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Mediated interpersonal communication in friendships among digital natives:

How the advancement of personal media changed German *Gymnasium* students' communication

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Abstract

Within the last several years, new types of media for interpersonal communication have been developed. This means that the personal media environment of current students at German *Gymnasien* is different to that of former students. In turn, it is assumed that mediated interpersonal communication with friends has changed as well. This study seeks to highlight and reason these changes through an investigation of former and current *Gymnasium* students' communicative practices via personal media. Although these two groups are both proclaimed to be "digital natives", a difference may exist, as different forms of communication media were available to them when they grew up. It seems therefore accurate to refer to them as "early digital natives" and "late digital natives" depending on when they were born in the course of the developments.

Insights from twelve interviews with former and current students were analysed by the means of grounded theory. The results show that the late digital natives' mediated interpersonal communication differs considerably as it is more concentrated on one medium and characterised by a continuous flow of communication. These results, among others, are discussed and explained with the help of the media capabilities, the medial-conceptional distinction, and the niche theory. Corresponding communicative changes are argued and brief comments are made on the concepts of friendship and digital natives. The study concludes that the personal media environment has a considerable but not exclusive impact on the students' mediated interpersonal communication and testifies to how quickly communicative changes can take place.

Keywords: *mediated interpersonal communication, personal media, digital natives, friendship, communicative change, German Gymnasium.*

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1. Introduction

A mere few years ago, the technological status quo regarding the ways to communicate with one's friends was different in many ways (Ledbetter, 2008). Before 2010, Facebook, WhatsApp, and smartphones were already introduced but not used to the extent to which German adolescents use them nowadays (Klingler, 2008; Klingler, Feierabend, & Turecek, 2015). German *Gymnasium* students who graduated directly after 2010 spent almost their entire school time without the communication technology that they and current *Gymnasium* students now use on a daily basis (Prensky, 2001). The communicative environment has changed and developed at a fast pace: computers and laptops became standard equipment of households, mobile phones became popular before they were replaced by smartphones, and the internet became today's social media world (Dingli & Seychell, 2015).

As Krotz (2009) points out, media has played a crucial role in the development of children ever since but it has changed to a completely new form. He states that "we should speak of new mediatized forms of socialization and of growing up in or into a mediatized society" (Krotz, 2009, p. 22). This society relies on mediated interpersonal communication, especially in a digital sense, as it links the concept of communication competence to the competence in mediated interpersonal communication (Hwang, 2011).

The generation or population that is connected to this specific period has been given several names; one of these conceptions is "digital natives", which seeks to label everyone who was born after 1980 (Prensky, 2001). This generation grew up with new digital technologies and integrated them into their lives as no other generation before (Dingli & Seychell, 2015; Prensky, 2001). Although it is referred to as *one* group of digital natives, there seem to be two separate groups depending on when they were born during the recent communicative advancements (Dingli & Seychell, 2015). This thesis refers therefore to "early digital natives" who were born in the early 1990s and "late digital natives" who were born in the early 2000s.

Communication as the core activity of human beings has constantly acquired new forms of mediated interpersonal communication (Krotz, 2009). These new types of communication media "have been used by people to make communication more convenient [and] to make communication independent of the actual face-to-face situation" (Krotz, 2009, p. 23). They enabled communication to overcome distances and time differences, which made people less reliant on face-to-face encounters. The recent developments of communication technologies may have changed the communicative practices in friendships of current German *Gymnasium* students in comparison to their equivalents from roughly ten years ago. Hence, these technological advances within the last years lead to the hypothesis that the mediated interpersonal communication among friends inside and outside school changed through these developments (Ledbetter, 2008).

The next section discusses the purpose and significance of this study, which is followed by the precise outline of the research problem and corresponding research questions. In section two, the theoretical background is introduced and emphasises all elements of the research problem: First, the study's main concept "mediated interpersonal communication" is argued. Second, friendship and communication in school are given an overview. The third subsection

provides a discussion of the label "digital natives", its meaning, criticisms, and alternative additions. Fourth, the relevant media technological developments are presented and examined from three selected theoretical frameworks. The section ends with an overview of studies that can be connected to this thesis.

In order to explore the stated hypothesis, the study examines the interview data from previous and current *Gymnasium* students who have an age difference of seven to ten years. The analysis was guided by grounded theory. This methodological approach, corresponding ethical considerations and limitations are presented in section three. In the fourth section, the results are presented separately for the two groups of digital natives. This is followed by a comparison to highlight the differences. The discussion concerns the main findings and the theoretical background regarding the media for mediated interpersonal communication, the communicative changes, and the concepts of friendship and digital natives. Finally, the main conclusions are summarised and potential topics for future research are outlined.

1.1. Purpose and significance

The purpose of this thesis is to provide an insight into a specific research field of communication and to contribute to the existing research of interpersonal communication among friends. The study of "mediated communication has a relatively brief history in the field of interpersonal communication" (Ledbetter, 2014, p. 458), which is why the number of related studies is limited. In turn, no other studies have been conducted using the current study's design.

This study seeks to demonstrate that the environment of communication media in which German *Gymnasium* students develop and have developed, has a considerable impact on their way of communicating with their friends. It may testify to how quickly communicative changes can occur and that the digital natives may need to be differentiated because of contrasting practices of mediated interpersonal communication. The current time period favours the execution of this study because it makes it possible to investigate two groups of students who differ in their experiences. Through the study's findings, the mediated interpersonal communication at German *Gymnasien* and the influencing factors on its characteristics can be made understandable. The findings may contribute to the body of knowledge about the early and late digital natives, their communicative needs and practices.

1.2. Research problem and question

The research problem of this study is situated in the field of communication with a focus on interpersonal communication, more specifically, on the mediated interpersonal communications within the friendships of German *Gymnasium* students. It should be noted that this thesis only refers to media in terms of communication technologies that are used for interpersonal communication. It does not cover media in general.

Due to the development of the media environment prior to and after the turn of the millennium, this study expects the results to show a change in how friends communicate with each other via media. Although they are all claimed to be "digital natives" (Prensky,

2001), the technological advances within media may have influenced the communication of current *Gymnasium* students in comparison to students that graduated in 2011 and 2012. The uniqueness of these two groups is that the early digital natives have experienced the environmental changes of media themselves throughout their schooldays, while the late digital natives are only familiar with the current media environment (Prensky, 2001).

The study is limited to German students at the so called "Gymnasium". The *Gymnasium* provides secondary education after the four years of primary school. It is one of three types of secondary schools in Germany and provides the most advanced education that qualifies for higher education. The focus lies on mediated interpersonal communication and therefore excludes an investigation of face-to-face communication. Face-to-face communication is assumed to be a predominant part of friendships (e.g., Baym, Zhang, & Lin, 2004) and would need a much more detailed linguistic examination to pinpoint communicative changes in relation to different media environments. Hence, the study investigates German *Gymnasium* students and their mediated interpersonal communication at two distinct but nearby points in time to explore the assumed communicative change. The research is guided by the following two research questions:

(1) *How* does the mediated interpersonal communication among friends at German *Gymnasien* differ between digital natives born before and after the turn of the millennium?

