4 Theory of Second Language Acquisition

The scientific field of *second language acquisition* (SLA), as it emerged in the 1970s, is concerned with the conditions and circumstances in which second and foreign language learning occurs. Although sometimes used synonymously, the terms *second language* and *foreign language* describe two different aspects: a second language refers to the official language within the country of residence, which is not a person's mother tongue. This is, for example, the case for immigrant children who learn the language of their parents' homeland before or while learning the language of their country of residence as a second language in school or kindergarten. By contrast, the term foreign language describes a language that is not an official language in the country of residence nor a persons' mother tongue. A foreign language is usually learned through formal classroom instruction within the educational system (Hasebrink et al., 1997; Olsson, 2016; Sundqvist, 2009a). English is a foreign language in both Germany and Switzerland. Therefore, the focus of this study is *English as a foreign language* (EFL).

Over the years, SLA has produced a great variety of theoretical frameworks and methodology to cover the broad aspects of the field (Olsson, 2016). It is beyond the scope of this study to provide the reader with a comprehensible overview. In short, the different strands of theory can be subsumed under three main groups: *formal* properties of language learning, *cognitive* processes while learning a language, and *social* aspects of language learning. These three groups are not distinct, as there are various overlaps and interactions. Researchers might draw from one or more theory strands, depending on their research questions (Olsson, 2016). The present study will draw on the cognitive theoretical framework, i.e., the process of learning a foreign language, and the social framework, to investigate unplanned and unprompted language learning through media-related extramural English contacts and the influence of two important social factors on the learning process.

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4.1 Incidental Language Learning Through Media-related Extramural English Contacts

As defined above, extramural English contacts are defined as any form of out-of-school contact with English as a foreign language arising from voluntary contact with and the use of authentic English media content. The term does not deny the possibility that learners might be aware of the beneficial effect of these contacts, yet the focus of these contacts lies in the appreciation for the media content or a desire to communicate with others (Sundqvist, 2009a, 2011).

While in contact with authentic media content in such a natural setting, learners will be less concerned with studying underlying rules and principles of a foreign language but will instead be focused on the social nature of the situation, on participation, observation, communication, and understanding (R. Ellis, 2008). As a result, any learning processes that might arise from these situations is most likely characterized by incidental, implicit, or explicit learning processes and will often be an unconscious process, without intent or active learning strategies by the learner (Elley, 1997; R. Ellis, 2008). Such *incidental language learning* processes are defined as the "[…] by-product of any activity not explicitly geared to […] learning" (Hulstijn, 2001, p. 271). Kekra (2000) also defines it as "unintentional or unplanned learning that results from other activities" (p. 3). Incidental language learning is thus a process "without the conscious intention to commit the element to memory" (Hulstijn, 2013, p. 1). In contrast, intentional learning is defined as "any activity aiming at committing lexical information to memory" (Hulstijn, 2001, p. 271).

These definitions of incidental learning are closely related to the definition of informal learning as provided by Stevens (2010):

> "Learning resulting from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional (or 'incidental'/random)." (Stevens, 2010, p. 12).

Both definitions emphasize the subconscious nature of the process, which occurs while a person is engaging in everyday activities. Thus, incidental learning could also be referred to as a language *acquisition* process, as the term acquisition is commonly used to refer to the subconscious process in which children acquire their mother tongue. Usually, children are not consciously aware of the language acquisition nor the resulting language competences. Instead, they are focused on meaning as they interact with the people around them. As a result, children cannot

'name the rules' they have acquired, only that something 'feels correct'. By contrast, *learning* usually describes a much more conscious process of committing information to memory (R. Ellis, 2008; Krashen, 1985; Sok, 2014).

Given these definitions, incidental learning could be seen as more closely related to the concept of acquisition, while intentional learning could be seen as being closer related to the definition of learning (R. Ellis, 2008). However, the fact that incidental language learning occurs as a by-product of another activity does not require the complete absence of consciousness (Rieder, 2003). Indeed, even though sometimes used synonymously, the distinction between implicit and explicit learning is not congruent with the distinction between incidental and intentional learning (N. C. Ellis, 1994).

The terms implicit and explicit learning refer to the level of awareness and attention a learner pays towards learning. Implicit learning is defined as "acquisition of knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply and without conscious operation" (N. C. Ellis, 1994, p. 1). On the other hand, explicit learning is a "more conscious operation where the individual makes and test hypotheses in a search for structure" (N. C. Ellis, 1994, p. 1).

However, unconscious in this sense does not, as is often thought, refer to unintentional behavior, but rather to the fact that something is done without awareness and attention. Explicit learning is thus a conscious process in that learners are aware and pay attention to concept formation and linking. This can occur under instruction (e.g., in a classroom) or by understanding concepts and rules without instruction. On the other hand, implicit learning has a person paying attention to the stimulus but being unaware of the acquisition processes (N. C. Ellis, 1994; R. Ellis, 2008).

The result of explicit and implicit learning is explicit and implicit knowledge, which differ in their degree of awareness of rules and the possibility to verbalize them. Implicit knowledge is procedural and intuitive, while explicit knowledge is declarative and conscious. The former comes with the ability to use the language automatically, while the latter comes with the knowledge of underlying rules and regularities (Olsson, 2016). This is why formal instructions are often seen as crucial for grammar learning in a foreign language, as they explicitly teach grammatical rules and regulations (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999). However, things learned implicitly at some point may be reflected upon explicitly at a later point in one's language learning journey (Olsson, 2016).

In contrast to this distinction, the term consciousness within the framework of incidental and intentional learning usually refers to intentionality. Indeed, the definitions of incidental learning provided above do not exclude awareness of the learning process. The important distinction is that in intentional learning, learners are focused on the linguistic form. In incidental learning, the focus is on the meaning, yet a peripheral focus on form is not denied (R. Ellis, 1999). Incidental learning can therefore include implicit, i.e., unaware, learning processes, as well as explicit learning processes, i.e., processes that take place unintentionally but not without a learners' awareness or (peripheral) attention, and hypothesis forming (Rieder, 2003; Sok, 2014)[1].

For example, learners might engage in reading for pleasure, during which implicit learning processes will occur automatically, but they might also decide to engage in explicit learning processes (i.e., paying attention to form) by looking up an unknown word. In addition, they might actively test new words and phrases in a sentence, thus testing their hypothesis about the meaning (Letchumanan et al., 2015).

While the exact definition of these terms remains a matter of ongoing debate within the research community, and the terms are often used interchangeably (see for an overview for example Hulstijn, 2001, 2002, 2005, 2015; Laufer & Hulstijn, 2001), the present study will stay within the original terminology of the theoretical framework of incidental learning and define it as *an unintentional or unplanned process, resulting as a by-product of another activity. This by-product can result from implicit processes but might also be accompanied by explicit processes, during which a person pays at least peripheral attention to certain language forms and engages in hypothesis forming and testing.*

While often used within the framework of first language acquisition, the concept of incidental learning can also be related to the field of second and foreign language learning and is generally acknowledged in the research field of psychology and language learning (R. Ellis, 2008; Krashen, 1982). For Chomsky (1968, cited in Elley, 1997) learning a native language is in fact so deeply biologically programmed into the brain that children learn their native tongue simply

[1] In terms of how much of this process is implicit and how much is acquired through explicit processes, N. C. Ellis (1994) concludes that acquiring vocabulary (i.e., words, collocations, and grammatical class information) might mostly be an implicit process, while for the acquisition of sematic properties and mapping words from context explicit processes are more relevant, see also Rieder (2003). However there is still some doubt if learning without awareness is even possible (R. Ellis, 2008). Since the focus on this study is on incidental learning and not implicit/explicit learning, the distinction will not be discussed in detail here.

by being exposed to it. In addition, there is little dispute that, except for the first few thousand most common words, which are usually learned intentionally, the vast majority of the vocabulary is acquired incidentally as a by-product of other activities (Hulstijn, 2001, 2003, 2013). Nagy and Anderson (1984) conclude that it would indeed be impossible to explain high school students' knowledge of 25,000—50,000 words in their mother tongue otherwise. Most words, phrases, and grammar rules have to be 'picked up' from the context while engaging in other activities.

While acquiring a first language is not the same as learning a second or foreign language, some research suggests that the two processes are not that different. Moreover, while explicit instructions within the classroom have been proven to be an effective route to foreign language learning, teachers could simply not include enough vocabulary learning in the classroom to explain some learners' language proficiency (Rieder, 2003). In his work, Krashen claims that the process of language acquisition is indeed not limited to children learning their first language, as adults do not lose the mental capacity for acquisition. According to him, language acquisition is an autonomous process outside of one's conscious control, as humans cannot choose not to encode and store the information they encounter (Krashen, 1982). Therefore, his *input hypothesis* claims that as long as learners are presented with a high amount of *comprehensible language input*, incidental language learning will take place, even in the absence of explicit instructions and intentional learning activities (Krashen, 1985, 1989). Comprehensible input (i + 1) can derive from spoken words or through media channels (e.g., books, movies) and is input that is just slightly more complex (+1) than a person's current level of competences (i). Under such conditions, a person can derive unknown words and grammatical structures from the surrounding context and thus acquire higher language competences (Krashen, 1982, 1985, 1989).

The learning process is mediated by a person's resistance to process the input, i.e., the level of their *affective filter*, which is any kind of internal resistance to process the input. It functions as a mediator between the language input and the acquisition process. Even if sufficient comprehensible input is available, a high filter might lead to a reduced or total lack of acquisition. Under such circumstances, the information might be understood in the moment, but will not be processed for acquisition. Reasons for a high affective filter are often anxiousness, a lack of motivation or self-confidence. A person's affective filter is low if one is not afraid of failure and feels self-confident in their role as a language speaker and member of the language community. Krashen suspects the filter to

be lowest if a person does indeed forget that they are speaking another language and are instead entirely focused on the message at hand (Krashen, 1982, 1985, 1989).

Given a low enough filter, language acquisition will take place in the *language acquisition device* of the brain (LAD). According to this theory, learners will naturally progress to continuously higher levels of language competences, as long as they come into contact with enough comprehensible input (Krashen, 1982, 1985, 1989). Consequently, a lack of comprehensible input will slow down or stop this trajectory. This might then lead to *fossilization*, i.e., the learner will stop short of achieving a native speaker level (Krashen, 1985, p. 43). This can happen in two ways: First, learners might encounter input that is too easy and will not provide learners with new syntax or will only subject them to a limited range of vocabulary. Second, learners might encounter input that is too complex and the input will consequently prove to be too difficult for them to decipher. As a result, students will be unable to understand enough of the content to derive unknown words from the surrounding context. Both situations would result in diminished learning outcomes (Krashen, 1985).

