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# Receptive multilingualism in German pupils and the underlying factors

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*Abstract*

Receptive multilingualism (RM) has been shown to be an effective mode for communication in the case of German and Dutch (Van Mulken & Hendriks, 2012) and is part of plurilingual competence as defined by the Common European Framework of Reference (CEFR, Council of Europe, 2001). Studies investigating RM in pupils have found individual differences between participants (e.g. Jentges, Knopp & Sars, in press). This study investigates to which extent the factors knowledge of foreign languages, Tolerance of Ambiguity, attitudes and aptitude can explain the differences in pupil's performance in RM.

An intervention teaching German pupils about strategies when decoding a Dutch text as well as a pre-and post-test and a questionnaire were developed.

As the experiment could not be carried out due to the Covid-19 situation in the Netherlands, expected findings and results are presented. The method and materials as well as possible pedagogical implications and directions for further research will be reflected upon in the discussion section.

*Receptive Multilingualism in German pupils and the underlying factors*

## *1. Introduction*

Within the continent of Europe, more than twenty languages are spoken. The European Union actively promotes multilingualism with the goal that all citizens can speak at least two other languages. Furthermore, learning languages from a very early age on is encouraged. Indeed, multilingualism is part of the school curriculum in many different countries, mostly with English being taught as the first second language. The framework of reference for language learning in the European Union is summarised in the Common European Framework of Reference (CEFR; Council of Europe, 2001). The CEFR can be used for language education, assessment, or language learning (Council of Europe, 2001). Complementing the CEFR, the CEFR Companion Volume with New Descriptors (Council of Europe, 2018) also includes the skills of both plurilingual repertoire and plurilingual comprehension and descriptors for these skills next to multilingualism. Since in the definition of the Council of Europe (2001), multilingualism is defined specifically and distinguished from plurilingualism, a further definition of both constructs seems necessary. The concept of multilingualism is a broad concept and has generally been defined as being able to speak multiple languages (e.g. Cenoz, 2013). The CEFR further specifies this concept of multilingualism, making use of the term plurilingualism. While multilingualism views languages from a distinct point of view and separates them from each other, plurilingualism can be defined as viewing languages as not being distinct, but as part of one underlying knowledge system and therefore also includes the notion of first language (Council of Europe, 2001). However, the definition of these concepts according to the CEFR does not mean that multilingualism excludes the notion of plurilingualism. Plurilingual repertoire and comprehension also means making effective use of one's knowledge of languages.

Plurilingual skills are part of the school curriculum of some countries already, for example in Germany (Hessisches Kulturministerium, 2018). Furthermore, there are suggestions on how to implement plurilingual skills in the school curriculum. For instance, a suggestion for the Dutch core curriculum states that pupils should be aware of the languages around them and should use their own language skills and their repertoire effectively in learning and communicating (Curriculum.nu, 2019). This poses the questions how these plurilingual skills can be implemented in teaching effectively. In order to answer this question, it seems necessary to look at particular elements of plurilingualism first. An element that has been identified as being part of the plurilingual repertoire and plurilingual comprehension is the communication mode referred to as receptive multilingualism (RM) (Council of Europe, 2018).

## 1.1. Modes of communication

When having to communicate with someone who speaks the same first language, communication would usually take place in the first language (L1) of the speakers. However, if two speakers do not share the same first language, several other modes of communication are possible. One of these modes of communication is the use of the first language of one of the participants, which might be a second language (L2) for the other participant. This communication mode is also referred to as L1-L2 communication (Van Mulken & Hendriks, 2012). In this mode of communication, however, one speaker is at a disadvantage as they need to adapt to the other speaker's first language and, therefore, might not be able to express themselves fully (Beerkens, 2010). Another possible mode of communication is the use of a lingua franca, which refers to the use of a shared, but foreign language for both participants. While there are several possibilities for the use of a lingua franca, in most contexts in Europe, this will be English (ELF). However, there are some drawbacks to this mode of communication: its effectiveness is dependent on the participants' proficiency in English

(Gunnarsson, 2014). Furthermore, communication might be hampered by the fact that both participants do not make use their first language and are therefore restricted in the way they can express themselves (Hincks, 2010). To overcome this problem, a possibility would be the use of a third mode of communication, namely receptive multilingualism (RM), which is also known as lingua receptiva (LaRe).

## 1.2. Receptive multilingualism

In receptive multilingualism, both interlocutors use different languages in order to communicate with each other. In this mode of communication, no lingua franca is used but instead receptive knowledge of the languages used by the interlocutors is required (Rehbein, ten Thije & Verschik, 2012). As of now, RM is a relatively popular mode of communication in Scandinavia (Maurud, 1976) and might also be an alternative and effective mode of communication for Romance languages (Degache, 2003), languages like Estonian and Finnish (Verschik, 2012) as well as communication in closely related languages like Dutch and German (Van Mulken & Hendriks, 2012; Ház, 2005). Indeed, Beerkens (2010) showed that receptive multilingualism is used as a mode of communication in the Dutch-German border area. A case study by Roelands and ten Thije (2006) provides further evidence on RM in the case of German and Dutch. The authors observed a German and a Dutch employee of the Goethe Institute in Amsterdam and discovered that both employees communicated with each other in their respective first language, therefore making use of RM.

Although receptive multilingualism used to be a standard mode of communication in the Middle Ages, nowadays it has become relatively unpopular and not well-known, with the exception of Scandinavia (Braunmüller, 2013). One reason for this unpopularity might be the native-speaker-ideal, which is often used in an English teaching context (Holliday, 2006). According to this native-speaker-ideal, native speakers are seen as more competent. As the focus in receptive multilingualism is on receptive skills rather than productive skills,

understanding a language receptively but not productively might be seen as less competent and could therefore be the reason for the unpopularity of this concept. Braunmüller (2013) mentions further reasons for the unpopularity of RM. According to him, a lack of awareness of this communication mode, the dominance of English as a lingua franca and the standardisation of languages in many European countries, which restricts the use of dialects and other languages all play a role, therefore making RM not an obvious option when choosing for a mode of communication. Braunmüller (2013), who sees the chance for receptive multilingualism to become more popular in the European Union, promotes this mode of communication as an "important indicator of a polyglot citizen in Europe" (Braunmüller, 2013, p. 221). Including plurilingual skills and consequently, receptive multilingualism, in the CEFR Companion Volume with new descriptors (Council of Europe, 2018) can be seen as an important step in making this mode of communication more popular and officially acknowledged. Some projects, like EuroCom (Hufeisen & Marx, 2007; Klein & Stegmann, 2000) intend to foster receptive multilingualism for closely related languages such as Romance or Germanic languages. The method of the "Seven Sieves" (Hufeisen & Marx, 2007; Klein & Stegmann, 2000) lists seven strategies that can be used in order to learn to understand a yet unknown language when reading. The method therefore focusses on receptive skills. As the strategies can be regarded as quite complex, the method is targeted more towards adults. So far, instructions for intercomprehension within the Romance and the Germanic language family have been published (Klein & Stegmann, 2000; Hufeisen & Marx, 2007).

A number of studies indicate that receptive multilingualism can be an effective mode of communication and therefore an alternative to other modes of communication such as ELF or L1-L2. In order to investigate the effectiveness of RM as a mode of communication, Van Mulken and Hendricks (2012) compared the effectiveness of different modes of communication in a problem-solving task, namely ELF, L1-L1 interaction, L1-L2 and

receptive multilingualism. The participants were a group of German and a group of Dutch native speakers. During chat sessions, the participants took part in a spot-the-difference-task in different modes of communication. In the communication mode of L1-L1, only Dutch natives interacted with each other and German natives interacted with each other; in the other communication modes, both groups interacted with each other. Results showed that the use of the first language (L1-L1) was the most effective mode of communication, resulting in the highest number of differences found. Receptive multilingualism was found to be the second-most effective mode of communication. The communication mode of English as a lingua franca was found not to be as effective as receptive multilingualism as participants found significantly less differences in this mode of communication. The researchers therefore conclude that receptive multilingualism in German and Dutch might be an alternative to English as a lingua Franca in terms of effectiveness. These findings suggest that, at least for German and Dutch, making RM more popular would be beneficial in making communication more effective. Enhancing plurilingual skills might be a solution in making people more aware of this mode of communication. This poses the question how these plurilingual skills can be fostered effectively.

Jentges, Knopp and Sars (in press) investigated how plurilingual competences and skills in young pupils could be fostered. German pupils with no previous knowledge of Dutch took part in a week-long workshop on receptive multilingualism where they explored several strategies on how to decode texts in Dutch. Two examples of these strategies included making use of their knowledge of German in order to decode a text in Dutch or making use of contextual hints. The participants completed a pre- and a post-test in which they were asked to decode a text in Dutch. In the post-test, some pupils were able to decode significantly more words and sentences in Dutch than in the pre-test, which had been completed before the intervention. Therefore, the workshop indeed could enable some pupils to enhance their abilities in receptive multilingualism and make effective use of the strategies they had

acquired during the workshop. However, there were individual differences between the pupils in their performance. While some participants could successfully apply the strategies they had learned, other participants showed no difference in performance in the post-test. This shows that there might be factors influencing the successful use of RM and raises the question which factors might have had an influence on these individual differences in pupils.

The present study is going to examine to what extent certain factors influence RM in pupils. So far, very few studies have investigated RM in pupils or children. Some of the factors influencing intelligibility in RM in general have already been identified in previous research and will subsequently be described in greater detail.