(2) *Why* does the mediated interpersonal communication among friends at German *Gymnasien* differ between digital natives born before and after the turn of the millennium?

2. Theoretical background

The theoretical background consists of five subsections that cover the most important definitions and theories of this study. First, the concept of mediated interpersonal communication is derived from its components. Second, friendship as a term is defined and related to communication and the context "school". Third, the generational label "digital natives" is discussed. Fourth, the media technological developments of the relevant time period are examined and three theories for their characterisation are introduced. A review of previous research that is connected to this thesis finalises the theoretical background.

2.1. Mediated interpersonal communication

The term "mediated interpersonal communication" can be disassembled into three components: mediated communication, interpersonal communication, and communication itself. To begin with the broadest and most basic conception, the definition of communication that is applied in this study is primarily based on Allwood (2002). Allwood (2002) defines communication as the "transmission of content X from a sender Y to a

recipient Z using an expression W and a medium Q in an environment E with a purpose/function F" (p. 8). This single transmission is part of an exchange process of several transmissions and has to be seen as such (Trenholm & Jensen, 2000). Sender and recipient can be both understood as communicators in such a process who may engage with different abilities respective of their communicative competences (Allwood, 2002; Trenholm & Jensen, 2000).

This definition is useful because of its concrete elements, which facilitate a detailed and complete understanding of the communicative situation. In the first instance, it covers the core process of transmitting specific content from one person to another. The content itself can be several things ranging from factual information to emotions, which is expressed in connection to a certain purpose or function in the communicative process (Allwood, 2002). One possible purpose is, for example, to maintain a friendship by communicating with each other. Second, it acknowledges different expressions and the existence of a medium in the communication process. Expressions refer to verbal and non-verbal communication such as words or gestures, while the medium could be the "air" in a face-to-face context or a technical device that is used to communicate (Allwood, 2002). In this way the definition makes it possible to include the relevant types of communication that are enabled by different media forms and the media forms themselves as a channel for communication.

Lastly, the definition includes the environment as an element. Allwood (2002) understands the environment as "physical, biological, psychological or social" (p. 9) combinations that influence communication. Trenholm and Jensen (2000) talk specifically about "cultural, historical, and relational" (p. 16) contexts that have an impact on the communication process. For example, communicators from varying cultures, historical times, or relationships may communicate differently (Trenholm & Jensen, 2000). Because this study engages in the investigation of the specific context of *Gymnasien* in Northern Germany and focusses on communication in friendships at two different points in time, the definition of Allwood (2002) is most suitable.

Although Allwood's (2002) definition claims to address communication as such, it suits also the term of interpersonal communication (Jensen, 2015). This may be partly because "all communication is, in a sense, interpersonal" (Trenholm & Jensen, 2000, p. 23) as it occurs between people even though in different form. Interpersonal communication, in its simplest approach, refers to two individuals communicating with each other (e.g., Berger, 2014; Höflich, 2016; Jensen, 2015). Because it is classically understood as a dyadic, face-to-face interaction, it can be differentiated from other kinds of communication such as intrapersonal, group, intercultural, organisational, or mass communication (Höflich, 2016; Trenholm & Jensen, 2000).

In addition to taking place face-to-face, interpersonal communication can be mediated (De Mooij, 2014). Mediated communication is understood as "communication that uses some form or medium other than by mouth" (De Mooij, 2014, p. 5). This refers for example to paper or communication via the internet and does, most of the times, not provide non-verbal cues, which makes it especially different to face-to-face communication (De Mooij, 2014). Thompson's (1995) understanding of "mediated interaction involves the use of a technical

medium . . . which enables information or symbolic content to be transmitted to individuals who are remote in space, in time, or in both" (p. 83). Thompson (1995) refers to media such as letters, telephones, and radio.

One specific kind of mediated communication is computer-mediated communication (De Mooij, 2014). This term refers to any kind of communication mediated by a computer which, as a research area, has recently gained far more interest among scholars than non-electronic technologies for mediated communication (Berger, 2005; Simpson, 2002). Mediated communication covers communication via paper (letters, notes, books), landline and respectively, mobile telephone (oral and written conversations in forms of calls, voice messages, SMS, instant messages), or computer (e-mail, social networking sites, video chat).

The first mention of the term "mediated interpersonal communication" can be traced back to Cathcart and Gumpert's article in 1983. It is a response to their claim that communication scholars did not recognise media's role in their definitions of communication. According to Cathcart and Gumpert (1983), media is "an increasingly significant and complex aspect of human communication" (p. 268), which is why they proposed a new typology for its inclusion. In this typology, mediated interpersonal communication is phrased as a "general category referring to any situation where a technological medium is introduced into face to face interaction" (Cathcart & Gumpert, 1983, p. 270-271). This category compromises four variations of mediated interpersonal communication that are as follows: interpersonal mediated communication, media simulated interpersonal communication, person-computer interpersonal communication, and uni-communication (Cathcart & Gumpert, 1983).

To begin with the latter, uni-communication concerns artefacts that are used to communicate a certain quality. This includes for example implicit communication through the possession of a very expensive car or explicit communication through the printed letters on an article of clothing. Person-computer interpersonal communication discusses the use of a programme on the computer, it is communication "with a computer" (Cathcart & Gumpert, 1983, p. 275). The third variation, media simulated interpersonal communication, is commonly known as "para-social interaction" (Cathcart & Gumpert, 1983, p. 272). The most relevant concept in their terminology is interpersonal mediated communication, which "refers to any person-to-person interaction where a medium has been interposed to transcend the limitations of time and space" (Cathcart & Gumpert, 1983, p. 271). Such media include "telephone conversations, letters, CB [citizens' band] radio, electronic mail, audio and video cassettes" (Cathcart & Gumpert, 1983, p. 271).

Confusingly, the overall category is called "mediated interpersonal communication" and the relevant concept for this study is labelled "interpersonal mediated communication". A problem that they acknowledge themselves as the overall label was not finalised (Cathcart & Gumpert, 1983). However, other scholars recognise the term "mediated interpersonal communication" with a similar definition as Cathcart and Gumpert (1983) (e.g., De Mooij, 2014; Höflich, 2016; Hwang, 2011; Krotz, 2009; Sternberg, 2009). Thus, this study uses the term "mediated interpersonal communication" to express that two or more individuals communicate with each other via a technical or electronic medium. The other conceptions

can be seen as mediated forms of communication because of the involvement of a medium but they do not capture the interpersonal moment of a communicative interaction.