Krashen finds empirical support for his hypothesis not only in children's first language acquisition but also in several studies that show empirical evidence for incidental learning in second and foreign language learners through input from leisure time reading and free reading programs within the classroom, as well as from listening to stories being read out loud (for a summary see, for example, Krashen, 1989). Further empirical evidence for incidental learning processes from language input in natural settings will be discussed in Section 4.2.

Despite his influence in the field, Krashen has been criticized for his strong focus on language input, and for ignoring the social nature of language and the importance of output production and interaction for language learning in general and for incidental language learning processes in particular. Other researchers have stressed the importance of social interaction for (incidental) language learning. These theories and studies have often drawn on Vygotsky's *sociocultural theory.* According to Vygotksy, humans need social interaction and communication in order to levitate their natural biological mental capacities into higher-order mental functions. Only through interaction are these capacities modified and interwoven with cultural values and meaning. Through this process, individuals gain understanding and control over psychological tools, which helps them to moderate interaction with objects in their surroundings. Written and spoken utterances made in a foreign or second language are such objects of interaction (R. Ellis, 2008; Vygotsky, 1978). According to this theory, learners will not be able to

interact directly with a language as the object of their attention at the beginning. Instead, they will rely on external assistance in the form of *other-regulation* via more advanced speakers or *object-regulation* via tools (e.g., dictionaries), which act as moderators for the interaction with the object 'language'. Other-regulation through personal assistance in a verbal interaction can, for example, be provided in the form of waiting (giving the speaker time to think), prompting (repeating words in order to help the speaking person to continue), co-constructing (providing missing words or phrases), and explaining (addressing errors; often in the first language) (R. Ellis, 2008; Vygotsky, 1978). Through this assistance, learners will be able to perform tasks which lie within their *zone of proximal development*. Vygotsky defines this zone as

> "[…] the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers." (Vygotsky, 1978, p. 86).

Hence, the zone of proximal development lies between tasks a person can already carry out by themselves (*level of actual development*) and tasks that a person could not perform, even if assistance is available (Vygotsky, 1978).

The interaction with another person or an object frees the novice of some of the cognitive load of the task at hand and allows them to reach their goal. At the same time, the interaction will provide them with behavior to imitate and internalize for future use. In time, learners will become able to perform these tasks or activities on their own and will rely less on outside regulation (Dunn & Lantolf, 1998; Lantolf, 2000, 2005, 2011; Swain, 2005; Vygotsky, 1978).

Eventually, language learners will reach a level of proficiency where they no longer need outside assistance and instead become self-regulating in their use of the language. In this state, a person can facilitate their own language resources through private (inner) speech to achieve and execute control over their mental processes and their interaction with the language. The process from other-regulation or object-regulation towards self-regulation is called *internalization,* and (verbal) communication is the crucial means by which such a process is achieved (R. Ellis, 2008). According to the theory, the highest level of proficiency in any language can thus only be achieved if learners interact with others and produce output as well as take in input (R. Ellis, 2008; Swain, 2000, 2005).

It might be tempting to equate Vygotsky's Zone of Proximal Development with Krashen's i + 1. However, as Dunn and Lantolf (1998) have pointed out, the two theories are incommensurable at their core. For Krashen, language learning takes place automatically within a person's language acquisition device (LAD), given a sufficient amount of input within a person's i + 1. If the affective filter is low enough and enough comprehensible input is available, language acquisition will be inevitable. As long as enough input is provided, the acquisition curve will be a steady, continuous, and linear process, moving from one stage to the next (Dunn & Lantolf, 1998; Krashen, 1982, 1985, 1989; Lantolf, 2005). Krashen does support a weak interaction hypothesis by acknowledging that dialogue and interaction can help to negotiate meaning and clarification, making input more comprehensible. However, he rejects the idea that output production and interaction are necessary factors for (incidental) language learning. For him, a true interaction hypothesis cannot explain cases in which learners have reached a high level of proficiency without interaction. In fact, he sees the value of interaction not in the amount of language spoken by the learner but in the amount of input provided by the interaction partner (Dunn & Lantolf, 1998; Krashen, 1982, 1985, 1989).

On the other hand, Vygotsky rejects the idea of an autonomous individual acquiring a language through an automatic cognitive process. Instead, he states that language development results from humans constantly developing to a higher state of control over their own mental activities by using the assistance of others or objects. Language development is thus not a linear but rather a historical process, rooted in a social context and acquired through interaction and imitation. As a result, interactional and material circumstances shape the form and outcome of each individual process (Dunn & Lantolf, 1998; Lantolf, 2005).

Dunn and Lantolf (1998) concluded that trying to converge the two theories means reading into Krashen something that is not there and taking the interactive core out of Vygotsky. Instead, they call for an acceptance of this incommensurability and peaceful coexistence, dialogue, and appreciation for their individual contributions to the field (Dunn & Lantolf, 1998). Following this call for dialogue, this study will draw on both theories in order to explain incidental language learning in the context of media-related extramural English contacts. As Section 4.2. will show, there is empirical evidence for incidental learning processes through input only contact, as well as evidence for the (additional) benefit of interaction and output production.

Similar to Vygotsky, Swain also sees language as an inherently social and interactive artifact that humans use to interact with each other and their environment. In her *output hypothesis*, she emphasizes not only the interactive nature but

also the need for active output production in order for learners to reach higher language competences.

While evaluating Canadian immersion programs in 1985, she found higher French test scores for the immersion students than for the non-immersive students. However, while the reading and listening scores of the immersion students were almost similar to native speakers, their performance for writing and speaking stayed behind those of their native counterparts. Since students in immersive classes are presented with a high amount of comprehensible input on a daily basis, her findings raised doubts about Krashen's input hypothesis (Swain, 2000, 2005). Swain and her team argued that the important difference between native French speakers and immersion students was that students in the immersion classes were not pushed to produce a high amount of output. For Swain, the production of comprehensible output, i.e., output that is "grammatically accurate and sociolinguistically appropriate" (Swain, 2005, p. 472) for a given situation, and which allows the interaction partner to understand the speaker, goes far beyond simply providing an opportunity for enhancing fluency through practice (Swain, 2005). Instead, the output serves three functions:

First, producing language output can trigger *noticing* on different levels. Learners may notice a word or form because it is frequent or salient. However, they may also notice gaps and language problems in their own interlanguage, which hinders their ability to express themselves accurately. They might then seek to fill the gap by interacting with an interaction partner or an inanimate tool (e.g., dictionary, grammar book) or make a mental note to pay further attention to the relevant input in the future. In this way, through the recognition of problems, a mental conflict is triggered, and a cognitive process is initiated, leading to generating new or consolidating existing knowledge (Swain, 2000, 2005). Empirical research has shown evidence for such a process in learners after producing written or spoken language output in interaction with another student (for an overview see, for example, Swain, 2005).

Second, empirical findings suggest that output serves as an opportunity for testing one's language hypothesis and provides the learner with an opportunity to alter and modify the output if the hypothesis proves to be incorrect (Swain, 2000, 2005). This becomes possible through feedback from the interaction partner. The feedback can be implicit or explicit. With implicit feedback, learners must infer the inaccuracy of their utterance, while explicit feedback clearly states where the learners' utterance was correct and where it was incorrect (Carroll & Swain, 1993). Both implicit and explicit feedback can be positive or negative. Implicit or explicit positive feedback verbally or nonverbally confirms that an

utterance was indeed correct (Carroll & Swain, 1992). Explicit negative feedback verbally or nonverbally states that a form does not belong to the target language. Implicit negative feedback occurs verbally in the form of error correction, corrective recast, and rephrasing of erroneous sentences or phrases, or through nonverbal communication (Aljaafreh & Lantolf, 1994; Carroll & Swain, 1992, 1993; R. Ellis, 2008; Long et al., 1998). Both forms of feedback are effective and can provide learners with information that input alone cannot provide. Empirical studies have, for example, shown that negative feedback, both implicit and explicit, can induce noticing of forms and phrases which are not as salient through comprehensible input alone or are rare or unlearnable through positive feedback (Aljaafreh & Lantolf, 1994; Carroll & Swain, 1992, 1993; R. Ellis, 2008; Long et al., 1998).

Therefore, feedback helps learners to test their hypothesis about the target language.

Strategies to solve language problems might include testing alternative hypotheses, applying existing knowledge to the context at hand, and internalizing newfound knowledge into one's system. In fact, some errors or turns observed in learners' written or spoken interactions may be seen as evidence for testing different hypotheses about the target language. By doing so, learners are engaged in deeper processing of the target language, ultimately resulting in increased control and automaticity in using the target language. This, in turn, releases cognitive resources for higher-level processes. Therefore, it can be argued that the process of modifying one's own output represents language acquisition (Swain, 2000, 2005).

Third, the production of language output provides an opportunity for metalinguistic reflective functions (Swain, 2005). By putting thoughts into words, they become sharpened and transformed into an artificial form that is accessible to further reflection and response by oneself and others. Thus, speaking or writing represents both cognitive activity and the product of the activity itself.

In addition, output production triggers a deeper understanding and elaboration because it requires the speaker/writer to pay more attention to the elements of a message and their relationships to each other to connect and organize them into a coherent whole. Through this process, a more durable memory trace is established in learners' minds, and language learning is facilitated (Swain, 2000, 2005).

All of these functions and benefits of output production are present in collaborative dialogue, in which speakers work together in order to solve linguistic problems and build linguistic knowledge (Swain, 2000, 2005). It is in output and interaction that learners have the opportunity to actually use the target language

and stretch beyond their present stage of language competence. Swain, therefore, concludes that the production of comprehensible output is necessary for learners to reach the highest levels of proficiency (Swain, 2000, 2005). Language is thus interlinked with and fostered through social interaction, emerging as a result of "meaning-making processes" (Black, 2005, p. 120) within a specific social context (Black, 2005). In interaction with others, learners have the chance to test their hypotheses and to gain more control over their own language production.

Despite the somewhat incommensurability of the way the discussed theories model language learning and the importance language input, output, and interaction play in its process, the discussed theories suggest that regular contact with a foreign language and the chance to use it to interact with others can result in incidental language learning.

In terms of input and media-related extramural English contact, Chapter 2 has shown that technological developments in the last few decades have made regular access to English-language media content highly accessible for learners in Germany and Switzerland. By regularly engaging in English media content, learners are presented with a high amount of input for the most frequent English words and chunks, both written and auditory. In addition, learners can benefit from contact to less frequent and topic-specific vocabulary. Since learners choose the content themselves, it should be highly motivating and engaging, thus lowering the affective filter.

