintomi
- terapia
- strumenti diagnostici

Suggerimenti: in questa sezione può scrivere eventuali suggerimenti e/o richieste relative alla risorsa terminologica (ad esempio se ritiene utile inserire una categoria non presente nell'elenco di cui sopra).

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iv. Italian abstract

La presente tesi si basa sullo sviluppo di una risorsa terminologica trilingue in italiano, inglese e russo, riguardante l'ambito psicologico e, nello specifico, il sotto-dominio relativo ai disturbi dell'età evolutiva. Tale decisione nasce dalla nostra esperienza lavorativa, infatti tra il 2021 e il 2022 abbiamo ricoperto il ruolo di insegnante di sostegno presso una scuola dell'infanzia situata in provincia di Vicenza, in Veneto. La ragione che ha condotto alla scelta del sotto-dominio di analisi risiede soprattutto nella situazione osservata nell'istituto durante il periodo di insegnamento. Innanzitutto, è importante sottolineare che si trattava di una scuola multietnica, nella quale erano presenti numerosi bambini a cui erano stati diagnosticati disturbi dell'età evolutiva e i cui genitori non capivano e/o non parlavano italiano, situazione resa ancora più complicata dalla mancanza di mediatori linguistici. Ne consegue che i colloqui con i genitori divenivano quasi impossibili: la comunicazione avveniva solo grazie ad alcuni docenti che possedevano delle conoscenze base di lingua inglese, nonostante spesso gli insegnanti non riuscissero a capire le esigenze e le richieste dei genitori, i quali a loro volta non erano in grado di comprendere gli avvisi e le circolari pubblicati dagli uffici scolastici.

Inoltre, è importante sottolineare che, durante gli incontri tra genitori e insegnanti di sostegno vengono descritte le problematiche dell'alunno e le possibili strategie che si possono adottare per migliorare la situazione. Si tratta di contesti in cui viene utilizzata una terminologia alquanto complessa e dunque nei casi in cui sia richiesta una mediazione tra due lingue, la comunicazione può divenire impossibile se non si hanno a disposizione le risorse necessarie. In aggiunta a ciò, la situazione descritta non si limita alla scuola in cui si è osservato questo fenomeno, ma riguarda anche altri istituti, come è emerso dal confronto con i docenti.

Vista la gravità della situazione, nel 2022, dopo aver frequentato il corso di terminografia orientata alla traduzione tenuto dalla Professoressa Federica Vezzani, è stata presentata all'esame una relazione terminologica in italiano e inglese, riguardante i disturbi d'ansia in età evolutiva. Per il progetto presentato all'esame, sono stati prodotti un sistema concettuale e due reti lessicali, una in italiano e una in inglese, che hanno poi portato alla compilazione di 15 schede terminologiche su FAIRterm 1.0. Il progetto che presentiamo rappresenta quindi la continuazione e l'ampliamento del lavoro iniziato

durante il corso della Professoressa Vezzani, con il fine di sviluppare una risorsa terminologica rivolta non solo a mediatori culturali, traduttori e interpreti, ma anche a insegnanti e assistenti sociali. L'obiettivo è fornire uno strumento che possa facilitare la comunicazione di informazioni di natura specializzata alle famiglie di alunni non italiani.

La seguente tesi è suddivisa in cinque capitoli: il primo ha illustrato i principi cardinali della terminologia, offrendo una panoramica sull'evoluzione storica di tale disciplina e sulle sue teorie fondamentali. Infatti, nel primo sottocapitolo sono stati descritti i principali sviluppi della terminologia e gli eventi che hanno contribuito alla sua affermazione come scienza autonoma, a partire dal XVIII secolo, periodo in cui gli scienziati iniziarono a interessarsi alla nomenclatura delle loro discipline, fino al XX secolo, che ha visto il contributo di tecnici e ingegneri e l'affermazione della terminologia teorica e applicata. Inoltre, abbiamo analizzato il ruolo di Wüster, considerato il padre della terminologia moderna, l'importanza della sua *General Theory of Terminology* (nota anche con l'acronimo GTT) e gli approcci alternativi proposti negli anni da altri studiosi. Nella sezione 1.2, è stata invece analizzata la definizione di terminologia e le caratteristiche principali di tale disciplina, seguendo il pensiero elaborato dei vari studiosi nel corso dei decenni e le norme proposte dal comitato tecnico 37 dell' ISO (*International Organization for Standardization*). Inoltre, abbiamo introdotto la distinzione tra lessicologia e terminologia, che è di fondamentale importanza per la comprensione di due nozioni fondamentali, ovvero quelle di lingua generale e lingua speciale.