This basic definition enables discussion concerning both the various kind of traditional and new media as a mediator of interpersonal communication, which would not explicitly be the case for the terms "computer-mediated communication" or the general definition of interpersonal communication. A message on paper and a message send on Facebook can be simultaneously addressed with this term. Moreover, using the term "mediated interpersonal communication" emphasises the social aspect of the relationship more than the term "mediated communication".

2.2. Friendship and communication in school

Friendship is "clearly a core aspect of our lives" (Fehr, 1996, p. 1) and has been defined by several researchers from different disciplines in various ways (Bagwell & Schmidt, 2011). Based on a review of definitions from social sciences, Fehr (1996) concludes that friendship is "a voluntary, personal relationship, typically providing intimacy and assistance, in which two parties like one another and seek each other's company" (p. 7). Rawlins (1992) similarly captures friendship as a voluntary human relationship grounded in equality, "a shared orientation of mutual good will, understanding, trust, support, and acceptance, and heartfelt feelings of platonic affection and concern" (p. 271).

In comparison to other types of relationships, friendship differs to those with parents or siblings because it is horizontal and not vertical when it comes to equality and similarities in age or development (Bagwell & Schmidt, 2011). Paraphrasing Rawlins (1992), Ledbetter (2010) states that "compared with the stronger ties binding romantic and family relationships, most friendships are voluntarily sustained without broader social structural support" (p. 939).

Fehr (1996) points out that there are subdivisions of friendship regarding demographic factors (i.e., same age and/or gender), the social context (i.e., school, leisure activities), and level of closeness (i.e., ordinary friend, best friend) (see also Bagwell & Schmidt, 2011). In addition to the social context, the cultural context may have an impact on the importance of friendship in relation to other relationships (Bagwell & Schmidt, 2011). Apart from this, every friendship can be argued to have a unique character "because children are not all alike and because children do not all choose similar peers as friends" (Bagwell & Schmidt, 2011, p. 158). This is supported by Hartup and Stevens (1997) who claim that "all friendships are not alike" (p. 366).

Friendships of any kind are a significant developmental aspect of life, as they emerge in the very early childhood and "provide a context for learning and practicing social skills and competencies" (Bagwell & Schmidt, 2011, p. 75). This refers for example to the development of emotional and cognitive aspects as well as for psychosocial adjustments, especially in the early stages of life before adulthood (Bagwell & Schmidt, 2011). Accompanying people throughout their lives, friendships may be more or less important at certain life stages but they are recognised as "developmental resources at all ages" (Hartup & Stevens, 1997, p. 355).

Within the age range of twelve and eighteen years, there is a developing tendency of increased expectations of and empathy towards friends, a stable or increased level of attachment and intimacy, and a decreasing number of conflicts and level of exclusivity among friends (Bagwell & Schmidt, 2011; Claes, 1992). Claes' (1992) study demonstrates that the number of classified friends decreases with a higher level of intimacy, meaning that there are far more acquaintances than ordinary friends, which are in turn more than the number of close or best friends. Although the general number of friends stays almost the same throughout adolescence, the number of close friends decreases towards the later stages of adolescence (Claes, 1992).

Hartup and Stevens (1997) address the conception of friendship through the life course by differentiating between a "deep structure" and a "surface structure". Accordingly, the deep structure of friendship is its social meaning and the surface structure captures the social exchanges within the friendship (Hartup & Stevens, 1997). Based on this understanding, Hartup and Stevens (1997) acknowledge that the social meaning of friendship develops with age. The features of mutuality and reciprocity, on the other hand, are part of the deep structure of friendships at any point in life. It is the surface structure that actually changes and not simply develops throughout life in terms of the social exchanges between friends (Hartup & Stevens, 1997). Children of seven years might want to play football with their friends as often as possible, while friends at the age of sixty-two may prefer to talk about their grandchildren or retirement once a week (Hartup & Stevens, 1997). In this way, it is useful to look at communication in relationships that adapt to changing biological and interpersonal needs at different points in life (Knapp & Vangelisti, 2009).

Knapp and Vangelisti (2009) attend to the connection of interpersonal communication and human relationships and picture communication as "the lifeblood of relationships" (p. 2). The same understanding is acknowledged by Trenholm and Jensen (2000) who also demonstrate the essential nature of communication at all stages of a relationship. Fitzpatrick (1993) likewise concludes that "communication processes are central to the initiation, development, maintenance, and ending of interpersonal relationships" (p. 281). Interpersonal communication is the key to human relationships and facilitates its emergence and existence as it would not be possible to perform a relationship without any kind of communication (Fitzpatrick, 1993; Trenholm & Jensen, 2000).

Knapp and Vangelisti (2009) claim that "human communication may be affected by the existing relationship, but it will also structure the nature of any future relationship" (p. 6). Friends that know each other for a long time communicate in a specific way and the way one communicates may affect how well a new relationship will develop. Furthermore, Knapp and Vangelisti (2009) predict that the communication changes with the development of the relationship regarding their eight communicative dimensions. The communication within a developed relationship, like the one of best friends, would be broader, more personal, unique, efficient, flexible, smoother, and more spontaneous and open (Knapp & Vangelisti, 2009).

Within this study, the specific context of German *Gymnsaien* is important to keep in mind. Knapp and Vangelisti (2009) point out that there is a mutual influence between the context in which we communicate and our communicative behaviour: "In short, the environment

acts upon us, but we may also act upon the environment" (p. 122). They claim that depending on the environment, different kinds of communication may be possible, appropriate, or even impossible. The environment is made up of four components: "(1) the natural environment, (2) architectural structure and design features, (3) movable objects, and (4) the presence or absence of other people" (Knapp & Vangelisti, 2009, p. 122). Hence, there may be limited communication among friends during a lesson because of the presence of the teacher and more communication before, between, and after it.

The point is that this environment has partly changed due to the introduction of the new forms of media (Krotz, 2009). Although friends, family, and school are continuously seen as the main institutions for socialisation, they all have been influenced by the new media environment, which is why none of them "can be understood without taking the media into account" (Krotz, 2009, p. 22). Communication in friendships cannot be discussed "without referring to the media as a topic and as a means of communication" (Krotz, 2009, p. 22). Of course friends communicate face-to-face at and after school but they also engage in increased conversations via telephone, text messages, e-mail, and other digital means (Bagwell & Schmidt, 2011).

With regard to the new media environment, Palfrey and Gasser (2008) hint at a different conceptions of friendship for digital natives. The researchers claim that digital natives form new friendships online with people who they eventually "would never have had a chance to meet in the offline world" (Palfrey & Gasser, 2008, p. 5). Similarly, Amichai-Hamburger, Kingsbury, and Schneider (2013) declare that "the digital world has dramatically changed the logistics of many friendships" (p. 38) and question if the "very essence" (p. 38) of the concept is affected as well. There are online and offline friendships that are connected or transferred from one another and it is argued that befriending someone on Facebook interferes as well with the conception of friendship (Amichai-Hamburger et al., 2013).