In addition, newer interactive media channels can further increase and deepen the learning process by allowing learners to interact and engage in dialogue. Here, Vygotksy's theory and Swain's output hypothesis provide a framework that might explain why a high level of interactive extramural contact with a foreign language might help students to navigate their interaction with the target language. The interaction will provide them with the necessary assistance to make complex input comprehensible, work through their zone of proximal development, and engage in mean-making processes within a given social context. Such interactions can be with a more advanced speaker of the target language (other-regulated), but also with other inanimate objects (object-regulated), such as additional information material, a dictionary, or other forms of technological tools. This might be especially important for less proficient learners. As learners progress in their control over the language, they might be more and more able to self-regulate and process even complex authentic input on their own. In addition, the chance to produce output and engage in dialogue will help learners to notice gaps in their own knowledge, reflect on their language use, and test hypothesis.

However, it should be mentioned that in the very beginning, learners might not be able to navigate authentic English-language media content even with the help of other-regulation and object-regulation. Instead, most learners will rely on in-classroom instructions at this stage. Even Krashen admits that for most learners, the first contact with a target language will most likely be through the educational system. This in-classroom instruction will provide learners with comprehensible learning material geared explicitly towards their competence level (Krashen, 1985). As such, formal instruction within the classroom will have a significant impact on students' language development and will lay the base for any future language learning. Indeed, as Hulstijn (2001) points out, most teachers and scientist are well aware of the fact that even though incidental learning is a useful and powerful tool for language learning, it is important to teach learners the linguistic principles and lexical system of the target language, as well as making them aware of (vocabulary) learning tasks and teach them explicit strategies for doing so. Most teaching materials recognize this by including a vast number of techniques and activities to teach beginners and intermediate learners the necessary core vocabulary. This ensures that learners start their language journey with the study of a base vocabulary, learned to automaticity, while contextual learning does only play a role in later stages (Hulstijn, 2001).

In addition, formal instruction will also help learners to develop what Krashen calls the *monitor*. While a person's ability to produce language derives from their unconscious knowledge and acquired competence, conscious learned knowledge about the target language serves as a monitor. This monitor helps to regulate and check output before it is uttered. For the monitor to work, learners need to be aware of the rules and be concerned with correctness (Krashen, 1985).

With time, learners will become more proficient and, as a result, will find it easier to find comprehensible media content outside of the classroom and engage in more complex interaction and dialogue with advanced learners and native speakers. Chapter 2 could show that newer interactive media channels do provide learners with said opportunity to produce and actively use English in natural settings. In this way, the media has created new assisted and interactive language learning opportunities outside of the educational setting, which provide more than just language input. New forms of interactive online communication tools, such as chatrooms, messaging apps, and message boards, can provide opportunities for extramural English contacts and activities through synchronous or asynchronous interaction with native and non-native speakers. By using these media channels, learners not only receive a high amount of input but can also actively produce output and engage with others in collaborative dialogue and interaction. In these interactive contexts, they will get immediate feedback on

their language production. Here, advanced learners and native speakers can act as sources for other-regulated interaction, similar to a teacher in the classroom. They provide positive and negative feedback and help learners in the form of, for example, co-construction, explanations. Through these contacts, learners may even be provided with the opportunity for a high level of immersion within a language community. In this way, new words and phrases can be used and repeated regularly, which in turn fosters a higher conversion rate into long-term memory (Hulstijn, 2001).

The next chapter will summarize empirical evidence for incidental language learning occurring both from input-only as well as from more interactive media channels.

4.2 Empirical Evidence

Early research into incidental learning processes was often conducted within the field of psychology and concentrated on learning through input by reading or being read to by others. The studies were usually experimental in design and did not focus on language contact through extramural English contacts. In recent years, interest in incidental learning processes through media-related extramural English contacts in natural settings has grown significantly outside of the field of psychology. Extramural language contact in these natural settings might be provided through books or other written online and offline material or through music, podcasts, audiobooks, radio, movies, TV series, TV shows, online communities, and computer games. While the first of these media channels only provide language input, online communities (e.g., social media platforms) and computer games can also provide learners with opportunities for output production and synchronous and asynchronous social interaction. The following chapter will summarize important recent empirical findings for incidental language learning in natural settings among young learners (i.e., children and adolescents) through these channels.

As the media landscape changes rapidly, the summary will focus on newer findings to increase comparability with the present study. In addition, the summary will focus on studies about extramural English contacts in natural settings as this aligns with the focus of the present study. Key findings from experimental studies will be discussed only where they provide important insight otherwise missing (for a more detailed discussion on experimental studies in this area see, for example, Huckin & Coady, 1999; Ramos, 2015).

Studies investigating media exposure within the classroom and homework assignments were excluded as they do not focus on extramural English contacts. This also excludes the use of educational computer games, computer-assisted language learning, online learning platforms, and other forms of material specially developed for language learners.

4.2.1 Incidental Language Learning Through Reading

Books have been one of the traditional ways for extramural contact with English as a foreign language. One advantage of reading is that it provides learners with the possibility of repeatedly encountering unknown words and phrases, thus increasing the knowledge of those words and the chance of committing them to memory (Vidal, 2011). However, research has suggested that reading a book is a demanding activity as learners already need to have advanced language competences (Peters, 2018). According to Huckin and Coady (1999), readers need knowledge of at least 2,000 of the most common words in English to understand and use 84% of the words in most texts (and spoken language). For general text comprehension, readers must even be able to understand 95% of the words used in a given text. In order to be able to do so, people need to know the 3,000 most common words. Complete comprehension will not be reached until one understands 98% of the words in a text, which already requires a vocabulary of the 5,000 most common words. According to Sylvén and Sundqvist (2015), this might be the reason why learners in their study only reported low frequencies of leisure time reading in English. Nevertheless, even though 5,000 sounds like a relatively large number, Huckin and Coady argue that it is well within reach of the average language learner (Huckin & Coady, 1999).

Despite these challenges, empirical research suggests the effectiveness of extensive reading, especially for incidental vocabulary gain. To this author's knowledge, at the time of this study, there seem to be no studies looking exclusively into unprompted extramural reading and language competences in natural settings. Empirical evidence must therefore be drawn from studies investigating incidental language learning in experimental settings. However, it should be kept in mind that these settings do not strictly provide extramural contact as defined in this study.

Elley and Mangubhai (1983) conducted a study to examine the effect of extensive reading programs for children from Fujian primary schools learning English as a foreign language. In the experimental groups, teachers encouraged students

to read as much as possible and provided age-appropriate books within the classroom. In one of the experimental conditions, teachers also discussed and followed up on the material. Compared to the control group, students in both experimental conditions showed increased language competences in the post-tests. Even though the study suffers from a lack of control over what happened in the classrooms (e.g., some teachers in the control groups read aloud to their students on a regular basis, even though they were instructed not to), the results all point towards the existence of incidental learning processes through extensive reading.

Pitts et al. (1989) conducted a study with 74 learners of English as a foreign language, who were asked to read an excerpt from Anthony Burgess' book *A Clockwork Orange*. The book contains the artificial language *nasdat* and is thus ideal for testing, as students most likely did not know these words beforehand and could therefore not derive their meaning from any similar words in their native language. They were told they would be tested on the story's content afterward but were not told about any vocabulary testing. Two experimental groups were tested in addition to one control group. Experimental group 1 was given 60 minutes to read the text. Group 2 was additionally shown a short clip from the film before reading for 60 minutes. This was due to the high complexity of the text and the younger sample in group 2. The control group neither read the text nor watched the movie. Results from the subsequent vocabulary test showed a significant difference between the experimental and control groups, with group 2 scoring significantly higher than group 1.

Similar to these findings, Dupuy and Krashen (1993) found in their experimental study that even exposure to 40 minutes of reading showed significant gains in students' vocabulary knowledge. They showed students of French as a foreign language a short clip of the film *Trois hommes et un couffin,* followed up by a 40-minute reading of an excerpt from the book. Results showed a significant language gain in the experimental group. The group of 3rd year students of French as a foreign language even outperformed the advanced 4th year language students in the second control group.

Both teams concluded that in the light of the significant, yet sometimes minor, gains in vocabulary, incidental language learning from reading can occur with foreign language learners, even in a short timeframe. In addition, subjects were only tested on a fraction of words, meaning that they could have learned other words incidentally as well, without it being represented in their test scores. Furthermore, subjects did not read the entire book, which would have provided them with the opportunity to encounter unknown words multiple times, thus increasing the chance of storing them to memory. Last, the chosen texts were quite difficult for readers in both experiments. Hence, it would be possible that more incidental

learning would have taken place if learners had been able to understand more of the texts and thus infer more meaning of unknown words from the surrounding context (Dupuy & Krashen, 1993; Pitts et al., 1989).

In order to overcome the limitations of these earlier studies, Horst et al. (1998) conducted a pre-post-test experimental study in which subjects were asked to read a whole novel over a period of 14 weeks. Students read along while the text was read aloud in class. After each session, the texts were re-collected and stored in the school to prevent students from reading ahead or looking up unknown words at home. The results showed a significant gain in vocabulary by the subjects. The gain was higher than in Dupuy and Krashen (1993) or in Pitts et al. (1989), which the authors attributed to the longer exposure and the longer text. Prior knowledge seemed to have played a moderating role in students' ability to pick up words, as higher knowledge allows students to infer the meaning of unknown words more easily from the surrounding context. Word frequency in the text also played a moderating role in the chance of words being picked up. In addition, nouns were picked up more often than other word types. In a follow-up interview, students reported being surprised that the words they were tested on in the post-test were actually in the novel. This is a strong indicator of the implicit knowledge built through incidental learning.

Despite the findings, the authors conclude that while reading might be a source for incidental learning, it seems to be a slow process. Learners, on average, picked up one word for every fifth word read. However, this result is much higher than for the previous studies, which found retention rates of around one in twelve (Horst et al., 1998).

Pigada and Schmitt (2006) investigated the influence of incidental vocabulary learning in a qualitative study design. They observed one intermediate learner of French as a foreign language. Even though the study used simplified reading material, not authentic texts, their results are still interesting, especially since they not only tested for increased knowledge about word meaning but also spelling and grammatical characteristics. This aids the understanding of the incidental learning process. As the authors and others have noted, the disadvantage of texts with a rich context is that the meaning of a single unknown word might not be necessary to understand the text as a whole. As a result, learners might not subconsciously try to infer the meaning of each unknown word and thus might not learn the meaning of these words. However, the exposure might still increase their knowledge about other aspects of a word, with spelling being the most affected characteristic. Their results revealed that their test subject was able to recall at least one of the word aspects in two-thirds of the target words. Moreover, while not all words were fully mastered by the subject, he was nevertheless capable of

using them in productive writing. The highest number of exposures within the text was necessary for learning the meaning of nouns, and some words were still unclear after they appeared more than twenty times in the text. However, one exposure was enough for spelling in some instances. Results also suggest that the inference of meaning for some words was hindered by the interference of the subject's native language and similar words in French (Pigada & Schmitt, 2006).