*1.3. Factors influencing intelligibility in RM*

Intelligibility and understanding in receptive multilingualism have been subject to research for several decades. Crucial factors that have been shown to influence the intelligibility of RM can be divided into several groups of factors: Language-pair related factors, such as the typological closeness of languages or language asymmetry (Maurud, 1976), modality-related factors such as the type of communication (Maurud, 1976; ten Thije, 2018) and speaker-related factors such as proficiency or age (Blees, Mak & ten Thije, 2014; Vanhove, 2014).

The first factor are language-related factors such as the typological closeness of languages, which can foster mutual intelligibility. Some languages have been shown to be mutually intelligible, for instance Scandinavian languages (Maurud, 1976) or Finnish and Estonian (Verschik, 2012). The same has been shown for Dutch and German (Hàz, 2005). Indeed, German participants judged Dutch as being the most intelligible language out of Norwegian, Dutch and Icelandic, which all belong to the Germanic language family (Marx, 2007). Typological closeness can also be characterised by the number of cognates two languages share. Cognates can be defined as words between two languages which are similar in form and meaning (Wenzel, 2007). If languages share a higher number of cognates,

learners can make use of the linguistic similarities of the two languages which facilitates their learning process (Ringbom, 2007). German and Dutch indeed share a high number of cognates (Schepens et al., 2013) which contributes to the intelligibility between the two languages. For instance, a German native speaker reading a Dutch text containing the word "wekker" (alarm clock) would be able to understand that word as it has cognate-status with the German word "Wecker".

Even if there is typological closeness between languages, the intelligibility between languages can vary with respect to the directionality of intelligibility. This factor is also called language asymmetry. Language asymmetry has been reported in the case of Swedish, Danish and Norwegian (Maurud, 1976) and German and Dutch (Gooskens, Van Bezooijen & Van Heuven, 2015). An example for asymmetry can be found in Scandinavian languages. Research suggests that Norwegians find it relatively unproblematic to understand Danish and Swedish, while Danes and Swedes have difficulties understanding Norwegian (Maurud, 1976). An explanation for language asymmetry is given by Gooskens (2006). Linguistic differences between the languages, for instance lexical or phonetic differences seem to be the reason for language asymmetry. An example for language asymmetry can be found in the case of Danish and Swedish. Danish and Swedish are similar in terms of orthography, but pronunciation in Danish differs more from orthography than in Swedish (Schüppert & Gooskens, 2010). Therefore, Danish might be harder to understand than Swedish.

Modality-related factors are shown to play a role in RM as well, for instance in the case of the form of communication. Written communication generally tends to be understood better than spoken communication (Maurud, 1976). Therefore, reading a text in an unknown language is easier than listening to a conversation taking place in an unknown language (ten Thije, 2018). According to ten Thije (2018), one of the reasons for this preference is the fact that written communication is not fleeting. Therefore, the reader has more time and possibilities to discover similarities with other languages that are known to him or her.

Furthermore, in the case of spoken language, it is not easily recognisable if there is any correspondence of sounds between two languages. Speech might therefore be harder to decode. For an introduction to receptive multilingualism, focussing on reading tasks might therefore be the most efficient solution. This indeed is in line with the method of EuroCom (Hufeisen & Marx, 2007; Klein & Stegmann, 2000), which, in order to teach strategies on how to decode an unknown language, concentrates on reading comprehension rather than speaking comprehension.

Lastly, speaker-related factors play a role in intelligibility in RM as well. It has been found that proficiency influences the effectiveness of RM. Blees, Mak and ten Thije (2014), for instance, found that a lack of proficiency hampered the effectiveness of RM in German and Dutch in a problem-solving task. The participants of their study were more effective communicating in ELF than in RM; a finding that the authors ascribe to the participants' relatively high proficiency in the lingua franca English. Hàz (2005) investigated the mutual understanding of German and Dutch participants. German seemed to be easier to understand for Dutch participants than Dutch for German participants. While the German participants reported not having previous or little contact with the Dutch language before, the Dutch participants had learned some German at school. This asymmetry in understanding could therefore also be explained by the participants proficiency in the respective language.

Another speaker-related factor, namely age, seems to be of importance to the intelligibility of receptive multilingualism. A study by Vanhove (2014) that investigated RM by means of cognate guessing, showed that the number of accurately guessed cognates is linked to the participants' age. After a steep increase during childhood until the age of about 20-25 years, it seems to remain stable for most of the adult life and then might decrease with increasing age. Van der Ploeg, Swarte and Gooskens (2017) found similar effects of age in the case of text intelligibility. Danish participants took part in a cloze test in Swedish, Dutch, English and German. Age had a significant influence on the performance in the cloze test,

with the performance increasing, and then remaining relatively stable and decreasing approximately at around the age of fifty to seventy. Berthele (2011) conducted a study on cognate guessing in Swiss participants with German as a native language which had to guess Danish cognates. It was found that age was a significant predictor of task performance, with the performance improving with increasing age. Vanhove (2014) links this trend to cognitive and linguistic factors of the participants, for instance fluid intelligence, which refers to logical thinking, and crystallised intelligence, which refers to knowledge-based intelligence. As both of these factors increase with age, they might be the reason for the task performance of the older participants (20 years and older) compared to a younger group of participants (Vanhove, 2014).

However, all of the factors mentioned above cannot entirely explain the differences in participants' performance or behaviour in receptive multilingualism tasks. Thus, additional factors that influences intelligibility and especially affect the performance of RM of younger participants have to be taken into account. The following factors have not yet been researched extensively in the context of RM but are suggested to play a role in intelligibility and effectiveness as well.

*1.3.1. Knowledge of other foreign languages*

The influence of foreign language knowledge has been researched in the context of language learning as it is believed to positively enhance the process of language acquisition and might therefore also enhance plurilingual competence. Tremblay (2006) showed that knowledge of a second language (L2) and proficiency in the L2 was beneficial to the acquisition of a third language (L3) as learners could rely and use their knowledge of an L2. A study by Peyer, Kaiser and Berthele (2010) about reading competence in an L3 or a fourth language (L4) showed that participants with a low proficiency in German as their L3 or L4 could benefit from their foreign language knowledge and knowledge of English as an L2 when reading

texts in German.

In the case of unknown languages, previous knowledge of foreign languages was found to influence the ability to decode an unknown language (Gibson & Hufeisen, 2003). In their study, participants from two groups, namely learners of German as a foreign language (GFL) and learners of English as a foreign language (EFL), were asked to decode and translate a text in Swedish into either German or English. Furthermore, they were asked to report on their decoding strategies. The participants had different first languages and language learning backgrounds, and Swedish was an unknown language to all of them. Three main findings were drawn: First, the EFL group performed better at the task than the GFL group, which might be ascribed to the fact that the language proficiency in English was higher in the EFL group than the language proficiency in German in the GFL group. Furthermore, participants which reported not only using cognate similarities as their decoding strategies but also world knowledge and paralinguistic strategies were more successful in decoding the text than participants that reported using only cognate similarities as their decoding strategy, which might hint at an advantage for participants with broader metalinguistic skills. Lastly, general foreign language experience had an effect on performance in the task. Participants that learned German as an L4 were better than participants that had learned German as an L2. Thus, the participants' foreign language experience might have facilitated and predicted success in the decoding task.

Not only general foreign language experience, but more specifically, speaking a language closely related to the target language seems to be of importance for RM. In a cognate guessing task, Berthele (2011) shows that speaking a closely related language to the target language in RM, in this case a Romance or Germanic language, helps facilitate participants' success in the task. Further proof for the importance of the closeness of languages is provided by Swarte, Schüppert and Gooskens (2015), who instructed Dutch participants with German as an L2 to translate Danish words. Generally, they found that

participants made use of their knowledge of German when translating words into an unknown language. More specifically, the more proficient the participants were in German, the more correct their translations were. Kürschner (2013) found that German participants who had to decode words in Dutch often made use of their knowledge of English. These findings lend support to the fact that not only general foreign language learning experience and knowledge, but also knowledge of specific foreign languages that are close to the target language might play a role in receptive multilingualism.

*1.3.2. Tolerance of Ambiguity*

Another factor that has been researched in the context of receptive multilingualism are personality traits. Lambelet and Mauron (2017) investigated the influence of several factors, one of them being personality traits, on receptive multilingualism in young pupils from the French-speaking part of Switzerland. More specifically, the researchers employed the personality traits of the Big 5. This theory measures five personality traits, namely extraversion, openness, neuroticism, conscientiousness and agreeableness (Zillig, Hemenover, & Dienstbier, 2002).

The participants of the study by Lambelet & Mauron (2017) took part in a text comprehension task in Italian, which was unknown to the pupils. They were asked to read newspaper articles and answer several comprehension questions related to these newspaper articles. The authors found individual differences in performance between pupils, which could not be entirely explained by the background variables under investigation, therefore also not by personality traits. Success in the task could partly be predicted by school level. The authors conclude that next to school level, there might be several other factors that have an influence on the ability to decode texts in an unknown language (Lambelet & Mauron, 2017). Even though this study failed to establish a connection between performance in RM and personality traits, there might be other sorts of personality traits, which have not been subject to

investigation yet, that influence intelligibility in receptive multilingualism. A personality trait that has been linked to language learning and multilingualism, for instance, is Tolerance of Ambiguity (TA) (Dewaele & Wei, 2012; Chapelle & Robert, 1986). This trait describes behaviour in ambiguous situations. Low levels of TA indicate that ambiguous situations are connected to discomfort and stress, while high levels of TA indicate that ambiguous situations are seen as interesting and desirable (Furnham & Ribchester, 1995). While the initial definition of TA was not specifically linked to language acquisition, previous research has established a connection between this personality trait and language learning. A higher Tolerance of Ambiguity seems to be linked to success in language learning (Chu et al., 2015; Chapelle & Robert, 1986). Ely (1989) further specified the concept of Tolerance of Ambiguity to second language learning, developing the Second Language Tolerance of Ambiguity Scale (SLTAS).