Adolescents use the internet and its several platforms for communication to keep in touch with their offline friends (Valkenburg & Peter, 2007). This new kind of communication seems to affect the closeness felt and the perceived effectiveness regarding self-disclosure between friends (Valkenburg & Peter, 2007). Referring to Mikami, Szwedo, Allen, Evans, and Hare (2010), Bagwell and Schmidt (2011) state that "for many children and adolescents, the internet is simply a new medium for engaging in the same level of socially competent interactions as offline" (p. 317). The new mediated forms of interpersonal communication account for a big part of relational maintenance behaviour and especially the digital forms, which make it possible to extend the friendship online (Höflich, 2016).

To summarise, this subsection has provided a detailed insight into the relevant aspects of friendship and communication among *Gymnasium* students. Although the study does not investigate the students' conceptions of friendship, it is important to keep in mind what friendship can mean in adolescence and which role communication has. The environment matters in the reasoning of communication and friendship, and media as part of it needs to be considered. Lastly, the friendships that are considered in this study are most probably established offline and it may be revealed which kind of mediated interpersonal communication was and is used to maintain these friendships at the two points of interest.

2.3. Digital natives – a problematic label

The term "digital natives" can be traced back to Marc Prensky (2001) who established it as a label for "the first generations to grow up with this new technology" (p. 1). The new media technology is seen as "an integral part of their lives" (Dingli & Seychell, 2015, p. 9), which is why they appear to be different in comparison to previous generations (Dingli & Seychell, 2015; Palfrey & Gasser, 2008; Prensky, 2001). A distinction is made between "digital natives" and "digital immigrants" (Prensky, 2001). Prensky (2001) refers to the digital immigrants as "today's older folk [that] were 'socialized' differently from their kids" (p. 3) in relation to the new media environment that has emerged.

According to Prensky (2001), digital natives are highly networked, multitask, go with the fast flow of information via diverse media, and favour graphical over textual impressions. Being a digital native seems to incorporate the high usage of digital technology, a kind of innate knowledge of how to use it, and living online as well as offline (Palfrey & Gasser, 2008). In this way, digital natives differ largely from the digital immigrants who may "always retain, to some degree, their 'accent', that is their foot in the past" (Prensky, 2001, p. 3). The digital immigrants' accent may for example be related to a lack of this innate knowledge of how to use the new digital technology.

These characteristics of the digital natives are claimed to capture everyone who is born after 1980 (Helsper & Eynon, 2010; Palfrey & Gasser, 2008; Taipale, 2016). Roughly the same characteristics and age limits are applied in other labels that are similarly known but have not been cited as much (Koutropoulos, 2011). While Tapscott (1998) speaks about "the net generation", Howe and Strauss (2000) coin the label "millennials". Dissent occurs regarding the defining factor, which may either be the age or the "exposure to, or experience with, technology" (Helsper & Eynon, 2010, p. 505).

In general, there is a critical discussion about the accuracy of this label and the existence of such a generation (Bennet, Maton, & Kervin, 2008; Helsper & Eynon, 2010; Koutropoulos, 2011). The main criticism is aimed at the generalisation of the label – "all young people are expert with technology" (Helsper & Eynon, 2010, p. 505). This is connected to the fact that these labels neglect to provide scientific proof for their claims (Bennet et al., 2008). As Koutropoulos (2011) points out, the label may already be insufficient depending on location and socioeconomic status. He refers to studies from different countries that highlight that depending on where the digital natives live, they spend different amounts of time on the new technology (Koutropoulos, 2011). Helsper and Eynon (2010) contribute to this critique by referring to several studies that "have highlighted the complexity and diversity of use of new technologies by young people" (p. 505).

One way to handle this problematic label and its criticisms is to configure the general conception of it. Palfrey and Gasser (2008) as well as Koutropoulos (2011) suggest talking about a certain part of the population instead of a whole generation. This takes into account that there are differences in the usage and distribution of the new media technologies among digital natives and immigrants throughout the world (Helsper & Eynon, 2010). Palfrey and Gasser (2008) agree similarly that the generational label is "an overstatement, especially in light of the fact that only 1 billion of the 6 billion people in the world even have access to

digital technologies" (p. 14). Therefore, Helsper and Eynon (2010) argue that the best way to identify a digital native is a combination of age, "gender, education, experience and breadth of use" (p. 515). Their study shows that "in all cases immersion in a digital environment . . . tends to be the most important variable in predicting if someone is a digital native in the way they interact with the technology" (Helsper & Eynon, 2010, p. 515).

Apparently there is a need for a more complex differentiation regarding who is a digital native and who is not as it is argued above. Dingli and Seychell (2015) similarly strengthen the role of immersion in the conception of digital natives and claim that "all arguments . . . can be ultimately explained in terms of space and time" (p. 12). Meaning that it depends on when and where someone was born in order to be a digital native in addition to the role of immersion in the new technology.

As the next subsection demonstrates, there have been many technological developments in relation to communication and that children were born throughout this timeline of development. It may therefore be worth considering a more detailed conception that talks about digital immigrants and a first and second generation of digital natives, as claimed by Dingli and Seychell (2015). They have all experienced a different technological environment when they grew up: While the digital immigrants did not have any digital technology, their children, the first generation of digital natives, grew up with the first technological advances (Dingli & Seychell, 2015). However, there is still a difference between the conditions of the media environments of the digital natives from the 1980s to 1990s, and the ones born in the first decade of the 21th century (Dingli & Seychell, 2015).

These varying conditions are central to this thesis. In the case of Germany, they can be pinpointed in the change of the adolescents' possession of media devices and usage across the relevant time span (e.g., Klingler, 2008; Klingler et al., 2015). German adolescents of around twelve and thirteen years in 1998 and in 2008 differ largely in owning, for example, a mobile phone (Klingler, 2008). While only 3% of the adolescents born in 1985/86 had a mobile phone at this age, 90% of the adolescents born in 1995/96 had one when they were twelve and thirteen in 2008 (Klingler, 2008). Noteworthy numbers of smartphones were found in 2010 and 2011 among German adolescents between twelve and nineteen years and are almost a standard since 2014 (Klingler et al., 2015). Further insights into the change of the media environment are given in the next subsection.

In summary, the label "digital natives" may be famous and widely used but comes with criticisms that have to be considered. It is useful to talk about a certain population that is particularly interesting for the purpose of this study. The acknowledgement of the more complex reasoning about how and who can be identified as a digital native is of importance when considering the application of the term "digital natives". Especially regarding the fact that further differentiations need to be made between a first and a second generation of digital natives, or an early (older) and a late (younger) group of digital natives.

2.4. Understanding the media technological developments

The term "medium" or "the media" can mean several things that go beyond its conception from a communicative point of view. This study attends to media in the form of channels for communication (Bolchini & Lu, 2013). In this sense, the medium is understood "as the basic physical and technical infrastructure that supports the proper and continuous movement of messages between a sender and a receiver" (Bolchini & Lu, 2013, p. 400). The classifications of media by Jensen (2012a, 2012b) and Höflich (2016) cover several degrees of media that include more than is actually relevant in relation to mediated interpersonal communication. The human body itself and broadcasting media are for example included in their classifications but not applicable to this study and its main concept.