In a more recent study, Vidal (2011) showed significant gains in vocabulary knowledge for language learners through written academic texts. In comparison to auditory input, readers recalled more information overall, especially low proficiency learners. The author concluded that reading provided learners with ideal opportunities to dwell on unknown words and sentences. Repetition of words was an important factor for recollection, with readers needing significantly less repetition than listeners to store words to memory. However, the author also concluded that readers and listeners made more gains in words that were explicitly elaborated beforehand. This shows that explicit elaboration can foster robust connections between form and meaning.

Overall, the empirical findings show that incidental language learning from extensive reading does occur, albeit the process being slow and challenging for readers. In addition, some words (e.g., nouns) seem easier to pick up than others and repetition seems to be an important factor for recollection but does not guarantee a successful learning process.

All of the discussed studies used books or book excerpts for their research. However, the internet has also made new forms of written content available. While social media sites often only provide shorter texts, blogs might provide readers with longer English content from various areas of interest. It can thus be hypothesized that online reading activities will also lead to incidental learning processes. However, to this author's knowledge, there is no empirical data available for reading online in terms of incidental language learning, yet. Studies concerning online communities, including social media platforms, will be discussed separately in Section 4.2.4, as they provide not only input but also enable output production and interaction.

4.2.2 Incidental Language Learning through listening

Music can be a valuable source for language learning, as the lyrics are highly repetitive, conversation-like, and slower-paced than spoken, non-musical discourse. In addition, people tend to listen to the same song multiple times

(Toffoli & Sockett, 2014). It is therefore surprising that there seems to be little empirical evidence for incidental language learning from exposure to music, either in an experimental or in a natural setting. One of the few studies investigating the effect of extramural listening to pop music on students' vocabulary competences is Schwarz (2013). In the study, 74 secondary students were tested on their word recognition for 14 common words from 10 popular songs. In addition to self-reported word recognition, students also had to use some words productively or provide a translation or synonym, thus making the results more reliable. Results showed a significant increase in vocabulary knowledge between the pre- and post-test. In addition, the qualitative analysis of the translation and synonyms also showed that some students already referred to the song lyrics in the pre-test, demonstrating that they already knew the lyrics and the words were processed in the context of the song. However, four students had inferred the wrong meaning of the target word from the song. The author did not investigate the differences between students with a high number of extramural contacts and students with lower extramural contacts. This is probably due to the small variance in the sample, as all students listened to English music every day (Schwarz, 2013).

Even though the sample size was small, and the data relies on students' self-reported knowledge, the results showed a promising trend towards incidental language learning from exposure to English pop songs. However, similar to the findings for reading, the vocabulary gains were small (Schwarz, 2013). This once again supports the notion that incidental learning takes place in small increments and through repeated exposure.

In their experimental study,Pavia et al. (2019) investigated vocabulary gains from listening to music for 300 Taiwanese children ages 11 to 14. Their results showed significant gains in knowledge of spoken-form recognition for both single word items and collocations for the experimental groups between pretest and immediate post-test, but not for the control group. Repeated exposure significantly increased learning gains, starting around seven encounters. Overall, students' learning gains were again small. Results for the delayed post-test could not solely be attributed to the treatment, as the control group also showed a significant increase in vocabulary. The authors attributed this to learning effects from the immediate post-tests or conscious discussions about words and collocations among the students after the test. Experimental and control groups did not differ in regard to their gains in form-meaning connections. This is in line with other empirical findings that showed learners retain spoken-form recognition before form-meaning connection, the latter needing more exposure than the former. As the authors note, this might be even more dominant in exposure to music since

songs do not provide as much context as other forms of media content. Nevertheless, even though participants only listened to two songs and results only show learning gains for spoken-form recognition, the results are promising and show that incidental learning through music can occur even after a short exposure and even in learners at a beginner level.

Additional evidence for incidental language learning through music in older learners comes Toffoli and Sockett (2014). Results from their study with 207 Arts and Humanities students in France showed that French university students listen to a high amount of English music on a daily basis; some even listen exclusively to English music. Furthermore, the music was not just background noise, but students engaged in active listening strategies such as looking up song lyrics online or pausing and rewinding songs to understand the lyrics better. Learners were also asked to translate four excerpts from popular song lyrics in order to measure possible learning effects. Results showed that frequent listeners (at least once a week) outperformed non-frequent listeners for all four excerpts. Unfortunately, the language comprehension test only included four items in the form of four excerpts from song lyrics. What is more, it is not clear if learners had come across any of the words presented in the test before. As the authors noted, preferences for genre, artists, and songs varied considerably in the sample, making it difficult to choose lyrics for the test. In addition, the sample size was relatively small. Still, the results yield important insights in terms of the variety of music styles learners listen to, as well as the listening strategies employed by learners.

Apart from music, another form of auditory input is spoken auditory input, e.g., from reading aloud to learners. R. Ellis (1999) summarized findings for language learning by reading out loud to younger children in multiple experimental studies. The results show an increase in language competences for young learners in classes where students were being read to on a regular basis. Again, repetition was an important factor for learning gains. The author also stressed the significance of the opportunity for learners to ask questions and show their non-comprehension in face-to-face settings. These interactions will probably lead to additional input from the reader, specifically tailored to the individual learners' language skills.

In addition to the reported learning gains from reading, Vidal (2011) also showed significant vocabulary gains for university students listening to academic texts (see also Section 4.2.1). However, listeners recalled less information in direct comparison to readers in the sample. Vidal concluded that listening to a speaker seems to be a rather challenging activity, especially for lower proficiency learners, as real-time language processing makes it harder to segment the spoken text into separate words and recognize unknown words or phrases from

running speech. As a result of these challenges, listeners most likely needed more repetition in order to commit a word to memory than readers do. However, it is likely that, as learners' proficiency increases, so will the ability to identify and process unknown words from listening to audio input (Vidal, 2011).

Furthermore, the results showed that listeners most likely cannot suppress the activation of knowledge from their native language. As a result, they often do not recognize the differences in cognates or false friends. They are also less likely to add new, formerly unknown meanings of polysemous words to memory. Instead, they were shown to stick with the meaning they already knew, even if it made no sense in the given context. Readers in the study suffered less from this problem (Vidal, 2011).

However, despite the challenging nature, Vidal concludes that listening to English audio content can aid learners in their language learning process since words heard auditorily are stored directly into the phonological memory. Words encountered in the written form still need to be recorded, a process that might be partially or entirely unsuccessful in some cases. Listening can thus help to foster more stable and long-lasting memory traces (Vidal, 2011).

Similar to Vidal, van Zeeland and Schmitt (2013) conducted a study with postgraduate students from an English university who learned English as a second language. While it has to be kept in mind that the study tested learners much older than in the context of this study, who also lived in a country where the target language (English) was the native language, the results still yield interesting insight into the complex nature of incidental vocabulary learning.

As opposed to earlier studies, this study did not only assess recognition and recall of meaning, but also form and grammar recognition. Thirty high-intermediate to advanced learners of English were asked to listen to a text passage read to them that contained several made-up words. They were told to concentrate on the meaning of the text as a whole. While 20 learners were tested immediately afterward, ten learners were tested with a delay of two weeks to identify long-term retention without confounding learning effects from the first post-test. Results showed a significant but again small learning gain for all knowledge dimensions. Overall, meaning recall showed the smallest gains. Learners scored highest in form recognition, followed by grammar recognition, for immediate and delayed post-test. The authors conclude that these results show that some vocabulary dimensions are picked-up later than others. Interestingly, what little meaning learners were able to gain incidentally was better recalled after two weeks than gains for form and grammar recognition.

Overall, the empirical evidence suggests the benefit of extramural audio contact to a foreign language. As music is a popular leisure-time activity and people

tend to listen to their favorite songs repeatedly, extramural contacts through songs offer a beneficial way to learn a language.

English-language music has traditionally been easy to access, even before the advent of the internet in both Germany and Switzerland (see Chapter 2). Therefore, music has most likely already been an opportunity for incidental language learning for adolescents in past generations. However, the possibility of modern music streaming on online-based music platforms might provide learners with a greater locus of control over their listening experience. Being able to pause, rewind, and use the lyrics-on-screen function at their own discretion is likely to make input more comprehensible for learners (Toffoli & Sockett, 2014).

In addition, the empirical evidence for spoken language summarized in this chapter also highlights the learning opportunities provided by English audiobooks, radio programs, and podcasts. However, research about learning gains from extramural contacts in a natural setting is still scarce.

Similar to reading, learning gains from this kind of input seem to be small (van Zeeland & Schmitt, 2013; Vidal, 2011). This is likely also due to the fact that listening to authentic input is equally if not more challenging for learners. Learners need to know as many as 6,000 to 7,000 of the most common words to follow a spoken discourse (Nation, 2006). In addition, empirical evidence shows that especially low proficiency learners might have problems with the recognition and segmentation of words from running speech (van Zeeland & Schmitt, 2013; Vidal, 2011).

4.2.3 Incidental Language Learning Through Watching

English-language movies, TV series, and TV shows provide viewers with both auditory and visual input. New words are presented within a narrative context and supported by visual aids. If subtitles are added, written content is provided as well. Watching movies, TV series, TV shows with subtitles thus provide auditory, written, and visual information, with the latter providing rich contextual clues for the former two (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999; Lindgren & Muñoz, 2013). In addition, Webb and Rodgers (2009) point out the beneficial characteristic of repetition for vocabulary learning, especially in TV series.

Earlier studies about incidental learning through watching audio-visual content usually investigated subtitled movies and TV series, as these were the options most accessible to viewers at the time. In their study, Neuman and Koskinen (1992) investigated the influence of subtitled TV programs on both language and topic knowledge for Asian minority students in the US. They found significantly

higher results for the subtitled TV and the normal TV group in comparison to the two control groups (listen to audio and reading along; reading only). These results strongly support the claim that reading (subtitles) is not the only route for incidental learning processes and that visual content does, indeed, foster learning. In addition, the study also showed evidence that students' prior vocabulary knowledge and a supportive context, in the form of video print, play an important moderating role in the incidental learning process. However, the authors pointed out that since the content is not produced with the language learner in mind, the content might be too complicated for beginners to follow. In addition, the pace of the spoken information in most TV series and movies might be too quick for some learners and subtitles are designed to keep pace with the scene on screen (Neuman & Koskinen, 1992).

d'Ydewalle and his team conducted several experimental studies investigating the effect of watching subtitled television on learners' language competences (an overview can be found in d'Ydewalle, 2002). Results showed evidence for the fact that reading and processing the input provided by subtitles is an automatic process beyond conscious control and that it triggers incidental learning processes (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999).