Not only does the personality trait of Tolerance of Ambiguity seem to be a significant predictor of language acquisition (Chapelle & Robert, 1986), Dewaele and Wei (2012) found that this trait was also linked to multilingualism. In their study, multilinguals displayed higher levels of TA than bilinguals and monolinguals. In another study, Dewaele and Ip (2013) found that high levels of TA and Foreign Language Classroom Anxiety were linked as well. Learners that scored high on TA displayed lower levels of Classroom Anxiety and felt they were more proficient. Chu et al. (2015) linked the personality trait to language learning. In a study with learners of Chinese as a second language, using the Second Language Tolerance of Ambiguity Scale (Ely, 1989), they found that tolerance of ambiguity positively correlated with the learner's language proficiency in Chinese. Learners with high levels of Tolerance of Ambiguity were more proficient than learners with medium or low levels of Tolerance of Ambiguity. Therefore, TA might be linked to multilingualism and language learning and it can be suggested that this personality trait would play a role in RM as well. In the case of unknown languages, it might be speculated that learners with higher levels of TA might feel

more comfortable with the target language and therefore would be more successful at decoding unknown words.

*1.3.3. Attitudes*

Attitude towards a language is yet another factor that has been linked to language learning in previous literature. Kuhlemeier, Van den Bergh and Melse (1996) found that for Dutch lower secondary students, attitudes towards the German language had a slight influence on achievements in German lessons. More precisely, a positive attitude towards the German language correlated with better German word comprehension and, consequently, influenced the overall achievements in German class. Within the context of receptive multilingualism, attitudes towards a language are suggested to play a role in intelligibility as well. In the context of Scandinavian languages, attitudes can influence the intelligibility of the languages (Delsing & Lundin Åkesson, 2005). For instance, the asymmetry in understanding between Danish and Swedish has been explained with negative attitudes of Swedes towards the Danish language (Gooskens et al., 2010). Generally, research indicates that a more positive attitude towards a language would lead to a greater willingness to understand that language. While some studies have only found a weak link between attitudes and the understanding of unknown languages (Schüppert, Hilton & Gooskens, 2015), others have linked attitudes to better intelligibility in receptive multilingualism (Bahtina, 2013). Bathina (2013) showed that attitudes play a significant role in the success of receptive multilingualism in Estonian and Russian speakers. It might even be concluded that positive attitudes towards a language might compensate for a lack of proficiency in the target language, which has been shown to be an important factor for effectiveness (Blees, Mak & ten Thije, 2014). Therefore, it could be that positive attitudes towards the target language in RM have a positive influence on intelligibility and, more specifically, in the case of decoding words in the unknown language, may lead to a higher number of correctly decoded words.

*1.3.4. Aptitude*

Finally, language aptitude can be defined as a significant predictor of success in language learning. It describes the ability to learn languages and is believed to consist of several subcomponents (Harley & Hart, 1997). Carroll (1990) defines these abilities as phonetic coding ability, sensitivity to grammar, memory abilities and inductive language learning ability. These abilities can be tested with the Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1959). Abrahamsson and Hyltenstamm (2008) show that a high level of language aptitude predicted the level of ultimate attainment in a language. Participants that scored high on language aptitude also scored higher on a grammaticality judgement task than participants who scored low on language aptitude. The success of language learning has also been found to be predicted by aptitude. In a study by Sparks et al. (1998), the performance of high-proficiency and low-proficiency students could be predicted by their scores on the MLAT. Students scoring high on oral and written communication skills as well as receptive and expressive proficiency in the target language also obtained high scores on the language aptitude test. The authors therefore conclude that language aptitude might be an indicator of student's foreign language skills and proficiency.

In the context of receptive multilingualism, however, language aptitude is a factor that has not been extensively researched yet. Some evidence for the role of language aptitude in RM is provided by Berthele (2011), who linked a part of language aptitude to receptive multilingualism skills. In a cognate guessing task, Swiss participants had to infer unknown words in Danish. Several variables that were thought to be of influence on the performance of the participants were measured, among them parts of the LLAMA Aptitude Test (Meara, 2005). This aptitude test consists of four tasks measuring vocabulary learning, sound recognition, grammatical inferencing and sound-symbol correspondence. Berthele (2011) found that variance in the participants scores could partly be explained by their scores in the vocabulary learning part of the LLAMA aptitude test. Thus, the skill that was tested in this

part of the aptitude test, namely vocabulary learning, might have positively contributed to the inferencing abilities of the participants. It might therefore be interesting to see if language aptitude or, more specifically, a particular part of language aptitude, namely vocabulary learning, plays a role in the success of receptive multilingualism as well.

*1.4. Present study*

The European Union actively promotes plurilingual competence (Council of Europe, 2018). Receptive multilingualism (RM), which is part of plurilingual competence and plurilingual skills, is a mode of communication that is popular in Scandinavia (Maurud, 1976) and has been proven to be effective in the context of Dutch and German communication (Van Mulken & Hendriks, 2012).

      With relation to the question as to how plurilingual skills and competences can be effectively fostered, this study is going to examine the factors that influence RM in young pupils in a German-Dutch language context and to what extent these factors have an influence on RM. This will shed more light on the factors underlying the effectiveness and success of this mode of communication and is of importance for schools and teachers as it might show how receptive multilingualism can be fostered and how the plurilingual competence of pupils can be enhanced. Furthermore, suggestions on how to integrate receptive multilingualism into foreign language teaching can be made. As studies examining receptive multilingualism in pupils (Jentges, Knopp & Sars, in press; Lambelet & Mauron, 2017) found individual differences in the performance of pupils, it is therefore anticipated that there will be individual differences in this study, which might be explained by certain factors that have been under-investigated in the context of RM. The factors that this study will examine are prior knowledge of foreign languages, tolerance of ambiguity, attitudes towards the target language and language aptitude. The insights will provide an explanation for individual differences in RM in pupils. Furthermore, implications for fostering plurilingual skills can be drawn.

In the present study, German pupils will take part in an intervention teaching them about strategies on how to decode a text in Dutch, an unknown language to the pupils. Progress will be monitored by means of a pre-post-test design. Furthermore, a questionnaire measuring attitudes, knowledge of foreign languages and tolerance of ambiguity as well as a language aptitude test measuring vocabulary knowledge (Meara, 2005) will be administered.

*1.5. Hypotheses*

It is expected that pupils will perform differently in the post-test as compared to the pre-test due to the intervention, which might raise awareness for the use of receptive multilingualism and the strategies that can be used to decode a text. More specifically, it is expected that the intervention positively influences scores on the post-test. However, it is also expected that there will be individual differences between pupils in terms of performance. These individual differences might be explained with the factors mentioned above, namely knowledge of foreign language, attitudes, language aptitude and Tolerance of Ambiguity. Since knowledge of foreign languages and especially languages that are related to the target language have been shown to have a positive influence on performance in RM (Berthele, 2011; Gibson & Hufeisen, 2003), it is hypothesised that this knowledge will have a positive influence on task performance as well.

Furthermore, as positive attitudes towards a target language might facilitate intelligibility in RM (Gooskens, 2006), it is hypothesised that more positive attitudes will also have a positive influence on task performance. Moreover, a higher score on the vocabulary learning part of language aptitude (Berthele, 2011) is hypothesised to facilitate success in the task. And finally, the level of Tolerance of Ambiguity is also hypothesised to enhance task performance in RM.

## 2. Method

### 2.1. Participants

Participants in this study are young German pupils from the ages of twelve to fourteen years. The participants should attend German lower secondary education (grade 6 or 7) on a higher level (German "Gymnasium") or comprehensive school (German "Gesamtschule") and should have learned English as a second language and preferably another foreign language at school. There should be some variety in the number of foreign languages learned as more foreign language experience would help yield clearer outcomes for this experiment. Furthermore, the participants should have no previous knowledge of the Dutch language. The recruitment of the participants will take place within the context of the project "Nachbarsprache-buurcultuur" from Radboud University in Nijmegen, the Netherlands. The partner schools of this project are mainly located in the Rhine-Waal-area of Germany which is part of the border region with the Netherlands.

### 2.2. Materials

In order to answer the research question, an intervention teaching the participants about strategies on how to decode a text in Dutch, a pre- and a post-test and a questionnaire were created. The following section will elaborate on the materials used in the intervention while the subsequent sections describe the materials used for the pre- and post-test and the questionnaire.

#### 2.2.1. Intervention

The intervention included four strategies on how to decode texts in Dutch. The strategies used were based on the method of the "Seven Sieves" from the EuroCom project (Hufeisen & Marx, 2007, Klein & Stegmann, 2000), for which instructions for intercomprehension have been published for the Romance and Germanic language families (Klein & Stegmann, 2000; Hufeisen & Marx, 2007). These instructions focus on decoding texts in an unknown language.