The relevant media types are covered by the term "personal media", which refers to "all media that afford interpersonal communication" (Helles, 2012, p. 335). Such media facilitate one-to-one or many-to-many communication in a synchronous or asynchronous way (Helles, 2012; Jensen & Helles, 2011). In relation to the communication in friendships, the personal media for one-to-one communication are of significance in this study. However, many-to-many communication is also relevant as today's personal media often offer group chats. The main personal media that are of interest in the context of mediated interpersonal communication are therefore letters, SMS, telephone conversations, various instant messengers, social networking sites, and e-mail (e.g., Höflich, 2016).

In the 1980s and early 1990s, the media environment for interpersonal communication consisted basically of letters, landline telephone, and mobile phones (Helles, 2012). The communication via SMS took off in the 1990s as well and became extremely popular (Faulkner & Culwin, 2005). While these personal media were kind of established, the first media technological advances of the digitalisation like e-mail and the internet in general emerged at the same time (Helles, 2012; Palfrey & Gasser, 2008). The internet developed to the basis of today's globally connected world and facilitates the environment for the new technological advances (Höflich, 2016). Computers became step by step a standard part of the household and in the first decade of the new century the early digital natives themselves were further introduced to mobile phones (Dingli & Seychell, 2015).

Further developments took place in the new 21st century, referring to various kind of social media that emerged and that now dominate today's global media landscape (Fuchs, 2014). For example, the social networking site Facebook was founded in 2004 and the microblogging service Twitter in 2006 (Fuchs, 2014). Already before the turn of the millennium, the era of instant messaging began on personal computers and still continues mobile (i.e., ICQ in 1998, Skype in 2003, and WhatsApp in 2009)[1]. Although this is just a small recap of the main personal media that developed between the 1980s and today as the digitalisation process created and advanced more technologies, it demonstrates the differences between the two groups of interest in this study. In contrast to the early digital natives, the late digital natives were born when all this new media technology was already established and was accessible in a developed state (Dingli & Seychell, 2015).

The increasing role of media in general can be easily seen throughout the last 50 years in the German media landscape (Breunig & van Eimeren, 2015). People use media more often,

they use several more types of media that developed during these years, and the studies engage in more complex differentiations of media usage. The younger demographic of the population aged between fourteen and twenty-nine years engaged the most with the medium internet since its establishment (Breunig & van Eimeren, 2015). As pointed out by Ledbetter (2008), Klingler (2008), and Klingler et al. (2015), the media technologies for interpersonal communication developed and their possession and usage increased. In relation to these developments, Palfrey and Gasser (2008) claim that the new digital media technology "blends the human with the technical to a degree we haven't experienced before, and it is transforming human relationships in fundamental ways" (p. 4-5).

Dingli and Seychell (2015) declare that "the main motivation behind the most recent developments in technology was and is the need of communicating with others" (p. 20). Every medium's purpose is to deliver a communicative message but it has to be taken into consideration that each medium may incorporate a message itself, a metacommunication as Höflich (2016) phrases it. This means that a certain medium comes with certain specialities and characteristics that may have a certain impact on the message (Höflich, 2016). Something that is closely related to McLuhan's (1964/2001) notion of "the medium is the message" that emphasises the importance of the medium's structure over its content.

Ledbetter (2014) talks about three approaches to media of which the first views "the medium as the modifier of the message" (p. 458) in the sense "that the same message may produce different outcomes depending on the chosen medium" (p. 458). This understanding is similar to Krotz (2009) who defines "media pragmatically as a modifier of communication" (p. 28). Furthermore, a medium can be "a component of a causal chain" (Ledbetter, 2014, p. 458). This means that the usage of one medium can cause the usage of a certain other medium. The third approach refers to the usage of a medium "without regard to the message" (Ledbetter, 2014, p. 458) but rather in consideration of the type of relationship. It may not matter what one wants to communicate but to whom in the selection of the medium.

The point is that the different media considered in this study may modify communication in various ways, which is why their actual differences need to be considered. Höflich (2016) reasons that media offer opportunities for communication but are situated between communicators and limit communication in certain ways. He describes media as "*eine kommunikationsermöglichende Begrenzung*" (Höflich, 2016, p. 44), which translates to "a communication enabling limitation". Media allows us to communicate with each other but will limit our communication in one way or another. In order to understand these different media for interpersonal communication and their ways of modifying communication in the discussion of this study, the theoretical background considers the following three theoretical frameworks and respectively their conceptual parts: media capabilities, media-conceptional distinction, and theory of the niche.

2.4.1. Media capabilities

Dennis and Valacich (1999) developed a theory of media synchronicity that originates from media richness theory, which goes back to Daft and Lengel (1986) and other scholars. A part of Dennis and Valacich's (1999) theory concerns the "media capabilities" that can be used

to differentiate media regarding their communicative features. They claim that there are "five media characteristics [that] can affect communication" (Dennis & Valacich, 1999, p. 2): immediacy of feedback, symbol variety, parallelism, rehearsability, and reprocessability.

Starting with the first, immediacy of feedback refers to "the ability of the medium to support rapid bidirectional communication" (Dennis & Valacich, 1999, p. 2). The immediacy of feedback in ordinary mail is, for example, lower than in an e-mail. If a medium scores high on symbol variety, it allows a variety of ways to communicate a certain message. A voice message offers primarily verbal communication together with voice-related non-verbal aspects, while a video-call on Skype would allow verbal and non-verbal communication including body language.

Parallelism captures "the number of simultaneous conversations that can exist effectively" (Dennis & Valacich, 1999, p. 2) within a medium – one conversation on the telephone but various chats simultaneously in an instant messenger. Sending a message via e-mail allows to rehearse and edit the text before it is actually sent and would therefore score high on rehearsability. In contrast, talking on the telephone does not give much time to rethink what one wants to communicate. The last media capability of Dennis and Valacich (1999) is reprocessability and refers to the possibility of reprocessing a certain message in the same communicative context. The e-mail can be reread but whatever is said in a telephone conversation is gone.

Because these media capabilities are differently configured for each medium, the communication may be affected in a certain way. This part of Dennis and Valacich's (1999) theory is helpful to understand and differentiate the various media for interpersonal communication and to demonstrate their effects on the communication process.

2.4.2. Medial-conceptional distinction

Koch and Oesterreicher's (2007) "medial-conceptional distinction" (p. 346) is used to further differentiate the media technologies regarding the kind of communication that they employ. Their first dimension is called "medial dimension" and distinguishes between either phonic or graphic communication that is enabled by the medium. A medium is either used to talk or to write to another person. However, certain media, for example Skype or some instant messengers, may even allow both types of communication in separate functions.