La sezione 1.3 è stata dedicata alla dimensione concettuale e linguistica della terminologia, poiché una delle caratteristiche principali di tale disciplina risiede nel fatto che non si occupa solo di termini, ma anche di concetti e presenta, dunque una duplice dimensione. Infine, l'ultima sezione del primo capitolo si è soffermata sulla gestione della terminologia: abbiamo analizzato i vari aspetti di tale ambito con particolare attenzione ai diversi modelli che gli studiosi hanno proposto nel corso degli anni per lo sviluppo di una risorsa terminologica. Inoltre, abbiamo analizzato il paradigma della terminologia FAIR, sviluppato per gestire in modo ottimale i (meta)dati all'interno delle risorse terminologiche.

Il secondo capitolo della presente tesi, invece, ha fornito una panoramica sulla complessa situazione riguardante l'offerta di servizi linguistici in Italia: nella prima metà

del capitolo ci siamo soffermati sul *Child Language Brokering* (noto anche con l'acronimo CLB), una forma di interpretariato e traduzione di tipo non professionale svolta da bambini e adolescenti di origine straniera, i quali fungono da mediatori per i loro genitori in una vari contesti e situazioni. Nel primo sottocapitolo abbiamo riflettuto sulle varie definizioni proposte dagli studiosi nel corso degli anni per descrivere tale fenomeno e il crescente interesse mostrato dalla comunità accademica nei confronti del CLB, che recentemente è diventato un campo di studio indipendente. È stata poi fornita una panoramica del *Chil Language Brokering* e dei principali contesti in cui viene osservato, oltre a un'analisi delle sue conseguenze sia sui bambini coinvolti in tale pratica sia sui loro genitori.

La sezione 2.2 ha invece approfondito il ruolo dei mediatori culturali in Italia: dopo aver analizzato la terminologia utilizzata per riferirsi a tale professione e le definizioni eterogenee proposte dagli studiosi, abbiamo descritto il contesto storico e giuridico in cui nasce e si sviluppa la mediazione linguistica e culturale in Italia, con un'attenzione particolare alla situazione nelle scuole, dove i mediatori svolgono un ruolo fondamentale nel promuovere il processo di acculturazione e integrazione degli studenti stranieri. Infine, abbiamo approfondito alcune problematiche relative a tale professione, come la mancanza di un albo nazionale e di finanziamenti statali, e le relative ripercussioni sui mediatori.

L'ultima sezione del capitolo ha invece riassunto quanto analizzato finora e si è soffermata sulla difficile situazione osservata nelle scuole, evidenziando così l'importanza di sviluppare un database terminologico e introducendo il progetto alla base della presente tesi.

Nel terzo capitolo ci siamo addentrati nel vivo del nostro progetto, descrivendo le fasi principali che caratterizzano il processo di preparazione della risorsa terminologica. In primo luogo, abbiamo analizzato il sottodominio scelto per questo progetto: dopo aver spiegato le ragioni che hanno portato a tale scelta, nella sezione 3.1 abbiamo fornito una panoramica dei disturbi dell'età evolutiva, con particolare attenzione ai tre gruppi diagnostici più diffusi, ossia i disturbi del neurosviluppo, i disturbi d'ansia e i disturbi da comportamento dirompente, del controllo degli impulsi e della condotta, la cui categorizzazione, eziologia e terapia consigliata sono stati oggetto di discussione nella prima parte di questo capitolo.

La seconda parte del capitolo 3 è stata invece dedicata alla fase successiva di preparazione del progetto. Nella sezione 3.2 ci siamo concentrati sull'individuazione delle caratteristiche della risorsa terminologica e dei suoi potenziali utenti: abbiamo quindi riflettuto su quali professionisti avrebbero potuto trarre vantaggio dall'utilizzo di una simile risorsa e quali categorie di dati avrebbero potuto essere incluse. In seguito, nella sezione 3.3 ci siamo rivolti direttamente ai futuri utenti del database attraverso la creazione di un questionario, che abbiamo diffuso tra esperti linguisti, insegnanti e assistenti sociali al fine di raccogliere le loro opinioni sulla risorsa terminologica e sul fenomeno del *Child Language Brokering*. Infine, nell'ultima parte del terzo capitolo abbiamo descritto la struttura del questionario e abbiamo analizzato i dati raccolti e le principali difficoltà incontrate durante il processo di somministrazione.