The method of the Seven Sieves includes strategies such as making use of vocabulary knowledge of the native language or other languages in order to understand words in the target language, or focussing on morphosyntactic and phonetic properties of the target language in order to be able to decode texts in the target language. As the target group of this study differs from the adult target group of EuroCom, the strategies were adapted for being appropriate and understandable for a younger target group. The strategies were selected and adapted keeping the target groups metalinguistic knowledge in mind. For instance, the strategies include making use of contextual clues and compound words, which the pupils can be expected to have learned at school already. The final four strategies on how to decode texts in Dutch that were used for the intervention are as follows:

1) making use of the knowledge from the pupil's first languages,

2) making use of one's knowledge of other (foreign) languages,

3) making use of contextual clues like pictures and inferencing from other words, and

4) decoding Dutch compound words.

The intervention was created in form of a worksheet and a presentation that was then turned into a screencast, making use of a voiceover by a female speaker. The full set of materials for the intervention can be found in the Appendix (6.1. and 6.2.).

The screencast was recorded in German and started with a general introduction of the study and the decoding strategies. Then, an example text about the kingfisher was presented, which was taken from the Dutch children's magazine Kidsweek (Hurenkamp, 2020) and adapted and shortened for the purpose of the screencast. The text was shown to the participants and then read out loud by a female native speaker of Dutch. Next, the four strategies were presented in the sequence shown above and illustrated with example sentences from the text about the kingfisher. During the screencast, the text in Dutch was read out loud by a female native speaker of Dutch. After each strategy, the participants were asked to solve

a corresponding task on the worksheet. An example of a decoding strategy shown during the screencast is displayed in illustration 1. Illustration 1 shows the third strategy, namely using context. There is a picture of the kingfisher on the left with a headline and a marked part of text, namely the word *ijsvogels* (kingfishers, German: Eisvögel). On the right side, an explanation is given about using the context of a text in order to decode a text in Dutch. Then an extract from the text about the kingfisher is shown and words that can be derived from their context are highlighted in green. During the screencast, additional information about the picture and the word formation of the word *ijsvogels* as well as the highlighted words are given, and it is explained how pupils can decode these words using the context of the text. The full set of slides used for the screencast can be found in the Appendix (6.1.).



Illustration 1. Example picture about a decoding strategy from the screencast.

The worksheet that was created next to the screencast enables pupils to practice the strategies they have learned about during the screencast. The worksheet consists of the text about the kingfisher and five tasks relating to the text. The first four tasks are presented according to the sequence and content of the strategies that were introduced earlier. An

example for a task can be found in illustration 2. Illustration 2 shows the first task on the worksheet. First, a text about the kingfisher and an additional picture are displayed. In the task description, pupils are asked to highlight words in blue they could infer from German.



**Entschlüsselungsstrategien für das Niederländische**

*Aufgabe 1*

**Welche Wörter in dem Text erinnern dich an Wörter aus dem Deutschen? Markiere sie blau.**

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben. Volgens biologen wordt het een topjaar voor de ijsvogel.

Hoe onlogisch het ook klinkt, ijsvogels kunnen niet tegen ijs en kou. Als het water bevroren is, kunnen deze viseters geen vis vangen. Veel ijsvogels sterven daarom tijdens strenge winters.

Maar omdat de winter dit jaar zo zacht was, kun je ze volgens biologen van de zomer volop bewonderen.

Illustration 2. Example task from the worksheet that is presented next to the screencast.

In the second task, participants are asked to mark words they could infer from other languages or dialects they know in the same text and write down their translations. Illustration 3 shows the second task of the worksheet. While the first task put an emphasis on recognising words, the second task asks the pupils to translate words as well.

**Aufgabe 2**
**Welche Wörter in dem Text erinnern dich an Wörter, die du aus anderen Sprachen oder aus einem Dialekt kennst? Markiere sie gelb in dem Text oben und schreibe sie in die Tabelle unten.**

| Niederländisches Wort | Wort in einer anderen Sprache/in einem Dialekt | Mögliche deutsche Übersetzung |
|---|---|---|
| | | |

Illustration 3. Task 2 from the worksheet: decoding words that can be derived from other languages

In the third task, participants are asked to make use of contextual clues and words that could tell them more about the text, mark them in the text and note down their translations. The fourth task asked participants to decode compound words which were partly taken from the text about the kingfisher or semantically related to the topic of the text (e.g. *wintertijd*-winter time). In the fifth and final task, the participants were asked to decode the full text about the kingfisher, using the strategies they had just acquired. The full worksheet can be found in the Appendix (6.2.).

### 2.2.2. Pre- and post-test

Furthermore, a pre- and a post-test were created. Both consisted of twelve Dutch words that had to be translated to German, and a short text with corresponding comprehension questions.

The twelve words in Dutch the participants were asked to translate into German in both the pre- and post-test consisted of four cognates, four half-cognates and four non-cognates. The words were taken from another study in the context of this research project

(Van Hassel, 2020). The cognate status of the words was calculated using Levenshtein distance. Levenshtein distance can be used to assess the distance and similarities between words of two languages and can be used to measure cognate distance, therefore to what extent these words share orthographic overlap (Schepens, 2008). In order to calculate Levenshtein distance, insertions, substitutions and deletions are taken into account and a number between 0 and 1 is produced, with 0 being a cognate (e.g. the word *idee* in Dutch and the word *Idee* in German where no substitutions, insertions or deletions have to take place). For this study, a word having a Levenshtein distance of 0 to 0,3 was considered a cognate, a distance of 0,4 to 0,6 was considered a half-cognate (e.g. the Dutch word *bloem* and the German word *Blume)* and a distance of 0,7 to 1 was considered a non-cognate (e.g. the Dutch word *lente* and the German word *Frühling*). In order to ensure comparability between pre- and post-test, the same distribution of Levenshtein distance was ensured for both sets of words.

After being asked to translate the twelve words from Dutch to German, participants were shown a short informational text in Dutch (Hurenkamp, 2020). For the pre-test, this was a text about Sint-Maarten. For the post-test, a text about Curaçao was used. Both texts were split into four sentences and the participants were asked to translate one sentence at a time. An example sentence from one of the texts is the sentence *De hoofstad van Curaçao is Willemstad. Het historische stadcentrum van Willemstad is heel populair bij toeristen* (The capital city of Curaçao is Willemstad. The historical city centre of Willemstad is very popular with tourists).

The texts were comparable in terms of text length and complexity and contained 57 and 62 words, respectively. Table 1 shows the length in number of words for both texts, the number of cognates, half-cognates, and non-cognates with German. Nouns that contained the name of the topic of the text, such as Sint-Maarten/Saint Martin, Curaçao or the names of the respective capital cities were not included in the cognate status analysis.

|                                        | Pre-test (Sint-Maarten) | Post-Test (Curaçao) |
| -------------------------------------- | ----------------------- | ------------------- |
| Number of words                        | 57                      | 62                  |
| Number of cognate words with German    | 5                       | 8                   |
| Number of half-cognates with German    | 4                       | 4                   |
| Number of non-cognates with German     | 4                       | 5                   |
| **Compound words**                     | 7                       | 7                   |
|   - Containing two cognates   | 2                       | 1                   |
|   - Containing a cognate and half-cognate | 0           | 2                   |
|   - Containing a non-cognate and half-cognate | 2       | 1                   |
|   - Containing one cognate and non-cognate | 3          | 3                   |

Table 1. Comparison of the texts used in the pre- and post-test.

The distribution of words differed slightly for both texts. The text about Sint-Maarten contained twelve nouns (thirteen tokens, twelve types) including compound words, four verbs (six tokens, four types) and four adjectives (four tokens, four types) including compound words. The text about Curaçao contained thirteen nouns (thirteen tokens, thirteen types) including compound words, five verbs (eight tokens, five types) and seven adjectives (seven tokens, seven types) including compound words. Cognate status of the words with German, including compound words, was determined using Levenshtein distance. For Dutch words that were closer to English than to German or were a non-cognate in German, cognate distance with English was determined, resulting in three English cognate or half-cognate words for the first text and two for the second text. English was chosen because it can be assumed that all participants would have learned it as a second language at school, which cannot be assumed about other possible languages. There were respectively seven and six compound words in both texts. The distribution of cognate status in the parts of compound words can be found in table 1 as well.

An example for a compound word used in the pre-test is the word *duikscholen*, which consists of the words *duik* (dive) and *scholen* (schools). The word *scholen* has cognate-status with the German word *Schulen*, while the word *duik* has cognate-status with the German word *tauchen*, but not a graphematic cognate-status as it produces a Levenshtein distance of 0.8. It would therefore be more challenging to decode this word in a written text than in a spoken part.

Next, the participants were asked to answer two comprehension questions per text after reading to ensure that they had in fact read the text and understood the content. Furthermore, an evaluation and a feedback question were included at the end of the post-test. The full version of the pre- and post-test can be found in the Appendix (6.3.1. and 6.3.3.)

Next to the two tests, a questionnaire was developed. This questionnaire consists of general questions about the participants' age, their gender and first language or languages, Tolerance of Ambiguity and attitudes. Furthermore, the participants are asked about the number of languages they speak. They can indicate their self-assessed proficiency in these languages in listening, speaking, writing and reading on a 5-point scale ranging from "very bad" to "very good".