Incidental learning proved to be even more effective when subtitling was reversed, i.e., when the foreign language was presented in subtitles and the native language in the audio track. The authors attributed this to the fact that processing the subtitles was the main activity for participants and thus, providing the foreign language in written form led to higher learning gains (d'Ydewalle & Pavakanun, 1997).

Furthermore, results from studies with different age groups showed that, in general, younger children pay less attention to subtitles and prefer dubbed movies and TV series. This is most likely due to their lower reading skills. However, a small part might also be influenced by the fact that younger children in the Netherlands (where the studies were carried out) are not as accustomed to watching subtitled television as older children and adults are. As a result, they benefit less from extramural English contact if subtitling is reversed and therefore show lower vocabulary gains (d'Ydewalle & van de Poel, 1999).

Results from the research group also showed that the similarity between a person's native language and the foreign language in question plays a moderating role in the effectiveness of the incidental learning process (d'Ydewalle & van de Poel, 1999).

In addition to vocabulary, d'Ydewalle and colleagues are also one of the few teams to investigate the acquisition of grammar and syntax through incidental learning. While the initial studies failed to detect any effect, they were eventually

able to show slight increases in grammatical competences. However, it should be mentioned that the increases were most significant when explicit rules were presented in advance. Therefore, the authors concluded that grammar might be too complicated to acquire solely from exposure to the target language (d'Ydewalle, 2002). Increases in grammar and syntax competence should thus only be expected after some form of formal instruction has taken place. They confirmed this in a study comparing children before and after they were first introduced to French as a second language within the school context (d'Ydewalle, 2002). In contrast, words, especially nouns, seem to be much easier to acquire incidentally (d'Ydewalle & van de Poel, 1999).

Apart from subtitled content d'Ydewalle and Pavakanun (1997) also found learning gains for experimental groups with only the foreign language in the audio track (without any subtitles) and concluded that watching the rich visual information provided by the movie enabled participants to derive the meaning of the story from the visual context. This was not the case when the foreign language was provided in the subtitles, and no audio track was played, which is probably due to the fact that participants missed important visual clues while concentrating on the subtitles.

In support of these findings, Araújo and da Costa (2013) could also show that advanced learners from the *European Survey on Language Competences* (ESLC) did not significantly benefit from movies with subtitles compared to movies without them. The reverse was true for students at the beginner level. The authors attributed these findings to the fact that learners need to reach a certain level of proficiency before being able to process non-subtitled audio-visual content efficiently. Once they reach that threshold, subtitling no longer contributes significantly to the learning process.

Kusyk and Sockett (2012) tested 43 French university students on their word recognition from audio-visual input. High-frequency watchers demonstrated a significantly higher rate of recognizing and ability to define the most frequent 4-word chunks tested in the vocabulary test than low-frequency watchers. In addition, the results showed a tendency for more frequent and more salient chunks to be recognized more easily. The results underscore the importance of previous knowledge for extramural contacts in natural settings. Most students situated themselves at a B1 level at the beginning of the study. As the authors point out, at this level, learners should be able to understand most of the spoken content in standard dialect on TV or radio. However, the results should be interpreted with caution due to the small sample and the fact that word comprehension was not measured by a comprehension test but by students' self-evaluation.

Last, results from Lindgren and Muñoz (2013) also show that watching television is the second-best predictor for learners' listening and reading comprehension.

Overall, the empirical evidence presented in this section shows the beneficial effect of audio-visual contact in the form of movies and TV series for foreign language learning. In contrast to audio-only input, watching a movie or TV series provides a rich visual context to help learners follow a story, even if they do not understand every word. Similar to music, the technical opportunities of streaming services provide learners with a greater locus of control over their viewing experience. Being able to pause and rewind, switch between native and foreign language audio tracks and use subtitling is likely to make input more comprehensible and help with listening comprehension overall (Toffoli & Sockett, 2014).

As with other forms of language input, learning gains from this kind of input seem to be small, most likely due to the challenge of decoding words and meaning while listening to authentic language input. Similar to audio-only material, learners need an extensive vocabulary in order to follow spoken discourse (Nation, 2006; Webb & Rodgers, 2009), and low proficiency learners will most likely struggle to recognize and segment running speech (van Zeeland & Schmitt, 2013; Vidal, 2011). However, even though the requirements for incidental learning through watching television might be quite high and the medium might therefore not automatically be suited for beginners, Sylvén and Sundqvist (2015) could show that even children as young as 11 or 12 might reach the appropriate level of prior knowledge. Motivation is probably a key factor since the children want to understand their favorite TV series, movies, and TV shows and thus tend to pay close attention to what is shown on screen (Sylvén & Sundqvist, 2015).

Apart from movies, TV shows, and TV series, online videos might be another source for audio-visual input. These videos are usually shared via video-sharing platforms, such as YouTube, and cover various topics, from makeup to gaming to lifestyle and mental health. These platforms have also given rise to a new form of celebrity: social influencers (see Section 2.1 for reference). Social influencers produce and upload videos of varying lengths to video-sharing platforms or social media platforms (e.g., Instagram). They often have millions of followers worldwide and post multiple videos per week or even per day. Most of the most popular influencers come from the US or the UK. In addition, influencers from other countries might also choose to produce their content in English to reach a broader audience. Video platforms, therefore, provide an increasingly rich amount of authentic audio-visual input in English, including different accents and dialects.

These videos also give insight into different cultures. To this author's knowledge, there are no empirical studies for this form of extramural English contact and language learning, yet. This is surprising, given the large amount of input available and the popularity of these platforms among young people (MPFS, 2017; Waller et al., 2016). It is thus very likely that German and Swiss adolescents follow international English-speaking influencers who meet their interests on social media and video-sharing platforms. This will, in turn, provide them with yet another source of extramural English contact.

4.2.4 Incidental Language Learning Through Online Communication

With the rise of interactive online platforms, such as chatrooms, messenger boards, and social media sites, learners not only have the opportunity to take in a rich amount of language input but also to socialize and interact with other native and non-native speakers online (Thorne et al., 2009). The internet thus provides the opportunity for new, participatory forms of learning and interaction (Black, 2005; Thorne & Black, 2007; Thorne et al., 2009). However, empirical evidence in this area is still sparse. Among the various online communities, fan fiction communities have received the most attention for their potential for incidental learning. The following section will thus summarize findings for this form of participatory writing space and its learning potential, but the findings can most likely be generalized beyond the scope of this specific form of online community.

Fan fictions are "original works of fiction based on forms of popular media such as television, movies, books, music, and video games" (Black, 2005, p. 118). Within these communities, "native and non-native English speakers [have the opportunity] to use literacy skills to forge relationships with individuals who share their interests" (Black, 2005, p. 120).

Empirical evidence for incidental language learning from this kind of extramural contact can mostly be drawn from the work of Black (2005, 2009). The author used ethnographic and discourse analytic methods to estimate and understand how English learners interact and communicate on these platforms. Additional theoretical considerations and literature reviews can be found in Thorne (2008), Thorne and Black (2007), and Thorne et al. (2009). The results show that online (fan) communities offer learners the opportunity to use language in a social environment and in a way that is meaningful to a particular purpose. In order to participate in the community, users do more than type grammatically correct

utterances; they use language to create communities and interact with each other (Thorne et al., 2009).

Through engaging in the community, learners get in contact with a rich amount of input of meaningful content, but also actively use language to produce various forms of output and engage in interaction with more experienced members of the community, thus increasing their language competences (Black, 2005; Thorne et al., 2009).

Within fan fiction communities, members can choose multiple levels of participation. First, members can be readers only, i.e., only read stories written by others and benefit from the vast amount of language input through extensive reading and familiarization with techniques and conventions of different genres of writing, without having to produce content themselves (Black, 2005; Thorne et al., 2009). Second, members can choose to contribute by writing reviews for other people's stories, even though a reader might not be proficient enough in English to write their own stories, yet. By giving others (constructive) feedback, users are able to demonstrate their knowledge and expertise within a specific fandom (Black, 2005). Last, members might decide to write and publish their own stories. Writers can decide to publish in their native language or choose another language. For example, non-native writers might choose to publish their stories in English to reach a larger audience. Announcing one's status as a non-native speaker might help those authors, as it tells readers to focus on the content rather than grammatical correctness. At the same time, more advanced readers and native speakers often offer extensive feedback on grammatical errors, spelling mistakes, and style issues (Black, 2005). In doing so, they aid novices on their journey to use language as an internal resource to control their own mental processes (R. Ellis, 2008). As Black shows, this form of support and feedback helps non-native writers increase their awareness for audience-specific composition issues and drastically improve their writing skills (Black, 2005; Thorne et al., 2009). Authors might also choose to find a *beta reader*, i.e., an official proofreader, for their story (Black, 2005; Thorne & Black, 2007).

The actual writing process is further aided by the fact that authors can draw on a rich body of characters and plotlines from the original material. It is also common (as long as it is acknowledged) to incorporate elements and plots from other works of fiction or create crossovers (Black, 2005; Thorne & Black, 2007). By doing so, fan fiction communities not only offer other-regulation in forms of support and help from the community but also object-regulation by artifacts such as existing plotlines, characters, and genre conventions provided by the source material (Thorne et al., 2009). Ultimately, this fosters learners to "move beyond

the mechanical aspects of decoding and encoding in the target language." (Black, 2005, p. 127).

Overall, the analyses have shown that different levels of involvement offer even novice learners an opportunity to be part of an online community and make fan fictions sites a perfect place for collaborative and participatory writing processes. Within the community, learners get constructive feedback from native or more advanced speakers in a supportive environment and have the opportunity to solve linguistic problems together as proposed by the sociocultural theory (Black, 2005; Thorne et al., 2009). Students can revise, edit, and redesign their texts by drawing on and incorporating input from a broad audience of reviewers, engaging in dialog-based interaction, and drawing on the meta resources available in the community. Fan fiction communities are thus ideal places for English learners to become accepted members of an English-speaking community, practice their language skills with native speakers (both receptive and productive), get constructive feedback, and eventually take on their own identity as an English speaker (Black, 2005).

While fan-fiction communities have drawn particular attention by researchers in the last few years, the findings can be expected to be expandable to other forms of online communications, such as forums or message boards and social media. Unfortunately, however, to this author's knowledge, there is no empirical research on incidental language learning in that area. Nevertheless, it seems that online communities present users with an environment rich in authentic content as well as the opportunity to try out and develop one's own identity as an English user within an international community. With these characteristics, online communities have long surpassed the simple input mode offered by traditional printed media.