The second dimension of Koch and Oesterreicher (2007) concerns the conceptional side of language. It symbolises a range between the "spoken informal" and the "written formal" characterisation of communication within a certain medium. A medium can be used to communicate rather informally spoken, quite formally written, or somewhere in the middle. Hence, the communication facilitated by a certain medium can be phonic or graphic and somewhere between an informally spoken and formally written conception (Koch & Oesterreicher, 1994).

A letter, for example, would always be graphic on the medial dimension but it can be situated towards both ends on the conceptual dimension. If the letter is written to a friend, the language will be rather informal and spoken from a conceptional point of view. If the letter

is addressed to a public authority, the language will be formal and conceptually written. In another example, the difference between a spontaneous conversation on the phone (phonic and conceptional spoken) and a scientific lecture (phonic and conceptional written) can be demonstrated by the medial-conceptional distinction of Koch and Oesterreicher (2007).

The scope of mediated interpersonal communication excludes many of the examples given by Koch and Oesterreicher (2007) and because the study focusses on friendship, the medial-conceptional distinction is only applied on media for interpersonal communication among friends. Hence, this study does not cover any situations similar to the examples given in the previous paragraph. The differentiations between the relevant personal media on the conceptional dimension are therefore done in relation to each other and not to all potential forms of communication. Lastly, this approach may be interesting when it is applied to new media that offer both phonic and graphic communication.

2.4.3. Theory of the niche

Ledbetter (2008) highlights the usefulness of "media niche theory" in investigating the interrelations of media in the context of their developmental emergences and the corresponding shifts in their usage. According to Dimmick, Kline, and Stafford (2000), "the niche of a medium is its position in the multidimensional resource space of the environment" (p. 230). A medium needs to differentiate itself and its gratifications from other media in order to survive and eventually grow in competition or coexistence in a certain media environment (Dimmick, Feaster, & Ramirez, 2011; Dimmick et al., 2000). Thus, "the theory of the niche predicts that a new medium will compete with established media" (Dimmick et al., 2000, p. 227).

A medium can occupy a certain niche and offer, in turn, certain gratifications (Dimmick et al., 2000). The theory of the niche analyses and calculates the "niche breadth" of a medium, which is characterised by satisfying a narrow or broad spectrum of gratifications (Ramirez, Dimmick, Feaster, & Lin, 2008). Furthermore, it calculates the "niche overlap" with, and the overall competitive superiority to another medium (Ramirez et al., 2008). If a medium's gratification niche overlaps with another medium and it is superior to the other, older medium, then the new medium can "replace or partially replace an older form" (Dimmick et al., 2000, p. 234). Otherwise, if the media's niches do not overlap, they simply complement each other's gratifications (Dimmick et al., 2000). Dimmick et al. (2011) conclude that replacements among the media do not necessarily have to occur even if their niches overlap significantly: "Although there is a very high degree of overlap . . ., the different consumer usage patterns found in this study – differences in niche – allow these interpersonal media currently to coexist" (p. 1279).

A valued addition to the media niche theory is proposed by Feaster (2009) who states that "the media must compete to serve a role within the space of an individual's media repertoire just as they compete to serve a role for a population of users" (p. 970). In other words, media compete with each other on two levels: in the overall set of available media in the environment and in the individual's set of chosen media. An individual may only consider

using or have access to certain media, which form a personal media repertoire that can be different from the general competition of media.

This thesis does not engage in the actual calculations of media niche theory in order to predict possible replacements or overlaps between media. Instead, the theory is used to form a basic understanding of potential differences and overlapping gratifications of the investigated media sets.

2.5. Previous research

Within this specific field, Ledbetter (2008; 2009; 2010) contributes especially to the research into mediated interpersonal communication among friends through surveys and connected factor analyses. He similarly acknowledges the media technological developments and that friends employ these as new ways of communicating with each other (Ledbetter, 2008). His specific focus is how the modality usage and relational closeness in friendships changed from 1987 to 2002 (Ledbetter, 2008). In contrast to this study, Ledbetter (2008) investigates data from the same people at two points in time and explores the adaptation of new means of communication and not from two separate groups that experienced different sets of media at around the same age.

The means of communication included in his study are face-to-face, telephone conversation, postal mail, and e-mail additionally in 2002. Hence, Ledbetter (2008) gives a related insight but does not attend to the same overall set of available media as this study and does not include all of the previously discussed elements. According to his results, all modalities declined significantly in the given time period, particularly the usage of regular mail, while e-mail started off quite high in 2002. Interactions on the telephone and face-to-face are linked at both points in his study. Postal mail and telephone are both linked in their usage throughout the time span, which is not the case for face-to-face contact. Lastly, there is a strong interrelation between telephone and the other means in 2002 (Ledbetter, 2008).

When it comes to relational closeness, his results show that it is mostly associated with postal mail in 1987 but with telephone in 2002. Ledbetter (2008) draws two main conclusions: First, he strengthens the multimodal character of interpersonal relationships, in this case friendship. Second, he assures that "each medium occupies a niche in the fabric of relational life, and a medium's niche is reciprocally defined and redefined by its multiple interfaces with other media" (p. 562). All of the media that he analysed had a certain niche within the relationship and they established their roles in relation to each other. Besides a shift in the media constellations, Ledbetter (2010) states that friends "enact a variety of relational maintenance behaviors, across a variety of channels, to maintain their friendships" (p. 952). This emphasises again the multimodality of friendship and the usage of multiple media.

In another study, Ledbetter (2009) concludes that gratifications satisfied by oral and written communication differ more significantly than the ones satisfied by synchronous and asynchronous media. His factor analysis reveals the correlation of face-to-face and telephone, which are both oral and synchronous, but there is no correlation of instant messaging with these two, which is written and synchronous. The point is that media forms do not necessarily have to compete or complement each other as the niche theory would

predict, but that they "may cooperate when gratifications overlap" (Ledbetter, 2009, p. 1200). This is because they may be better suited for certain situations because of varying features or capabilities: face-to-face offers non-verbal communication but the telephone overcomes issues regarding distance (Ledbetter, 2009).

Another insight is given by Ramirez et al. (2008) and Dimmick et al. (2011). Both studies engage in the investigation of the media competition between the cell phone, landline telephone, e-mail, and instant messaging. Ramirez et al. (2008) are able to demonstrate a clear hierarchy of superiority among the media, which is in descending order the cell phone, instant messaging, e-mail, and lastly the landline telephone. Their results show that the use of instant messaging displaced the usage of e-mail and landline telephone instead of replacing it. In accordance with their own results, Dimmick et al. (2011) emphasise that these media are able to coexist even with their high degree of niche overlaps. This is primarily because of slightly different niches as they are used differently regarding "the resource dimensions of relationship, time, and space" (Dimmick et al., 2011, p. 1279).