Tolerance of Ambiguity is measured using the Second Language Tolerance of Ambiguity Scale (SLTAS; Ely, 1989). The items on the scale were translated to German. In statements including a specific language, this term was replaced by the general term "foreign languages". Two statements were excluded from the scale as they were too similar to or overlapping with other statements when the term foreign language was used instead of a specific language. Participants can indicate their answer on a 5-point scale ranging from left ("does not apply") to right ("does apply").

Attitudes are measured with 12 statements on a 5-point scale ranging from left ("do not agree") to right ("fully agree"). The statements contained six items that were formulated in a positive way and six items that were formulated in a negative way. The first six

statements were taken and adapted from Gardner (2004) and measure the general attitude towards foreign languages and foreign language learning. The other six statements (e.g. "I don't think the Dutch language is beautiful") measure the attitude towards the target language Dutch and the Netherlands. Both pre- and post-test as well as the questionnaire were merged into one questionnaire using the software Qualtrics (Qualtrics, 2020). Instructions within the questionnaire indicate in which order the parts had to be filled in and when the participants could start the screencast. In the screencast itself, the participants are told when they could finish the second part of the questionnaire and the post-test. The full questionnaire can be found in the Appendix (6.3.2.).

In order to measure the language aptitude of the participants, the LLAMA part B-vocabulary learning (Meara, 2005) is used. This part of the aptitude test has been shown to play a role in success in RM (Berthele, 2011). LLAMA part B- vocabulary learning is an online test for which a programme needs to be installed. The programme shows a screen with twenty objects on it. When starting the test, a timer of two minutes is set. Participants can then click on the objects and the name of the object is displayed on the centre of the screen. They are instructed to remember the name and the corresponding object. When the timer is finished, participants are presented with a name in the middle of the screen and have to choose the corresponding object. Feedback is given in the form of two sounds. At the end of the test, the score of the participant is displayed in the bottom panel of the programme. The score displays the percentage of correct answers by the participant. Instructions for the aptitude test were translated from English to German and provided with the test. The full set of materials from both the pre- and post-test can be found in the Appendix.

*2.3. Procedure*

Under normal circumstances, this experiment would have been carried out in a classroom setting. Due to the Covid-19 situation in the Netherlands, the materials have been digitalised.

The materials can be downloaded from an online platform. The full set of materials includes the screencast and worksheet, the aptitude test and a link to the full questionnaire which includes the pre- and post-test. The participants will first be asked to fill in the pre-test online, which also includes further instructions about the procedure and a statement about privacy. After having completed the pre-test, participants can fill in the rest of questionnaire. The questionnaire starts with general information about the participants, followed by knowledge of first and second languages and self-assessed proficiency. Afterwards, the participants are asked to fill in the Tolerance of Ambiguity scale and questions about attitudes as well as completing the aptitude test. When this part of the questionnaire is completed, further instructions will tell the participant to watch the screencast and solve the tasks on the worksheet. The screencast itself will include further information about the procedure of the experiment. Once the participants have finished watching the screencast and have completed the tasks on the worksheet, they will be asked to go back to the questionnaire and complete the post-test. After finishing the post-test, they will be thanked for their participation and get the possibility to provide any feedback they have concerning the tasks and tests they have just completed. The materials have been pre-tested with one participant, a fourteen-year old girl from the South of Germany.

*2.4. Analysis*

In the following section, it is elaborated on how the data obtained from individual participants will be processed and analysed. The data from the pre- and post-test will be analysed in the same way. For the twelve noun cognates, all decoding attempts will be counted. The attempts will then be coded with zero (0) points for an incorrect translation attempt, half (0.5) points for an incorrect translation with a detected coding strategy, and one (1) point for a correct translation. A detected coding strategy in this case means that the translation was incorrect, but a decoding strategy has been employed (Jentges, Knopp & Sars, in press). Examples for

the decoding attempts can be taken from the pre-testing of the materials. An example for an incorrect decoding attempt would be the word *kat* (cat, German: Katze), which the participant translated with the German word *Riss* (crack). An incorrect coding attempt with a detectable strategy would be the participants translation of the Dutch word *lente* (spring, German: Frühling) with the German word *Ente* (duck). Finally, an example for a correct translation would be the word *afval* (rubbish, German: Abfall) which the participant translated with the German word *Abfall*.

As for the two texts, decoding will take place according to the decoding scheme by Jentges, Knopp and Sars (in press) and on a word- and clause-level. All words where a decoding attempt has been made will be identified. These words will then either be coded as a correct decoding attempt (1 point), an incorrect attempt in which a decoding strategy was detectable (0.5 points) or an incorrect decoding attempt (0 points). Again, a detected coding strategy means that the translation was incorrect, but a decoding strategy has been employed (Jentges, Knopp & Sars, in press). The compound words included in the texts are coded as either being decoded correctly (1 point), being decoded partly correctly (e.g. only one word was decoded correctly or a decoding strategy was detectable) (0.5 points) and being decoded incorrectly (0 points). Examples for the compound words can also be taken from the pre-testing of the materials. An example for a correct translation would be the word *hoofdstad* (capital city, German: Hauptstadt) which the participant correctly translated with the word *Hauptstadt*. An example for a partly corrected word would be the compound word *eiland* (island, German: Insel), which was translated with the word *Umland* (surrounding) and an example for an incorrectly decoded word would be the word *vissoorten* (species of fish, German: Fischsorten), which was translated with the word *Besuchsorten* (place of visit).

As the texts might not be entirely comparable in their distribution of cognates and compound words, standardised scores will be used in order to be able to compare the two texts. For standardised scores, the percentages of correctly decoded cognates, correctly

decoded half-cognates, non-cognates and correctly decoded compound words from the text will be used. These scores will then be summed up to form one composite score. If possible, a quantitative analysis will take place as well.

Furthermore, data will be analysed on a clause-level as well. One point (1) will be assigned if the sentences are translated correctly and the context has been taken into account, half a point (0.5) will be assigned if that is partly the case and zero points (0) will be assigned if the sentences are not translated correctly and the context has not been taken into account. If needed, data will also be analysed qualitatively to investigate further the influence of knowledge of second or further languages.

The items for Tolerance of Ambiguity, Attitudes and knowledge of foreign languages in the questionnaire will be coded according to the 5-point scale, with the negative items being coded reversely. For the Tolerance of Ambiguity scale, Cronbach's alpha will first be calculated in order to ensure internal validity. Data obtained from the Tolerance of Ambiguity will be coded according to Chu et al. (2015). The higher the score for the individual items, the lower the Tolerance of Ambiguity of the participant. The score for the items will be added up to form one composite score.

The data from the items about attitude will be coded in two parts. The first part concerns the attitudes about foreign language learning while the second part concerns the attitudes about the Dutch language and culture. Negative items will be coded reversely. In a first step, Cronbach's alpha will be calculated for the items for both parts to ensure that the items are measuring the same construct. If Cronbach's alpha is greater than .07, it can indeed be assumed that the items are measuring the same construct. If the correlation is less than .07, interfering items will be excluded. After ensuring that Cronbach's alpha is sufficient, a composite score will be calculated for each part. The composite score will be based on the mean of five-point-scale of the items of each part. The higher the score, the more positive the attitude towards foreign language learning and the Dutch language and culture.

In the part in the questionnaire about knowledge of languages, participants can indicate their self-assessed proficiency on a five-point scale for the categories reading, listening, speaking, and writing. In order to obtain one score for the knowledge of languages, the self-assessment and number of languages will be integrated. Proficiency will be calculated by calculating the mean score of each category, which is formed into one composite score. The composite scores per language will then be added together to form one composite score. The higher this score, the higher the self-assessed language proficiency of the participants and number of languages spoken. The aptitude test is going to yield one score which is assigned to each participant. The programme used for the analysis will be IBM SPSS Statistics for Windows, Version 27.0.

For the following analysis, it is assumed that the data are normally distributed. In order to investigate the differences in performance, the means of the pre- and post-test scores will be compared. Afterwards, a dependent samples t-test will be carried out to investigate if there are indeed differences in performance between the pre- and post-test. Based on the scores obtained from the tests and the questionnaire and assuming that data are normally distributed, Pearson's correlation coefficient and a regression analysis will be calculated between the scores in both the pre- and post-test and the background variables obtained from the questionnaire and aptitude test in order to show a possible correlation of the background variables on the difference between the pre- and post-test.

## 3. Expected findings and results

As the study could not be carried out due to the Covid-19 situation in the Netherlands, only expected findings and results can be presented.

The first hypothesis of the experiment was that there will be a difference in performance between the pre- and post-test due to the intervention. It is expected that the number of decoding attempts and correctly decoded items are higher in the post-test.

However, it is also expected that there will be individual differences between the scores of participants as it has been shown in previous studies (e.g. Jentges, Knopp & Sars, in press; Lambelet & Mauron, 2017). It is expected that these individual differences can be explained by the variables measured in this study, namely Tolerance of Ambiguity, knowledge of foreign languages, attitudes and language aptitude.