Nel quarto capitolo abbiamo proseguito con la fase di preparazione del progetto, illustrando i passaggi che precedono lo sviluppo di una risorsa terminologica: nella prima metà del capitolo, abbiamo descritto la fase di creazione dei tre corpora trilingui, uno per ciascuna delle lingue di lavoro, ovvero italiano, inglese e russo. La sezione 4.1 ha invece fornito una panoramica sulla terminologia dei corpora, intesi come una collezione di testi autentici in formato elettronico, selezionati secondo criteri specifici per rappresentare una lingua o una varietà linguistica: abbiamo analizzato la definizione di corpus, i vari tipi di corpora esistenti e il ruolo fondamentale che svolgono nelle attività terminologiche. Abbiamo inoltre descritto il processo di estrazione automatica dei termini (ATE), che permette di estrarre automaticamente dai corpora una lista di termini candidati che saranno poi analizzati e controllati.

La sezione 4.1.1 ha poi introdotto Sketch Engine, lo strumento utilizzato per la creazione dei corpora in italiano, inglese e russo: abbiamo descritto il funzionamento del software e le varie funzioni disponibili. Dopo tali premesse, abbiamo illustrato i passaggi seguiti nella compilazione dei corpora e le principali difficoltà incontrate durante tale processo. A tal proposito, è importante sottolineare che, visto che possedevamo già una conoscenza di base del dominio selezionato, grazie alla nostra esperienza come insegnanti di sostegno, abbiamo utilizzato i corpora con un triplice scopo: indagare come i concetti relativi al dominio scelto sono designati nelle lingue di lavoro, estrarre una lista di termini candidati e confrontare la nostra conoscenza dei disturbi dell'età evolutiva con le informazioni raccolte su Sketch Engine.

Nella seconda parte del capitolo, ci siamo soffermati su un'altra fase preliminare fondamentale, ovvero la creazione del sistema concettuale e delle tre reti lessicali. In questa fase del progetto abbiamo innanzitutto adottato un approccio semasiologico, poiché, partendo dai termini estratti, siamo risaliti ai relativi concetti e abbiamo creato un sistema concettuale che rappresentasse le relazioni tra tali concetti. Poi, attraverso un approccio onomasiologico, ci siamo concentrati sulla dimensione linguistica, creando reti lessicali che mostrassero come i concetti individuati vengono designati in inglese, russo e italiano. In particolare, nella Sezione 4.2 abbiamo analizzato i vari tipi di sistemi concettuali individuati dalla norma ISO 704:2022 e poi abbiamo proceduto con la descrizione delle reti lessicali, sottolineando l'importanza di adottare un doppio approccio alla terminologia, che prenda in considerazione sia la dimensione concettuale sia quella linguistica.

In seguito, nella sezione 4.2.1, abbiamo presentato Miro, il software a cui ci siamo affidati per la creazione del sistema concettuale e delle reti lessicali e ne abbiamo descritto le caratteristiche e i vantaggi. Infine, abbiamo analizzato i diagrammi creati tramite il software, illustrando il sistema concettuale e il modo in cui i concetti e le relazioni tra quest'ultimi vengono designati nelle tre reti lessicali.

Nel capitolo finale della presente tesi, abbiamo descritto l'ultima fase di sviluppo della risorsa terminologica: dopo aver fornito una breve panoramica di FAIRterm 2.0, da cui abbiamo tratto ispirazione per la creazione del nostro database, abbiamo presentato l'elenco finale delle categorie di dati e delle caratteristiche da includere nella risorsa. A questo proposito, è importante sottolineare che alcune categorie come parte del discorso, definizione, genere, numero ecc. sono state prese da FAIRterm 2.0 e dalla sua versione precedente, mentre altre sono state aggiunte dall'autrice del presente progetto. Per quanto riguarda le nuove categorie che abbiamo aggiunto, ovvero pronuncia, cause, sintomi, terapia e strumenti diagnostici, abbiamo deciso di fornire anche una definizione per chiarire quali informazioni sarebbero state incluse.