4.2.5 Incidental Language Learning Through Gaming

Computer games have often been frowned upon as leisure time activities and have been suspected of causing violent and addictive behavior in adolescents and children (Graham, n.d.). However, research has shown that computer and video games can also have a positive effect on language learning, especially if they provide gamers with a complex narrative and offer the opportunity to interact with other gamers during the game.

Computer and video games differ in the degree to which they provide such a rich and interactive gaming environment. Following Graham (n.d.), games can be categorized into three levels of narrative complexity. *Low narrative games* – e.g., puzzles, rhythm, or simulation games – do not follow a narrative and often

have no endpoint or final goal. By comparison, *narrative games* – e.g., sport and racing games – provide a narrative and require some background knowledge from the real world. *High narrative games* provide an even richer and more complex narrative story, in which the gamer has to perform a set of tasks and quests to win the game (Graham, n.d.). It can be expected that more complex narratives might provide a higher level of authentic and comprehensible input to gamers.

Narrative and high narrative games are designed to engulf the player within the inherent logic of the gaming world. While playing, gamers are presented with situations and decisions to choose from. As a result, the course of the story depends on the player's preceding decisions. Players can thus be seen as co-creators of the game, not just mere users. By playing the game, they shape the game's environment as much as it shapes them (Gee, 2005). However, similar to the real world, not all actions are available in all situations and to all players alike. Instead, players have to follow a specific set of rules and regulations, which they have to learn and master to succeed in the game (Gee, 2005).

Players get to know the world by wandering through it and solving tasks (i.e., quests) (Gee, 2005; Zheng et al., 2015). Depending on the game, quests can be solved alone or in collaboration with other players. By completing these quests, players build up their character's abilities, skills, and equipment (Gee, 2005; Zheng et al., 2015). In order to solve quests, players will have to take risks and try out new ways or creative solutions. After successfully finishing a quest, a player moves on to new, slightly more challenging adventures. This forces the player to develop new solutions and communication strategies since the ones used in the level before might not be sufficient anymore. By continuously presenting the player with new and slightly more complicated, yet still solvable, tasks, game designers make sure that the games stay interesting yet rewarding enough for people to keep playing (Gee, 2005).

In such an environment, new information, words, and phrases are introduced at the exact time necessary and are embedded within a situated and communicative context. They are easy to process and do not overwhelm players at the beginning of the game. New words and phrases are also strongly linked to a gamer's immediate purpose and goals, as the new information is needed immediately to solve the subsequent quest in the game (Gee, 2005). This makes computer and video games ideal for contextualized and situated language learning. By contrast, schools often introduce topics detached from people's goals and purposes, causing them to be more difficult to remember (Gee, 2003).

> "People are quite poor at understanding and remembering information they have received out of context or too long before they can make use if it […]. Good games

> never do this to players, but find ways to put information inside the worlds the players move through, and make clear the meaning of such information and how it applies to that world." (Gee, 2003, p. 2)

Due to these characteristics, Gee identifies 25 out of 36 learning principles related to language learning in modern gaming (Gee, 2005, 2007). These advantages of gaming for incidental language learning led some researchers to predict the rise of digital games as a game-changer in modern language teaching methodology. However, in recent years, the discussion has shifted somewhat away from how to convert digital games for educational purposes to the notion that digital games already come equipped with the ability to teach cognitive skills and promote problem-solving (Thomas, 2012).

In addition to these general advantages, some games also provide the opportunity to interact not only with the gaming engine but also with other players via written or audio chats. According to the *Scale of Social Interaction* (SSI) model, games can be categorized according to the level of interaction they allow for, i.e., how many players can play simultaneously. These differ in the way they allow language input and output from the gamers. The model distinguishes between single-player, multiplayer, and massive multiplayer online role-playing games. *Single-player games* are played alone and do not allow interaction with other gamers. As a result, they only offer language input and few to no opportunities for output production. *Multiplayer games* allow for the interaction of multiple players simultaneously. These players might be in the same room or might be connected online. These games provide the opportunity for authentic interaction with other players. As a result, they can provide more opportunities for incidental learning within the natural game setting. *Massive multiplayer online role-playing games (*MMORPG) can be seen as the most advanced form of interactive gaming. Here a large number of gamers can be logged in to the games' online servers and can play and interact with each other simultaneously (Sundqvist, 2013).

Within MMORPGs, players are usually encouraged to work together to solve quests. In doing so, players fall back on their social competences from the real world, building social connections, cooperating with each other, and even building communities (Gee, 2005; Piirainen-Marsh & Tainio, 2009; Zheng et al., 2015). Depending on the abilities and experiences of the player's characters, these communities often form rather complex hierarchies and rules of interacting with each other, making sure that each player's abilities and skills are utilized the best way possible. Novices are integrated into the group and can learn from other, more experienced players (Gee, 2005; Piirainen-Marsh & Tainio, 2009; Sylvén & Sundqvist, 2012b).

Gaming communities in these MMORPGs can consist of people from the same geographical region, who might know each other in real life, but there are many communities in which members do not live close to each other. In these communities, English is often the language of communication among group members (Piirainen-Marsh & Tainio, 2009; Sylvén & Sundqvist, 2015). Just as with the skills necessary for successfully participating in the quests, more experienced language users within these communities serve as role models and catalysts for the language socialization of novice English speakers (Thorne et al., 2009). As suggested by the sociocultural theory, social interaction and other-regulated activities help novice learners move towards a self-regulating state in their language and gaming trajectory. In this way, multiplayer games and MMORPGs offer an immersive environment with repeated exposure to the target language in an authentic communicative context and meaningful interaction. Gamers have to communicate, negotiate meaning, and get real-time feedback from their gaming partners. In addition, MMORPGs usually involve a high level of engagement, motivation, and commitment to the task and the people involved. According to Gee, these characteristics make MMORPGs a *silver bullet* for language learning in natural settings (Gee, 2003, 2005, 2007; M. Peterson, 2010; Sylvén & Sundqvist, 2015).

Sylvén and Sundqvist even argue that MMORPGs might be similar to *content and language integrated learning* (CLIL)[2] in school, as it forces learners to use their language skills to solve tasks, meet the given requirements in order to be successful gamers, as well as communicate and get immediate feedback from other gamers. Similar to learners in a CLIL classroom, gamers thus have a high motivation to understand new vocabulary and grammar in order to solve quests successfully and communicate with other players. Moreover, since the game is a voluntary, leisure time activity rather than a school requirement, gamers will probably be more motivated to put in endless hours to perfect their gaming and language skills than learners within a classroom (Sundqvist, 2011; Sylvén & Sundqvist, 2012b).

The two authors also investigated Gee's statements about learning principles in relation to the MMORPG *World of Warcraft*. They conclude that the game does, in fact, provide eight of Gee's 36 criteria, i.e., active and critical learning, psychosocial moratorium, identity, practice, regime of competence, subset, transfer,

[2] Content and language integrated learning can be defined as any form of classroom based instruction in which a foreign/minority or another state language is used as the language of instruction in a non-language related school subject, e.g., biology (Olsson (2016)).

and affinity group (Sylvén & Sundqvist, 2012b). They also confirm Gee's proposed similarities between MMORPGs and the CLIL classroom in terms of the authenticity of the materials, the integration within a language community, and learners' motivation. They conclude that the advantages of playing MMORPGs might be responsible for the repeated empirical finding that boys outperform girls in vocabulary tests, even though girls tend to hold more positive attitudes towards languages and attend CLIL classes more often (Sylvén & Sundqvist, 2012b).

In a similar vein, Zheng et al. (2015) could show that MMORPGs provide learners with a rich input of social, historical, and cultural material to use as tools for their interactions with each other. Similar to Gee, the authors see these characteristics of games as highly beneficial, as they provide players a sense of embodiment by giving them a specific role, a goal, and the opportunity to experience the consequences of their actions. In addition, they found that gaming encourages learner agency and allows learners to transcend from the here and now of the situation to more general knowledge and use of the language (Zheng et al., 2015).

Further empirical support comes from Thorne (2008). In her qualitative study, she could show the fruitful way gamers communicate with each other and how language learning may occur. In her study, an American and a Ukrainian gamer began to communicate and chat within the MMORPG World of Warcraft. Their interaction showed forms of collaboration, negotiation of meaning, feedback, as well as other- and self-correction. In addition, the American gamer reported that the communication reduced inhibitions and insecurities and increased their motivation to further engage in language learning activities.

Similar to these findings, Rankin et al. (2006) showed increased vocabulary knowledge and enhanced output production for four participants in a pilot study. Students were asked to play the interactive game *Ever Quest II* for at least four hours per week. However, while more advanced learners seemed to benefit from the game-based interaction and communication, beginners seemed to struggle with cognitive overload from the game's requirements.

In another study, Rankin et al. (2009) employed a pre-post-test experimental design to investigate gamers' actual increase in vocabulary knowledge and conduct an in-depth analysis of their social interactions. Two experimental groups were established: in the first experimental group, six native Mandarin speakers were asked to play a video game among themselves. In the second experimental group, another group of six native Mandarin speakers played the game in interaction with a group of native English speakers. The six students in the control group did not play but instead received three hours of language instruction. Results showed that the two experimental groups outperformed the control group in the

post-test regarding vocabulary knowledge in the context of the game. However, classroom instruction was more beneficial for participants' scores on sentence usage. The authors attribute this finding to the fact that the employed test was very close to the classroom exercises students were exposed to before. It should be noted that the statistical results should be interpreted with caution due to the small sample size.

In-depth analysis of chat protocols revealed that the native speakers helped and guided the novice players through the all-English interface and the unfamiliar game. Results also showed that language use increased for Mandarin speakers over time. The protocols showed that these gamers started to produce more output as they grew more confident with the game (Rankin et al., 2009).

Results from M. Peterson (2012) also support the fact that gaming can help introduce language learners to specific language practices of a target group. The data showed that the six foreign language students in his sample adapted their interaction strategies in an online-based gaming environment and used time-saving techniques, such as abbreviations and emoticons. The data also shows how students engaged in continuous collaborative dialogue and interaction in the target language English.

Last, Piirainen-Marsh and Tainio (2009) conducted a qualitative study about the interaction of two teenage boys (10–14 years) regularly engaging in playing *Final Fantasy X* together. Although not an MMORPG, the study shows that even games with extensive (subtitled) dialogues offer a rich amount of linguistic input for the players, as well as a chance for playful and casual practice of language skills. The constant repetition throughout the game can lead to considerable learning effects.