Another hypothesis stated that the factors measured in this experiment will have a positive influence on the performance in the tests. It is therefore expected that the factors positively contribute on pupil's scores on the pre- and post-test and lead to more decoding attempts and more correct decoding attempts. The further hypotheses stated that knowledge of foreign languages, attitudes, Tolerance of Ambiguity and language aptitude would positively enhance task performance. More specifically, it can be expected that pupils with knowledge of second and further languages and a higher proficiency in these languages will attempt more decoding attempts and more correct decoding attempts in both tests. The score on the Tolerance of Ambiguity scale is also expected to correlate with more decoding attempts. More specifically, a higher score on the Tolerance of Ambiguity scale might correlate with a higher number of decoding attempts in both tests. As for attitudes, pupils with more positive attitudes towards foreign language learning and the Dutch language and culture are expected to attempt more decoding attempts. And lastly, the score on the aptitude test is also expected to correlate with correct decoding attempts. A higher score on the aptitude test should correlate positively with a higher number of coding attempts and correct decoding attempts.

## 4. Discussion and conclusion

As no data could be obtained, the following discussion and conclusion section will first discuss the expected findings and results, reflect on the process of material development. This is followed by sections on pedagogical implications, limitations of the study and directions for future research in receptive multilingualism.

*4.1. Expected findings and results*

The findings of this experiment might shed light on the factors that are underlying receptive multilingualism in pupils and provide a possible explanation for the individual differences in performance that other studies have found (Lambelet & Mauron, 2017; Jentges, Knopp & Sars, in press). Furthermore, implications for education might be drawn.

First of all, the performance of the participants in the pre- and post-test is expected to differ due to the intervention. It can be expected that participants show a better performance on the post-test than the pre-test. If that turns out to be true, it can be concluded that pupils indeed profit from being made aware of intercomprehension strategies and practicing these. However, this hypothesis might not hold true if the individual differences vary too much between participants, which has been the case in the study by Jentges, Knopp and Sars (in press).

Individual differences between the participants are expected, which would be in line with other studies (Jentges, Knopp & Sars, in press; Lambelet & Mauron, 2017). It could be established that the variables brought forward in this study have an influence on the difference in performance in the post-test.

It was hypothesised that knowledge of foreign languages would positively enhance the performance in the task. If that would indeed be the case, the results would be in line with earlier findings (Gibson & Hufeisen, 2003). However, since it can be expected that the participants do not vary too much in terms of their educational background and hence the foreign languages they have learned, not much variation in terms of second and further languages is expected. Comparing participants from different areas with different language backgrounds might yield more significant findings. These findings would also shed light on the role that language proficiency plays in this correlation. However, as the proficiency in this study was self-assessed proficiency, the findings might show no correlation between knowledge of second and further languages and task performance. Measuring actual

proficiency might reveal different results. Another factor that might hamper the results might be the quantitative analysis that does not discriminate between languages that are related to the target language and languages that are not related to the target language. Therefore, very little can be concluded about this factor. In order to solve this, a qualitative analysis taking into account if the languages are related to the target language and to what extent they influence performance in the task might show if this factor has an influence on performance in RM.

A second hypothesis was that positive attitudes would correlate with better results in the task. The attitudes measured in this study were attitudes towards foreign language learning and the Dutch language and culture. The findings might show that one of these two shows a higher correlation with performance in the task and might therefore be more important in the context of receptive multilingualism. There might also be no correlation between attitudes and the results in the task, which might be due to the questionnaire and the items used.

Another hypothesis stated that a high level of Tolerance of Ambiguity and a high language aptitude would be positively related to task performance. The findings would show if and to what extent these two factors indeed play a role in receptive multilingualism and even if they might be related to other factors, like the knowledge of other second and foreign languages.

*4.2. Material development*

The following section will elaborate on the process of material development and the different alterations that had to be made.

The development of the materials for this experiment went through different stages and the materials were adapted based on feedback and pre-tests of the materials. First, the four strategies were selected, and the intervention was created in the form of a PowerPoint presentation. A script for the screencast was written and further adapted after receiving

feedback on the content and structure. The final script was then used for the screencast, which was created by recording the presentation and adding a voiceover for the explanation of the strategies and a voiceover for the text in Dutch. Next to the screencast, the two texts and materials for the pre- and post-test were selected, and the tests were created. The materials were adapted throughout the process after being pre-tested and receiving feedback on them. Furthermore, the two texts about Sint-Maarten and Curaçao were adapted after comparing the occurrence of compound words and cognates in both texts. However, they still were not entirely comparable in terms of word distribution even after being adapted. This is due to the fact that the authenticity of materials was prioritised, and further alteration of the texts would lead to less authentic material. The finished materials were then pre-tested again with a fourteen-year old pupil from Southern Germany. The pupil recorded having trouble taking the aptitude test and had problems understanding the instructions concerning the worksheet that was presented together with the screencast. After receiving feedback, the instructions were further adapted to clarify the instructions about the worksheet and the aptitude test. Furthermore, the pupil reported that the sound quality of the screencast differed in quality as the spoken text in Dutch and the general explanation of the strategies was recorded separately. As for the complexity of the materials, the pupil reported having no problems understanding the strategies or tasks on the worksheet and in the questionnaire.

Several challenges arise for the analysis when looking at the results from the pre-testing. First of all, when coding the translation of the twelve Dutch words, it might be unclear whether an incorrect coding attempt was indeed incorrect or if a decoding strategy was employed. This might be due to the fact that the participant has knowledge of languages the coders has no knowledge of, which makes it hard to determine if the participant employed the strategy of using foreign language knowledge. The same goes for the decoding of compound words. As for the coding of the texts used in the pre- and post-test, the pre-testing showed that it might be challenging to decide which sentences have been translated incorrectly or partly

correct. An eventual coding scheme should therefore be based on actual results in order to avoid uncertainty. Furthermore, data should be coded by at least two independent coders and intercoder reliability should be calculated in order to make the coding process more reliable.

During the development of materials, the advantages and disadvantages of online material became clearer. While one of the advantages of an online test clearly remains the fact that more participants can be reached and can take the test from home, there were also some challenges, especially for this type of experiment. The first challenge might be the fact that the materials for this study were quite extensive and participants might therefore be more prone to drop out in the middle of the experiment or not finish the tasks. This might also be the case if the instructions or the sequence of the materials are unclear to the participants. Additionally, the online setting made it more challenging to integrate certain materials into the experiment. The aptitude test especially posed a challenge on the integration of materials. As the programme could not be integrated into the questionnaire, it would have to be downloaded by the participants.

Furthermore, an online setting also has the disadvantage of having less control. Participants are able to use the internet while taking part in the intervention or the questionnaire and can therefore look up the words and sentences from the tasks in an online dictionary, which might alter the results of this study. In the case of the aptitude test, participants cannot be observed while taking the test. It might therefore be the case that they will indicate another score than their true score on the test. Therefore, an offline setting might be better suited in some cases as there is more control and participants cannot drop out as easily as in an online setting.

## 4.3. Pedagogical implications

The findings and results of this study are expected to have some implications in a pedagogical context of foreign language teaching. First of all, RM and intercomprehension tasks are not

yet widely used and implemented in foreign language teaching. If a short intervention about RM would indeed be effective in fostering plurilingual skills, it might make sense to include RM and intercomprehension tasks in the classroom. In general, including intercomprehension tasks in foreign language teaching might be beneficial for pupils by fostering plurilingual skills and competences (Lambelet & Mauron, 2017). Indeed, Lambelet and Mauron (2017) conclude that the use of these kind of tasks might motivate pupils to actively develop these skills. Therefore, the use of these tasks is encouraged.

Furthermore, the data might show individual differences in learners and the extent to which the factors investigated determine the performance in the tasks. This would mean that not all pupils are equal when it comes to receptive multilingualism and that the strategies and approaches might not work for all learners. Therefore, a more flexible approach or several approaches to teaching plurilingual skills and competence would be needed.

Furthermore, if the factors brought forward in this study would indeed have an influence on pupils' performance in RM, some implications for classroom teaching can be drawn. For instance, if Tolerance of Ambiguity indeed shows a correlation to performance in RM, teachers might want to adapt the tasks so that they are less ambiguous for learners that score low on this trait. Some recommendations for making classroom learning less ambiguous can be found in Dewaele and Ip (2013) and include stressing the teacher's expectations and furthermore explaining strategies to cope with uncertainty and ambiguity. If negative attitudes towards foreign language learning would have a negative effect on understanding and intelligibility on receptive multilingualism, teachers could include other forms of learning in order to facilitate positive attitudes. For instance, Lasagabaster and Sierra (2009) show that programmes such as Content and Language Integrated Learning (CLIL) can help increasing attitudes towards language learning.

Additionally, teachers should be aware of the importance and differences of characteristics or personality traits on foreign language learning and keep these in mind when

developing new tasks or strategies targeted towards the development of plurilingual skills. For instance, the differences between pupils' Tolerance of Ambiguity can be taken into account when describing a task. Furthermore, the pupils' knowledge of second and further languages can be exploited when developing tasks by including words that can be derived from other languages.

*4.4. Limitations*

An obvious limitation of this study is the lack of data obtained. Therefore, it can only be speculated what the results of the experiment would be, how they would relate to earlier findings and to what extent they have implications for foreign language teaching and the topic of receptive multilingualism. However, there might be a few limitations to this study when carried out. One of them would be the length of the questionnaire and the pre- and post-tests. As the test battery is quite extensive, participants might lose motivation when taking the test which might result in less authentic answers or dropping out of the experiment. This problem might be of importance for the post-test especially as it has to be taken after the pre-test, questionnaire and the intervention. A solution to this might be changing the sequence of the materials and presenting the post-test directly after the intervention and the questionnaire after the post-test.