Un'ulteriore fase fondamentale nel processo di sviluppo della risorsa ha consistito nel determinare a quale livello della scheda terminologica posizionare le categorie di dati: basandoci sugli standard ISO 12620:2022, abbiamo specificato quali categorie abbiamo deciso di posizionare a livello del concetto e quali invece sono state posizionate a livello di lingua e di termine, fornendo una spiegazione di tale scelta. Infine, nell'ultima sezione

della presente tesi, abbiamo presentato la nostra risorsa: ne abbiamo descritto le caratteristiche e abbiamo fornito alcuni esempi di schede terminologiche compilate con il database da noi progettato.

In conclusione, è importante sottolineare che il presente progetto mostra indubbiamente alcuni limiti. In primo luogo, uno degli aspetti che andrebbe migliorato riguarda la scarsa partecipazione degli esperti linguisti al questionario: le risposte provenienti da mediatori culturali, interpreti e traduttori sono state poche e non ci hanno permesso di raccogliere dati sufficientemente affidabili. In futuro, sarà fondamentale risolvere tale problema, poiché il contributo degli esperti linguistici è di assoluta importanza, in quanto sono tra i principali destinatari del progetto e potrebbero fornire indicazioni utili riguardo l'aspetto linguistico della risorsa.

In secondo luogo, è importante sottolineare che il nostro progetto è preliminare, in quanto ci siamo concentrati sui tre gruppi di disturbi più comuni, ossia i disturbi del neurosviluppo, i disturbi d'ansia e i disturbi da comportamento dirompente, del controllo degli impulsi e della condotta; tuttavia, la risorsa potrebbe e dovrebbe essere ulteriormente ampliata per includere tutti i diversi gruppi diagnostici. Inoltre, a causa delle tempistiche ristrette, abbiamo dovuto tralasciare alcune caratteristiche che inizialmente volevamo includere nella risorsa, come la possibilità di inserire un audio nella parte relativa alla pronuncia dei termini e di fornire gli equivalenti italiani e russi dei nomi delle categorie di dati.

Infine, un ulteriore limite risiede nel fatto che il database da noi progettato è un prototipo che non è ancora stato testato dagli utenti: sarebbe dunque necessario somministrare la risorsa a esperti linguisti, assistenti sociali e insegnanti al fine di testarne l'efficienza ed eventualmente apportare delle modifiche.

Pertanto, per le ragioni sopra esposte, il presente progetto fornisce indubbiamente la base per un futuro lavoro terminologico nell'ambito dei disturbi dell'età evolutiva, visto che tale sottodominio non è stato oggetto di grande attenzione, come testimoniato dalla mancanza di risorse terminologiche riguardanti tale ambito. A tal proposito, abbiamo condotto un'approfondita ricerca online al fine di cercare progetti simili al nostro, tuttavia abbiamo trovato solo glossari monolingui in italiano e in inglese, che sono stati creati da istituti sanitari e analizzano esclusivamente specifiche categorie diagnostiche, come i disturbi d'ansia o i disturbi alimentari. Inoltre, tali glossari non sono stati progettati in

conformità con i requisiti degli standard ISO e quindi non possono essere considerati risorse terminologiche affidabili.

Tuttavia, nonostante i suoi limiti, la risorsa da noi progettata presenta alcuni aspetti interessanti: in primo luogo, è stata sviluppata considerando sia la dimensione concettuale che quella linguistica della terminologia, come dimostrato non solo dalla metodologia utilizzata, ma anche dal fatto che nella risorsa abbiamo incluso categorie di dati che si riferiscono sia ai concetti sia ai termini. Inoltre, riteniamo che la risorsa, se utilizzata in maniera efficace, possa avere un impatto positivo e possa promuovere la comunicazione tra le famiglie non italiane e gli esperti che operano in ambito linguistico, educativo e sociale, con la speranza che in futuro le professioni del mediatore culturale, del traduttore e dell'interprete ricevano un riconoscimento e una regolamentazione adeguati: questo porterebbe a un aumento dei fondi che le istituzioni ricevono per affidarsi ai servizi linguistici, con una conseguente diminuzione della presenza del *Child Language Brokering*, dal momento che tali fenomeni sono interconnessi.