Apart from that, this study takes into account the results of the yearly JIM-study that attends to the media usage of the German youth (Feierabend et al., 2015; Feierabend & Rathgeb, 2007). The following paragraphs summarise the results of 2007 and 2015 in relation to mediated interpersonal communication. Unless otherwise specified, it refers to German adolescents between twelve and nineteen years.

Feierabend and Rathgeb (2007) report that in 2007 almost every household (98%) owned a computer and had internet access (95%). Fourteen and fifteen year olds (born 1992/93) in specific had even their own computer to an extent of 71% and *Gymnasium* students in general were more likely to have their own. Almost 60% of internet usage was related to communication in contrast to games and information seeking. The study showed that instant messaging (72%) and e-mail (60%) were used daily or several times per week by the adolescents. *Gymnasium* students were more likely to use instant messengers in comparison to the other secondary schools. Most common was the instant messenger "ICQ" with 88%, followed by MSN with 44%, and Skype with 6%. The mobile phone was almost a standard for the adolescents in 2007 (94%) and its communicative functions such as SMS and telephone calls were used the most and valued as the most important.

Taking a look at the same study from 2015, the distribution of computers (98%) and internet access (96%) in the adolescents' households stayed the same in comparison to 2007 (Feierabend et al., 2015). The difference is that laptops are now part of the households too (88%), which is more than personal computers (75%) and tablet-PCs (58%). Feierabend et al. (2015) report that the number of own computers or laptops at the same age group of fourteen and fifteen year olds (born 2000/01) did not change compared to 2007. Differences between the school types decreased with regard to owning an own computer. Wi-Fi was the most typical way to connect to the internet (95%) and among the chosen devices for the internet usage were smartphones (88%) and computer or laptops (74%). The study shows that mobile devices became significantly more popular than stationary ones.

The internet usage of the adolescents in 2015 consisted to 40% of communication, the ratio between games and information seeking shifted, and entertainment gained a share of 26%

(Feierabend et al., 2015). The daily communicative activities on the internet concerned primarily WhatsApp (85%), followed by online communities in general (39%) and Facebook in specific (38%). Email and Snapchat[2] were mentioned at both 23%, while Skype came in sixth place with a 10% share. Some differences that appeared were that boys had a higher usage of Skype and online-games, while the girls preferred Snapchat more than the boys. The study demonstrated an overall decline in the usage of online communities in comparison to 2014.

The smartphone has become the standard mobile phone for adolescents in 2015 with a distribution of 92% (Feierabend et al., 2015). Messaging as such was the most regularly used function of the smartphone (94%), which included instant messaging, e-mail, and SMS. This was followed by surfing on the internet and listening to music (both 82%), telephone calls (69%), and watching videos (68%). Lastly, all these results have to be interpreted in the context of a higher internet usage time in 2015 (208 minutes) than in 2007 (114 minutes) (Feierabend et al., 2015; Feierabend & Rathgeb, 2007). In relation to this, Klingler et al. (2015) pinpoint the three contexts in which German adolescents between fourteen and twenty-nine years use the internet the most: during free time at home, at school, and while meeting friends.

3. Methodology

This section presents the study's methodological approach. It begins with an outline of the conducted interviews and continues with a description of grounded theory that was used to analyse the gathered data. The section ends with relevant ethical remarks and limitations.

3.1. Interviews

Interviews were chosen as the method of enquiry to capture the digital natives' experiences and practices (Lindolf & Taylor, 2002). The interviews were semi-structured in order to allow an exploration of the research problem and facilitate the possibility to pose follow-up questions or to ask for clarifications. The questions were open and non-leading to avoid subjective falsification through the interviewer's own experience regarding the research problem (Berger, 2000). The interviews were held in German to ensure the understanding of the questions and to make it easier for the interviewees to express their thoughts in their native language. The interviews were recorded and transcribed afterwards to guarantee a detailed analysis of the collected data. Transcriptions were done on a formal written basis because the actual content was of interest and the study did not apply a detailed linguistic or non-verbal analysis of the data.

Constructed in German and English, the interview guide (see Appendix A) covered 14 questions for both interview groups. Referring to either a usual day at school from roughly ten years ago or the school day from yesterday, almost all questions were phrased the same. In a few cases the questions could not be phrased in the same way. These questions were marked with the letter A for the early digital natives and with B for the late digital natives.

The first two questions asked about relevant demographic variables and the third introductory question was framed as a descriptive "mini-tour question" (Treadwell, 2014). The "mini-tour question" provided a brief overview of the interviewees' own understandings of their communication throughout the day. It helped them to become comfortable with the interview setting, familiarise with the topic, and recall all relevant aspects.

All in all, twelve current and former *Gymnasium* students from the northern part of Germany were interviewed (see Table 1). The researcher met the interviewees individually in face-to-face settings between the 15th and 19th March 2016. The interviews lasted between ten and twenty-five minutes and compromised a total data-set of three hours and fourteen minutes. The two groups consisted of six people each and were equally divided among male and female interviewees. The early and late digital natives had an approximate age difference of seven to ten years. The interviewees were selected on the basis of a nonprobability sampling, either in terms of volunteering for the research or of convenience to the researcher.

Interviewee	Year of birth	Gender	Graduation / Grade
A-01	1993	Male	2012
A-02	1992	Male	2011
A-03	1993	Female	2011
A-04	1993	Male	2012
A-05	1993	Female	2011
A-06	1993	Female	2012
B-07	2002	Male	8th
B-08	2000	Male	8th
B-09	2002	Female	8th
B-10	2001	Female	8th
B-11	2002	Female	8th
B-12	2001	Male	8th

Table 1: Interviewees' demographic variables

The current *Gymnasium* students were from the same school and were interviewed one after the other in a private room in their school. It was ensured that the interviewees did not have contact until all interviews were performed. Their participation was arranged through a personal contact at the *Gymnasium*. On the other hand, the *Gymnasium* students were interviewed on three different days in either a private setting at home or in a café. These students were selected from the private contacts of the researcher and visited three different *Gymnasien* in the northern part of Germany from which they graduated in 2011 and 2012.

In relation to the reliability of this study, it can be assured that the interviewees would give the same answers to another researcher asking the exact same questions. Even follow-up questions will be similar if the researcher prepares the interviews similarly. This applies also to the processes of transcribing, analysing, and finally reporting the results. Lastly, the answers of the interviewees assured that the interview guide was valid to explore the intended research problem.

3.2. Grounded theory

The transcripts were analysed with regard to the presented research questions in guidance of Glaser and Strauss' (1967) grounded theory. This approach goes hand in hand with interviews as the chosen method of enquiry and provided the guidelines for a thorough analysis (Charmaz, 2014). According to its core method of constant comparison, coding and analysing were done simultaneously. With the progress of the analysis and coding, the study came closer to developing into a theory that answers both research questions. This "theory", however, should be interpreted as a set of assumptions of how and why the mediated interpersonal communication changed between the two groups of students.