Another limitation of this study is the choice for the materials in the pre- and post-test, as mentioned in the discussion of material development. As both materials have been selected based on their authenticity, they are not entirely comparable, and the level of Dutch might be too high for the target group. However, it can be quite challenging to find authentic material that is comparable and therefore suitable for a comparison between the pre- and post-test.

A third limitation could be the online form of the materials which brings some disadvantages. First of all, participants can just drop out during the experiment due to the less controlled online setting. Furthermore, instructions are less clear and can easily be

misunderstood. A solution to this would be to create one cohesive questionnaire that includes all the materials, which was challenging due to the format of some tests and the screencast and worksheet.

Another factor that should be taken into account is the homogeneity of the suggested participant group. As the participants have a similar educational background, it might be expected that their second and further languages might be the same for a for the most part. In other words, not much variation is expected in terms of language backgrounds. Future studies should recruit a more varied participant group in terms of language background, for instance pupils from bilingual schools with a different language than English.

Furthermore, this study uses a self-assessment of the participants in order to determine their proficiency in foreign languages. A self-assessment was chosen as an actual language proficiency test would have been to extensive for the materials. However, as studies have shown that self-assessed proficiency is not always an accurate representation of actual proficiency (Edele et al., 2015), pupils might not be correct with their subjective assessment. In the future, if it is not too extensive for the type of experiment, language proficiency of pupils could therefore be measured with a test in order to obtain more correct results.

## 4.5. Further research

Further research in the field of receptive multilingualism could focus on other factors that have not been mentioned in this study and have not yet been investigated by literature. There could be other personality traits, like the personality trait of the Big Five employed by Lambelet and Mauron (2017) in their study, or participant characteristics that have an influence on understanding and intelligibility in receptive multilingualism. It would be interesting to see to what extent these factors play a role in RM. As it has also been shown that the type of communication plays a role in RM (ten Thije, 2018), comparing how pupils would perform in a spoken language task as opposed to a written language task might also

yield insightful results.

Further studies could also concentrate on regional and age differences between pupils. As the target group of this study would be limited to a certain area to Germany, which is close to the Dutch border, it might be that pupils have more knowledge of Dutch than they think due to dialect knowledge or exposure to the Dutch language from occasional visits across the border. Further research could therefore concentrate on pupils from different areas of Germany and investigate if there are regional differences in pupils in terms of performance. Another step would be to concentrate on pupils from different countries. For instance, it would be interesting to compare the results of German pupils decoding Dutch sentences and Dutch pupils decoding German sentences to investigate if there are similar patterns and to what extent language asymmetry would influence the performance.

Furthermore, future research could take into account the age of the participants. As age has been shown to be of importance for intelligibility and understanding in receptive multilingualism (e.g. Vanhove, 2014; Berthele, 2011), research could focus on the comparison of different age groups of pupils. It could namely indeed be that there are individual differences between pupils that are due to their age.

And lastly, further research could also concentrate on the influence of the factors mentioned in this study in adults. Findings might yield that these factors might be important for the effectiveness and intelligibility in receptive multilingualism in adults as well. Especially the factor aptitude might be of interest for future studies. As it has been suspected that this factor might play a role in receptive multilingualism (Berthele, 2011), further research seems necessary in order to determine to which extent this factor might be responsible for the effectiveness and intelligibility in RM in adults.

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# 6. Appendix

## 6.1. Intervention

Screencast PowerPoint
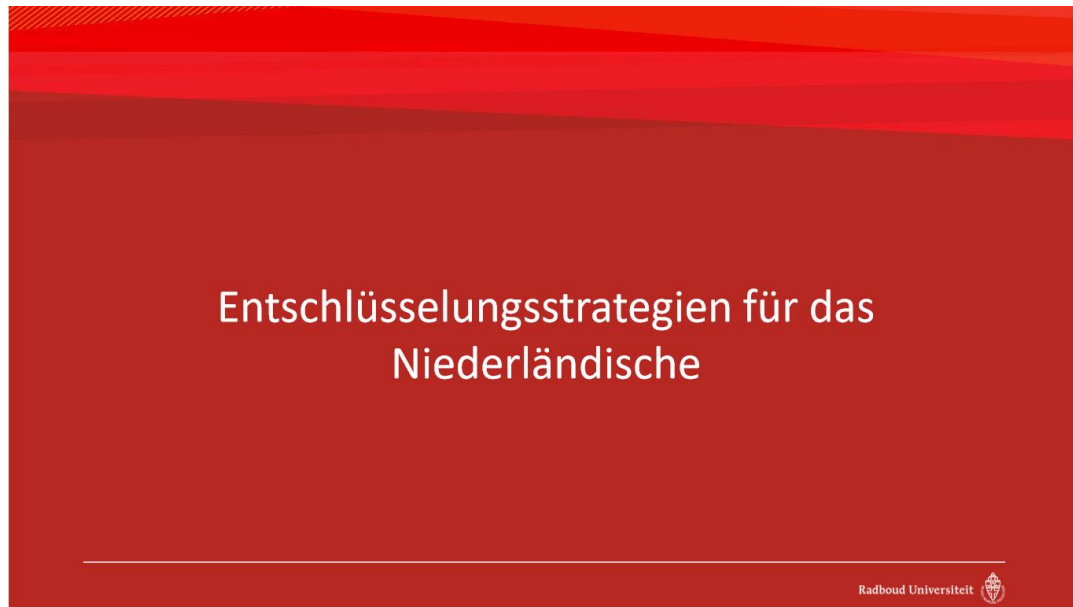


Slide 1



Slide 2

## Strategien

- **Wörter aus dem Deutschen**
- **Wörter aus anderen Sprachen**
- **Kontext**
- **Wortzusammensetzungen**

Slide 3

## Text

**VEEL IJSVOGELS TE ZIEN: ZO HERKEN JE ZE**



Wovon könnte dieser Text handeln?

- Adaptiert von https://www.kidsweek.nl/filmpjes-dieren/veel-ijsvogels-te-zien-zo-herken-je-ze

Slide 4

**Slide 5**



**Slide 6**

Slide 7



**Strategie 1: Wörter aus dem Deutschen**

Für das Textverständnis kannst du deine Kenntnisse aus dem Deutschen gebrauchen. Viele niederländische Wörter ähneln deutschen Wörtern und haben dieselbe oder eine ähnliche Bedeutung.

**VEEL IJSVOGELS TE ZIEN: ZO HERKEN JE ZE**

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben.

blauwe = blaue
wil = will
oren = Ohren

- Aufgabe 1

Slide 8

## Strategie 2: Wörter aus anderen Sprachen

Auch Wörter aus anderen Sprachen oder Dialekten können dir helfen, niederländische Texte zu entschlüsseln. Denke zum Beispiel an Wörter aus dem Englischen oder Französischen oder aus einem Dialekt, den du kennst.

**VEEL IJSVOGELS TE ZIEN: ZO HERKEN JE ZE**

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben.

water = Englisch *water* = Deutsch *Wasser*

zien = Englisch *see* = Deutsch *sehen*

- Aufgabe 2

Radboud Universiteit

Slide 9

## Strategie 3: Kontext



VEEL IJSVOGELS TE ZIEN: ZO HERKEN JE ZE

Der Kontext eines Textes kann dir ebenfalls bei der Entschlüsselung helfen. Schaue zum Beispiel nach Bildern oder nach Wörtern, die dir mehr Informationen geben können.

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben.

- Aufgabe 3

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Slide 10

## Strategie 4: Wortzusammensetzung

Bei einer Wortzusammensetzung verschmelzen zwei Wörter zu einem Wort. Wenn du niederländische Texte entschlüsselst, kann es dir helfen, lange Wörter in ihre Einzelteile zu zerlegen.

Ein Beispiel für eine Wortzusammensetzung ist das Wort **Schultasche = Schul + tasche**

**wintertijd = winter + tijd = Winter + Zeit**

- Aufgabe 4

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Slide 11

## Abschlussaufgabe 5

### VEEL IJSVOGELS TE ZIEN: ZO HERKEN JE ZE

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben. Volgens biologen wordt het een topjaar voor de ijsvogel.

Hoe onlogisch het ook klinkt, ijsvogels kunnen niet tegen ijs en kou.
Als het water bevroren is, kunnen deze viseters geen vis vangen. Veel ijsvogels sterven daarom tijdens strenge winters.

Maar omdat de winter dit jaar zo zacht was, kun je ze volgens biologen van de zomer volop bewonderen.

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Slide 12

# Vielen Dank!

Slide 13

*6.2. Worksheet corresponding to screencast*

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## Entschlüsselungsstrategien für das Niederländische

### Aufgabe 1

**Welche Wörter in dem Text erinnern dich an Wörter aus dem Deutschen? Markiere sie blau.**

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben. Volgens biologen wordt het een topjaar voor de ijsvogel.

Hoe onlogisch het ook klinkt, ijsvogels kunnen niet tegen ijs en kou. Als het water bevroren is, kunnen deze viseters geen vis vangen. Veel ijsvogels sterven daarom tijdens strenge winters.

Maar omdat de winter dit jaar zo zacht was, kun je ze volgens biologen van de zomer volop bewonderen.