While most studies reported here have focused on interactive gaming, Purushotma (2005) also found evidence for learning effects from non-interactive single-player games. In his article, the author analyzed the benefits of playing *The Sims* (a life simulation game played in single-player mode). While the game characters speak an artificial language, the game offers a wide range of text within the menu and in-game notifications. The vocabulary resembles an English beginner course, with a high number of everyday words and phrases. As with other games, players will get immediate feedback for their hypothesis of unknown words in the form of character's behavior in the game and the game environment. In addition, the newest version of the game offers the possibility to change the program code to show in-game messages in two languages (e.g., the native and a foreign language) and can offer translations for unknown words within a pop-up window. The analysis shows that even non-interactive games can offer opportunities for incidental language learning. With its high level of frequent vocabulary, games

like The Sims might be especially suitable for beginners. The non-violent and fighting-free setting might also make it especially suitable for younger learners. Research has also shown empirical evidence that these non-violent games might be a more attractive gaming option for female students than many of the often violent or sports-centered interactive game options (MPFS, 2017).

Although the sample sizes in the reported studies were often small, the empirical findings in this chapter suggest that incidental language learning can occur from interactive and non-interactive gaming. Furthermore, interactive games can help learners move from other-regulated learning to a state of internalized self-regulation and control of language as a mediative tool, as proposed by Vygotsky's sociocultural theory. However, as with other extramural contacts, interactive gaming in English can be challenging for beginners. However, collaborative dialogue and corrective feedback from other more advanced speakers can help bridge the gap, reduce inhibition, enhance motivation, and facilitate language learning. Overall, the immersive environment offered by modern interactive computer and video games is thought to offer an ideal platform for situated and incidental learning, thus bridging learning in and outside of the classroom (Reinders, 2012).

4.3 Incidental Language Learning Through Multi-channel Media Exposure

This last section will summarize empirical findings from studies that did not focus on a specific media channel but rather looked at learners' overall frequency of extramural contacts across multiple media channels.

At the beginning of the 2000s, Hasebrink (2001) showed that the German participants in his studies claimed to have learned around 20% of their English competences outside of school through informal contact (Hasebrink et al., 1997, p. 163ff). However, as this is only a self-reported estimate and the study did not include a test on language competences, these results should only be seen as a rough estimate. However, the result points towards the occurrence of informal learning processes even before the advent of the internet.

The only other empirical evidence for Germany comes from the study *Assessment of Student Achievements in German and English as a Foreign Language (*DESI). The study investigated 9th graders in Germany and included some questions about media-related extramural English contacts via email, video, television, books, comics, manuals, and songs in the questionnaire. While these categories

are by no means exhaustive in terms of modern online and offline media content, the results can still yield some interesting insights. Media-related extramural English contact activities showed a medium-sized correlation with students' English test results and English grades. Students in the highest educational track (Gymnasium) reported higher frequencies of media-related extramural English contacts and a higher interest in reading (Helmke et al., 2008). Apart from these results, no further empirical evidence seems to exist for Germany or Switzerland.

For Sweden, Sundqvist (2009a)[3] showed significant and positive correlations for the overall frequency of media-related extramural English contacts, vocabulary competences, and oral proficiency (for details about the test procedure see Sundqvist, 2009a). While the effect of reading was especially strong for oral performance, gaming and surfing showed the highest correlation for the vocabulary tests in her study. Dividing students into user groups showed that high-frequency users received significantly better test results than low-frequency users (Sundqvist, 2009a). Interestingly, however, the author also found indications for the effects of extramural English contacts to be stronger for low-frequency than for high-frequency users. She interpreted the findings as an indication that the increase from no contact (0 hours) to some contact (e.g., 8 hours) might be more beneficial than the increase from 45 hours to 53 hours (Sundqvist, 2009a).

In addition, the positive correlation between extramural contacts and oral test results found in the data only holds for two of the four classes, while it is negative for the other two. Sundqvist assumes this could be due to the socio-economic composition of the classes or due to the teacher influence but did not elaborate further (Sundqvist, 2009a). While her sample is relatively small ($n = 80$), her study does give an interesting and compelling inside view into the field of media-related extramural English contact through the media and the relationship with learners' competences. In addition, her use of language diaries provides a detailed, in-depth measurement of students' actual frequency of extramural contacts that might be more reliable than some of the ex-post-facto questionnaires employed in other studies, including the present.

Forsman (2004, cited in Sundqvist, 2009a) also found a significant and positive relationship between the overall frequency of media-related extramural English contact and students' tendency to use American words and phrases (in comparison to British ones) in his study with 330 Swedish-Finish students. The author attributes these findings to the dominance of American media content.

[3] Results reported here are from Sundqvist's 2009 dissertation. The author has conducted several follow-up studies (Sundqvist, 2008, 2009b, 2011, 2012, 2013). Findings from these other publications will only be reported if they differ from the findings in the main thesis or if they add additional insight.

Lindgren and Muñoz (2013) could also show the positive effect of extramural exposure to a foreign language on children's listening and reading comprehension in multiple European countries (aged 10 to 11). The results also showed a significant effect for the cognate distance between the native language and the foreign language: students with a native language closer related to the target language showed a significant higher learning effect.

Peters (2018) found a significant positive correlation between media-related extramural English contacts and language competences. Significant effects could be shown for reading books and magazines, surfing on English-language websites, and watching movies and TV series without subtitles, but the correlations were small in effect (except for browsing). Surprisingly the results showed a small negative correlation between vocabulary knowledge and listening to English-language songs, as well as no significant correlation for watching subtitled movies and TV series or for gaming. The study was conducted in the Flemish region in Belgium, which has a high level of non-Flemish and non-dubbed TV productions. The author attributes the lack of correlation between subtitled TV series and movies with test scores, therefore, to the fact that there is virtually no variance in her dataset since almost all students watch subtitled movies and TV series regularly (Peters, 2018).

In addition to the correlations, results from an analysis of variance with covariates also revealed the overall frequency of media-related extramural contact to be a positive predictor for students' vocabulary knowledge. The effect explained with 13% more variance than the length of in-class English instruction (Peters, 2018, p. 159).

Olsson (2011) focused specifically on the effect of extramural English contacts on students' writing skills. The author found a strong and positive significant correlation between overall media-related extramural English contacts and test results for a national mandatory writing test. Examining the individual media categories separately, she found a significant and positive correlation between extramural reading, writing, and watching television and the writing test scores. An in-depth analysis showed that students with a higher level of extramural contact on average wrote longer sentences and used longer and more complex words for some text types. In addition, she found that all students with at least moderate extramural contacts reached a *pass with distinction* or a *pass with special distinction* in their 9th grade finals. The extramural contacts also showed a moderate, significant correlation with learners' grades (Olsson, 2011).

In addition to the overall scores for writing, the study also looked at certain text features in more detail and found significant correlation effects for sentence

length in the written mails and the use of infrequent vocabulary for the newspaper articles, but not the other way around. Moreover, even though all students showed a higher variation in vocabulary for the newspaper article than the mails, students with high frequent extramural contacts did show significantly more variation than non-users or low-frequency users. This points towards the fact that students with frequent extramural contacts might gain a more extensive and more diverse language register, which allows them to adapt their language to different text types (Olsson, 2011).

Despite these interesting findings, the results should be read with caution as Olsson's sample is very small ($n = 37$). Still, the study gives an important insight into the relationship between extramural contacts and writing in English as a foreign language in general and different text features in particular.

In a longitudinal study, Olsson and Sylvén (2015) also investigated the effect of media-related extramural English contacts on the academic vocabulary of CLIL and non-CLIL students. As in Sundqvist's study, students were asked to fill out a survey and keep a language diary. Students were then asked to write four argumentative and explanatory essays. The results reveal that CLIL students had slightly more extramural contacts and wrote and read English texts significantly more often outside of the classroom, which in turn seems to lead to a more positive attitude towards English. However, the frequency of extramural contacts did not significantly affect students' test results and learning progress. The two authors even raise the question of whether or not extramural contacts might level the advantages in language learning for students attending CLIL classes. However, as the authors also note, the study does not answer how much vocabulary students are subjected to through extramural contacts (Olsson & Sylvén, 2015).

Sylvén (2019) further investigated the differences reported by Olsson and Sylvén (2015) with the same dataset. The language diaries from both measurement points again showed that CLIL students were exposed to a greater amount of media-related extramural English than non-CLIL students over time. In addition, the frequency of extramural contacts showed a positive correlation with sentence length and sentence types.

Results from Sylvén (2004, as cited in Sylvén & Sundqvist, 2015) support these findings. The data showed that Swedish CLIL students seem to not benefit as much from English within the classroom as from the use of English outside of school. In addition, although CLIL students on average scored higher than non-CLIL students, non-CLIL students who had a high level of media-related extramural English contacts scored higher than CLIL students who did not have frequent out-of-school exposure to English.

Two quasi-experimental studies further investigated the causal link between extramural English contacts and language competences. In his study, Kuppens (2010) recruited 374 primary students in the Netherlands, who did not have had any English instructions in school and did not have many extramural contacts with English before the study. The questionnaire included watching subtitled television, playing computer games, and listening to music as extramural categories. Non-subtitled movies, TV series, TV shows, websites, and radio were excluded since it could be assumed that a certain level of preexisting proficiency in English would have been necessary to utilize these media forms in a meaningful way. On the other hand, watching subtitled television does not require such a high level of proficiency, nor does listening to music or playing computer games. The results showed that students did use the mentioned media categories regularly. Watching subtitled television showed a significant influence on students' language test results. Playing computer games also showed a significant effect but only for the English-to-Dutch test, not the other way around. Since the survey did not distinguish between different computer games, it is difficult to determine if variance regarding the preferred games might have influenced the results. The author also speculates that watching subtitled television might be functioning as a form of 'gateway' for eventually switching to monolingual television in English as well as the use of other media channels (e.g., fan sites, blogs) (Kuppens, 2010).

In their longitudinal study, Verspoor et al. (2011) compared a group of students who, for religious reasons, had minimal media-related extramural English contact (control group) with students who attended public schools and had the opportunity for regular extramural contact (experimental group). The data showed that lack of extramural contact had a long-term effect on students' proficiency development. While the control group did not differ significantly in their language competences from the rest of the students at the beginning of the study, a significant difference was found after three years (Verspoor et al., 2011).

Overall, the results presented in this section strengthen the findings from studies focusing on specific media channels. A higher frequency of overall media-related extramural English contacts seems to be positively correlated with higher language competences. While some of these studies only reported correlative results, findings from Kuppens (2010) and Verspoor et al. (2011) lend support to the notion of a causal effect of these contacts on language competences. The results from these two studies also support the claim that extramural English contacts have a positive effect on language competence, even without additional in-class instruction.