### Aufgabe 2

**Welche Wörter in dem Text erinnern dich an Wörter, die du aus anderen Sprachen oder aus einem Dialekt kennst? Markiere sie gelb in dem Text oben und schreibe sie in die Tabelle unten.**

| Niederländisches Wort | Wort in einer anderen Sprache/in einem Dialekt | Mögliche deutsche Übersetzung |
|---|---|---|
|  |  |  |

*Aufgabe 3*

**Welche Wörter im Text kannst du aus dem Kontext ableiten? Markiere sie rot im Text und beschreibe hier, was sie bedeuten könnten.**

*Aufgabe 4*

**Hier stehen einige Zusammensetzungen, die teilweise aus dem Text stammen und teilweise nicht. Was könnten sie bedeuten?**

| Niederländisches Wort | Einzelteile | Deutsche Übersetzung |
|---|---|---|
| topjaar | | |
| ijsvogel | | |
| winterweer | | |
| viseter | | |
| waterdruk | | |
| zomerdag | | |

*Aufgabe 5*

**Du hast jetzt gelernt, Wörter zu entschlüsseln. Dieses Wissen kannst du benutzen, um ganze Sätze zu entschlüsseln. Versuche jetzt, den ganzen Text zu entschlüsseln. Lass dir dabei Zeit, du musst nicht alles übersetzen.**

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Page 2

Een hoog en luid getjilp en daarna een blauwe flits over het water. Wie een ijsvogel wil zien moet goede oren en ogen hebben. Volgens biologen wordt het een topjaar voor de ijsvogel.

Hoe onlogisch het ook klinkt, ijsvogels kunnen niet tegen ijs en kou. Als het water bevroren is, kunnen deze viseters geen vis vangen. Veel ijsvogels sterven daarom tijdens strenge winters.

Maar omdat de winter dit jaar zo zacht was, kun je ze volgens biologen van de zomer volop bewonderen.

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**1. Hallo und herzlich Willkommen zu meiner Umfrage, die ich im Rahmen meiner Masterarbeit an der Radboud Universität Nijmegen durchführe.**
**Die Antworten, die du hier gibst, sind anonym, werden nur für wissenschaftliche Zwecke genutzt und nicht an Dritte weitergegeben.**
**Dir wird eine Nachricht angezeigt, wenn du mit dem ersten Teil des Fragebogens fertig bist. Dann kannst du den Workshop machen, der aus einer Präsentation und einem Arbeitsblatt besteht, und im Anschluss daran den zweiten Teil des Fragebogens bearbeiten.**

**Die Umfrage und Materialien sind am leichtesten an einem Laptop oder Computer zu bearbeiten (Mac oder Windows).**

**Vielen Dank für deine Teilnahme!**
**Sarah Löber**

*6.3.1. Pre-test*

**2. Im Folgenden siehst du einige Wörter auf Niederländisch. Probiere, diese ins Deutsche zu übersetzen. Wenn du die Übersetzung nicht weißt, kannst du einen Punkt (.) in das Feld schreiben oder nur Teile des Wortes übersetzen.**

1. geschiedenis
2. man
3. boom
4. vader
5. week
6. school
7. tijd
8. winter
9. tafel
10. vogel
11. bloem
12. lente

**3. Versuche, die folgenden Sätze ins Deutsche zu übersetzen.**

**4. Sint-Maarten vormt samen met het Franse Saint Martin het eiland Sint Maarten, gelegen in de Caribische Zee (Noord-Amerika).**

_____

_____

_____

_____

_____

**5. De hoofdstad van Sint Maarten is Philipsburg. Sint Maarten staat bekend als veel gekozen vakantiebestemming voor vooral Amerikanen.**

_____

_____

_____

_____

_____

**6. Het landschap is heuvelachtig en heeft mooie stukken zandstrand.**

_____

_____

_____

_____

_____

**7. Het eiland staat bekend om de vele watersportfaciliteiten zoals snorkeltochten en windsurfen.**

_____

_____

_____

_____

**8. Versuche, die folgenden Fragen auf Deutsch zu beantworten.**

**9. Aus welchem Land kommen die meisten Touristen, die Sint-Maarten besuchen?**

_____

_____

_____

_____

**10. Welche Aktivitäten kann man auf Sint-Maarten unternehmen?**

_____

_____

_____

_____

_____

*6.3.2. Questionnaire*

**11. Ich bin...**
1. Ein Mädchen
2. Ein Junge
3. Keine Antwort

**12. Ich bin ... Jahre alt.**

_____

**13. Meine Muttersprache ist... (Bei dieser Frage kannst du auch beide Antworten anklicken)**

1. Deutsch

2. Andere, nämlich...

_____

**14. Ich kenne noch andere Sprachen...**

1. Ja, nämlich _____

2. Nein

**15. Hier kannst du mehr über die Sprachen erzählen, die du in der vorigen Frage angegeben hast.**

Sehr schlecht – schlecht – teils gut/teils schlecht – gut – sehr gut

Verstehen
Lesen
Schreiben
Sprechen

Wie hast du die die Sprache gelernt? Unterricht – außerhalb der Schule (Sprachkurs, etc.) – Ohne Unterricht (über Freunde, Familie, Ferien, etc.) – Anders

**16. Gebe an, inwiefern die folgenden Aussagen auf dich zutreffen.**

Trifft nicht zu – Trifft eher nicht zu – teils-teils – Trifft eher zu – Trifft zu

1. Wenn ich etwas in einer Fremdsprache lese, werde ich ungeduldig, wenn ich es nicht komplett verstehe.
2. Es stört mich, dass ich nicht alles verstehe, was mein Lehrer im Fremdsprachenunterricht sagt.
3. Ich mag es nicht, wenn ich beim Schreiben in der Fremdsprache meine Ideen nicht genau ausdrücken kann.
4. Ich finde es frustrierend, dass ich manchmal die Grammatik einer Fremdsprache nicht richtig verstehe.
5. Ich fühle mich nicht wohl, wenn ich merke, dass meine Aussprache in einer Fremdsprache nicht ganz stimmt.
6. Ich lese nicht gern fremdsprachliche Texte, bei denen es länger dauert, bis ich die Bedeutung begreife.
7. Es stört mich, dass es mir trotz Lernen schwerfällt, die Grammatik in einer Fremdsprache beim Sprechen und Schreiben gut zu verwenden.
8. Es stört mich, wenn mein Lehrer im Fremdsprachenunterricht ein Wort benutzt, das ich nicht kenne.
9. Ich fühle mich nicht wohl, wenn ich beim Sprechen in einer Fremdsprache meine Ideen nicht deutlich kommunizieren kann.
10. Es stört mich, dass ich manchmal keine Wörter in der Fremdsprache finden kann, die genau dasselbe bedeuten, wie bestimmte Wörter in meiner Sprache.

**17. Inwiefern stimmst du mit den folgenden Aussagen überein?**

Stimme gar nicht zu – Stimme eher nicht zu – Unentschieden – Stimme eher zu – Stimme voll zu

1. Ich möchte mehrere Fremdsprachen sprechen können.
2. Das Lernen von Fremdsprachen macht mir keinen Spaß.
3. Ich wünschte, ich könnte Webseiten in vielen Sprachen lesen.
4. Ich interessiere mich nicht für Fremdsprachen.
5. Das Beherrschen von Fremdsprachen ist nicht wichtig für meine Zukunft.
6. Mir ist es wichtig, mit Menschen aus verschiedenen Kulturen kommunizieren zu können.
7. Ich möchte Niederländisch lernen.
8. Ich finde die niederländische Sprache nicht schön.
9. Ich möchte die Niederlande und die niederländischen Menschen besser kennenlernen.
10. Niederländisch zu lernen ist für mich nicht einfach.
11. Niederländisch zu beherrschen bringt mir keine Vorteile.
12. Ich finde die Niederländer offen und tolerant.

**18. Das war der erste Teil des Fragebogens. Du kannst jetzt den Workshop (Screencast und Arbeitsblatt) machen und im Anschluss daran den zweiten Teil bearbeiten.**

**Wenn du fertig bist mit dem Workshop, klicke auf den Pfeil unten.**

*6.3.3. Post-test*

**19. Im Folgenden siehst du einige Wörter auf Niederländisch. Probiere, diese ins Deutsche zu übersetzen. Wenn du die Übersetzung nicht weißt, kannst du einen Punkt (.) in das Feld schreiben oder nur Teile des Wortes übersetzen.**

1. afval
2. steen
3. aarde
4. wekker
5. taal
6. kat
7. maand
8. brief
9. kaars
10. idee
11. schoen
12. trap

**20. Versuche, die folgenden Sätze ins Deutsche zu übersetzen.**

**21. Curaçao is een eiland en zelfstandig land binnen het Koninkrijk der Nederlanden, gelegen in de Caribische Zee.**

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**22. De hoofdstad van Curaçao is Willemstad. Het historische stadcentrum van Willemstad is heel populair bij toeristen.**

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**23. Op Curaçao zijn er veel stranden en het zeewater is helder en turquoise; met talloze vissoorten en kleurrijk koraal.**

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**24. Er zijn diverse duikscholen en men kan zwemmen met dolfijnen.**

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**25. Versuche, die folgenden Fragen auf Deutsch zu beantworten.**

**26. Was ist besonders beliebt bei Touristen auf Curaçao?**

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**27. Welche im Wasser lebende Tiere gibt es auf Curaçao?**

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**28. Feedback und Anregungen**

Wie haben dir die Aufgaben gefallen? Hast du noch Fragen oder Anregungen, die du gern mitteilen möchtest? Du kannst sie in dieses Textfeld schreiben.

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**29. Vielen Dank für deine Teilnahme!**