4.4 Conclusion

This chapter began by arguing that regular media-related extramural English contact with English as a foreign language can lead to unprompted and unconscious language learning processes. When reading in English, listening to music, watching a movie, or playing a video game, learners usually do not have a dictionary at hand. Instead, they are concentrated on the content and need to derive the meaning of unknown words from the surrounding context. According to the input hypothesis, this will result in incidental language learning, as long as the input is comprehensible, i.e., slightly more complex than a person's current level of competences. Under such conditions, learners can form plausible and practical hypotheses about the meaning of unknown words. This process is automatic, given that no significant cognitive obstacles or resistance are active (Krashen, 1982, 1985, 1989).

In addition, the chapter drew on the sociocultural theory and the output hypothesis and discussed the possibility of incidental language learning through output production, feedback, collaborative dialogue, interaction, and communication through interactive media platforms and games. According to the theory, learners will only reach the highest levels of language proficiency and self-regulated language use by interacting with other, more advanced learners or native speakers (Dunn & Lantolf, 1998; Lantolf, 2000, 2005, 2011; Swain, 2005; Vygotsky, 1978). Thus, frequent interactive extramural English contact can allow learners to increase their language competences as a by-product of other activities.

The empirical research presented in this chapter has supported the positive relationship between media-related extramural English contacts and learners' language competences. In addition, newer studies on interactive online media activities, such as gaming or message boards, social media, or online communities, have also shown the advantages of interaction and output production for incidental language learning. While some studies can only report correlative findings, (quasi-) experimental studies have also provided evidence for the causal effect of extramural English contacts on language competences.

Together these findings suggest that learners should not only receive input but also produce, use and repeat new words and phrases on a regular basis in order to foster a higher conversion rate into long-term memory through repetition and forming links with other words within the mental lexicon (Hulstijn, 2001, 2013).

Despite these positive findings, the process of incidental language learning seems to be limited in terms of the scope and speed by which learning can take place. Most of the studies summarized above have focused on vocabulary gains.

Studies that have tried to show increases in learners' knowledge of grammar, morphology, or syntax have generally only reported a marginal effect or no effect at all. Indeed, studies have shown that presenting students with formal instruction before presenting them with an incidental learning opportunity produced larger learning effects for grammar tests (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999; Elley, 1997; Vidal, 2011). These results indicate that not all aspects of a foreign language can be easily acquired incidentally. While vocabulary, especially nouns, seems to be easy to pick up as a by-product of other activities, grammar seems to be too complex of a topic for such an incidental process. Instead, formal instruction and feedback seem to be needed for learners to grasp important grammatical concepts in a foreign language (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999). However, this does not diminish the importance of learning opportunities through incidental language learning. A rich and vast vocabulary is essential for language learners to master. In order to understand a message, learners must know the meaning and functions of words, as well as the conventional way in which they are used in the target language (Elley, 1997).

Empirical findings also indicate that incidental learning is a relatively slow process, with an unpredictable outcome, and prone to errors. Texts with 200,000 words or more are most likely needed for a person to learn 108 new words (Letchumanan et al., 2015; Sok, 2014; Webb & Rodgers, 2009), and learning gains from listening seem to be even smaller than gains from reading exposure (van Zeeland & Schmitt, 2013; Vidal, 2011). It is thus not surprising that some studies have shown that intentional learning is more effective and faster, even for vocabulary learning in direct comparison (R. Ellis, 1999).

In addition, several factors have been shown to influence the speed and success of incidental language learning. This includes word characteristics (e.g., distinctiveness, polymeny, length, imageability, and correlation between form and meaning), frequency of exposure, repetition, text type, input complexity, contextual clues, learners' language proficiency, and ability to guess words, mother tongue and motivation. In addition, the proportion of words already known and the students' background knowledge has also been shown to influence the incidental learning process (N. C. Ellis, 1994; R. Ellis, 1999; Huckin & Coady, 1999; Hulstijn, 2003; Letchumanan et al., 2015; Neuman & Koskinen, 1992; Ramos, 2015; Sok, 2014).

These last two factors also underline the fact that extramural contacts might not be suitable for all language learners alike. As empirical research has shown, this might be especially true for auditory and audio-visual input (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999; Vidal, 2011). As movies and TV series were not made with the language learner in mind, the high pace, use of less

frequent vocabulary, idioms, different dialects, and advanced syntax might simply be too difficult for beginners to follow. Listening to and watching authentic media content in English is, therefore, most likely not suited for low proficiency learners, as they lack the competence to distinguish words in running speech and cannot identify certain word characteristics correctly (d'Ydewalle, 2002; d'Ydewalle & van de Poel, 1999; Vidal, 2011). As a result, learners who have not yet reached the necessary threshold will probably not engage in watching movies and TV series on a regular basis, at least not without subtitles (Webb & Rodgers, 2009).

This problem might be less prominent in books or other forms of written material, in which the reader has more time to engage with the text. However, overall, learners seem to need to have reached a certain level of language proficiency (usually within an educational context) before they can enjoy more complex forms of media content. Otherwise, even the most compelling authentic input will just be incomprehensible noise (Krashen, 1982). This is also emphasized by Neuman and Koskinen (1992), who pointed out the importance of prior knowledge of vocabulary as a moderating variable for incidental learning outcomes. Similarly, Vidal (2011) also found both readers and listeners to benefit from explicit elaboration before the extramural contact. He concluded that explicit (classroom) instruction helps to foster robust connections between form and meaning. Olsson (2016) also suggests that form-focused instruction will enhance the quality and depth of learners' vocabulary acquisition through incidental learning processes and might help with transforming receptive vocabulary knowledge into productive knowledge. Overall, the findings underline the importance of formal language instruction, especially in the beginning, in order to teach learners the most frequent vocabulary and linguistic principles of the target language (Hulstijn, 2001) as well as providing them comprehensible learning material for their competence level (Krashen, 1985).

In addition to these limitations of the incidental learning process, research has also yet to conclusively prove how incidental learning works within the brain. This is primarily due to the challenges in designing reliable, valid, and objective measurements, as it is difficult to measure what people do and how they deal with an unknown input while making sure that what is measured is, in fact, incidental learning.

Most research in the field of psychology has been experimental in nature, testing participants in a laboratory and sometimes using artificial language to avoid the problem of subjects' prior knowledge of the language. As a result, findings from these studies cannot easily be generalized to naturalistic contexts (Hulstijn, 2003; Kuppens, 2010).

Most experiments were also only able to provide evidence for short-term effects since they tested participants shortly after exposure to the stimuli (Hulstijn, 2003; Kuppens, 2010). As Vidal points out, the findings might thus only represent the strength of memory traces due to exposure rather than real incidental learning in terms of new lexical entries (Vidal, 2011). Investigating long-term language acquisition would require frequent and intensive contact with a target language. Such intensive exposure is difficult to implement within the confinements of an experimental setting. Still, if people pick up vocabulary or grammar after only a short period of exposure, it is almost certain to assume that more prolonged exposure would result in similar, if not even greater language acquisition (Kuppens, 2010).

Furthermore, most experimental studies tend to have a problem with priming. In order to investigate incidental learning processes, participants cannot be told to read texts and try not to learn something, as that means 'putting the elephant in the room' (Bruton et al., 2011). Studies usually ask participants in the experimental group to read a text without telling them that they would be tested afterward, while they instructed the control groups to read a text and announced the post-test beforehand (Hulstijn, 2001, 2003). However, participation alone might be enough to prime participants to expect some kind of test (Sok, 2014). Newer studies usually instruct the experimental group that they will be tested about a certain stimulus and then test a different, second stimulus, for which no test was announced. However, even such experimental designs cannot ensure validity since it cannot be conclusively proven that participants did not have any outside motive to learn. Thus, it is rather difficult to implement a study that can indisputably claim to measure the effect of incidental learning (Hulstijn, 2001; Sok, 2014).[4]

Studies outside of the field of psychology suffer to a lesser degree when it comes to these problems. Instead, they usually struggle to conclusively prove causality. While some studies have implemented quasi-experimental designs (e.g., Kuppens, 2010), most studies were carried out with learners who had already received years of classroom instruction in the target language. In addition, these studies often employed ex-post-facto study designs. It is thus difficult to determine how much of the increase in language competences over a certain period of time is due to extramural contacts and how much must be attributed to students' prior knowledge and parallel classroom instructions.

[4] The same uncertainty seems to arise when it comes to the question of whether operationalizing implicit learning is, in fact, possible. On the other hand, there is consensus that it is possible to operationalize explicit knowledge (Hulstijn, 2002).

Furthermore, while regular extramural English contact can be assumed to increase students' language competence through incidental language learning processes, it is also very likely that students with high language competences are more likely to engage more frequently in media-related extramural English contact. This is further supported by findings suggesting that authentic media input might be especially challenging for beginners. Consequently, a learner's language competence and their frequency of media-related extramural English contact will most likely influence each other. As a result of this unclear direction of causality, some of the studies presented above have only reported correlative effects. Thus, while high on ecological validity, most of these studies are relatively low on reliability.

In addition, frequency and form of students' media-related extramural English contact were often measured via a self-report questionnaire in which students were asked to average their frequency of media contact. A detailed day-to-day analysis of media habits and the specific media content students encounter was therefore often not possible. Thus, some studies cannot assess the true nature and scope of language input students might have had, making definite conclusions about causality impossible. These last two limitations also apply to the present study.

Despite these shortcomings and open (research) questions, the empirical research summarized in this chapter has shown that media-related extramural English contact can have a positive relationship with learners' language competences. Incidental language learning can most likely be a helpful and interesting route for language learning, especially for more advanced learners. Once students reach a certain level of language proficiency, they will be able to choose from various language sources outside of the educational system, enjoying them for their entertaining characteristics while increasing their language competences, without actively trying to store new information to memory. Learning effects are likely to be strongest for vocabulary, but other areas might also benefit. In addition, newer and more interactive forms of media content might allow learners to produce language output, form hypotheses, and test them in real-life interaction. Through this interaction, learners will also get feedback and assistance from advanced learners and native speakers.

The body of empirical studies summarized above was able to show positive effects for listening, reading, speaking, and even writing skills. Given the highly complex nature of writing in a foreign language, the latter is especially impressive. The present study will analyze the effect of extramural English contact simultaneously on students' reading, writing, and listening skills (for details on

language assessment, see the next chapter). Given the empirical results above, a positive effect of extramural English contacts on all three language skills can be expected. The final research hypothesis is, therefore:

H4: *The frequency of media-related extramural English contact will have a positive effect on students' reading, listening, and writing skills.*