3.3. Ethical considerations

The interviewees and if necessary parents or legal guardians were asked to sign an informed consent for voluntarily taking part in the project and being recorded during the interview session (see Appendix B). The interviewees were granted confidentiality of their recorded and transcribed data. All personal information that was mentioned during the interviews was anonymised. It was ensured that only examples from the transcriptions may be published with the thesis and that the recordings will be deleted after the finalisation of the transcriptions. Publishing the complete transcriptions could have revealed the identity of the interviewees because the current *Gymnasium* students and their teachers know who was taking part in this study. In turn, they could be able to connect even anonymised contextual information from the transcriptions to certain interviewees. However, all transcriptions can be requested from the researcher via the Department of Applied Information Technology at the University of Gothenburg.

3.4. Limitations

The interviewees' personality and familial background may have had impacts on the usage and access to certain personal media and therefore on the results. Additionally, the results may have been influenced by the fact that the early digital natives knew the researcher beforehand and the late ones did not. The situation seemed to be tenser for the late digital natives, although they were talking about current experiences and did not have to recall them. It may be worth to consider a less open interview design to enhance the memorization.

The physical place may have supported or limited the interviews as well. While the late digital natives were interviewed at their school, the early digital natives were interviewed at home or in a café, which may have made them remembering less school-related memories. On the other hand, the personal relationship with the researcher and the nostalgic factor of talking about previous experiences may have had a positive influence. It may even be the case that the nostalgic situation made the early digital natives too positive about their memories in contrast to today's context.

4. Results

The main findings of this study show how the mediated interpersonal communication differs between the early and late digital natives. First, the media usage of the late digital natives was more concentrated. Second, ordinary written communication as offered by the letter and the friendship or slam book was far less considered by the late digital natives. Third, ICQ and WhatsApp were both characterised as trendy but the latter replaced the former in the newer media set. Fourth, conversations on the phone stayed as one component throughout the developments but SMS was no longer used. Fifth, apart from WhatsApp, only Skype and e-mail were considered slightly more by the late digital natives. Lastly, the reactions regarding the influence of the corresponding media sets was phrased positively by the early digital natives but negatively by the late digital natives.

4.1. Early digital natives

The results of the early digital natives demonstrated a broad variety of mediated interpersonal communication (see Table 2). In total, there were ten different forms of personal media of which at least eight were used by more than one interviewee. Each medium seemed to cover a certain niche, especially in relation to a specific context. Both individual differences and general tendencies in their mediated interpersonal communication were discovered. ICQ was clearly the most popular medium, followed by the landline telephone. The early digital natives started to communicate via personal media at school, which was continued in one way or the other until the evening. The mini-tour question (3 A) acknowledged that face-to-face was in fact the dominant type of communication as it was the first response of all interviewees. There was no communication before the early digital natives actually met their friends in person because they could not reach them.

Medium	A-01	A-02	A-03	A-04	A-05	A-06
letter				+ +		+
friendship / slam book			+	+	+	+
note		0	0	0	0	+ +
landline telephone	+ +	+	+ +	0	+ +	+ +
mobile phone						
SMS	0	0		+ + +	0	+ + +
e-mail						0
ICQ / MSN	+ + +	+ +	+ + +	+ + +	+ + +	+ +
Skype / TeamSpeak	0	+ + +		+		
social networking sites		0	0	0		+ + +

Legend: used the most (+ + +) | used a lot (+ +) | used (+) | used less (0) | not used ( )

Table 2: Early digital natives' media for mediated interpersonal communication

The media form of a written letter, was respectively "used" and "used a lot" by two of the interviewees, one male and one female who both graduated in 2012. This was due to the

mutual purpose of communicating with a pen friend. It was otherwise characterised as inconvenient because it would have taken too much time and money for postage to send a letter back and forth via postal mail. Friendship or slam books were used by four of the six interviewees, including all females. One interviewee mentioned it but did not use it, while the last one did not even know about it. These small books (see Figure 1) were shared with typically one or more, mostly closer friends to write about various topics with each other. They were passed around at school after one of the participating friends wrote something new in it. The writing was done either at home or directly at school.

Figure 1: Friendship / slam books of one of the interviewees

These books were coloured, pictures were glued into it, and the owners made sure that it looks good. Each friend filled in a profile in the beginning and they communicated rather formally written about serious topics as well as nonsense with each other. Besides face-to-face communication, this was a dominant type of mediated interpersonal communication at school. It was of course forbidden to write privately during a lesson but it did not stick out on the table because of its book-form. The interviewees reported anyway that they used it more during the breaks when it could be exchanged with the corresponding friends. Small notes on college blocks or on a separate piece of paper were more likely to be written and passed over to friends during a lesson. Although it was mentioned by everyone, only one used it a lot. Some interviewees mentioned that it was too risky as the teacher may read it to the class when it attracted attention. It was anyway mentioned that the friendship or slam books took over as a kind of collected set of notes.

The second most popular medium was the ordinary landline telephone at home. They used it for two primary functions: to agree upon where and when they should meet and to have longer conversations with a close friend. The latter was especially mentioned by the female interviewees. Otherwise it was described as a good and quick way to communicate with friends about important topics. A common problem was that many households did just have one line and device. Hence, they could not communicate with their friends if someone else in the family was already using or wanted to use the telephone. One female interviewee explained how she had telephone conferences with two of her friends because one of them had two telephones at home and simply put both of them on speaker.

> *Zu dem Zeitpunkt war die Verbindung Mensch zu Handy noch nicht so ausgeprägt wie sie jetzt mittlerweile ist.* ("At this time the connection of human to mobile was not as distinct as it is now." – Interviewee A-01).

> *Das Handy hat auch einfach nichts getan, da ist nichts passiert, wenn ich einen Tag lang nicht drauf geguckt hab.* ("The mobile phone did not do anything, nothing happened on it when I did not look at it for a day." – Interviewee A-03).

All interviewees reported that they had a mobile phone but they did not use it that much. They had it primarily in relation to their parents – being able to contact them and vice versa. This was the only exception for the usage of mobile phones inside the school as it was usually not permitted. In accordance with the statements above, the interviewees reported that nothing actually happened on their mobile phones. They were quite basic, had no mobile internet connections or any other special function like smartphones have nowadays. The SMS function was mentioned by all of the interviewees but only two of them used it the most besides another medium. It was described as a medium for mediated interpersonal communication outside of school. They talked about almost everything as the male interviewee said or private topics in specific from the female interviewee's perspective. Everyone else said that the amount of SMS was manageable. One reason for the usage differences was apparently the high costs as not everyone had a mobile contract with a certain amount of free SMS.

> *Man hat sich halt auch ab und zu SMS geschrieben, aber einfach aufgrund der Tatsache, dass man halt ein Prepaid-Handy hatte und für jede SMS 20 Cent bezahlt hat, kam das auch nicht allzu häufig vor.* ("You did sometimes send SMS to each other but this did not happen that often simply because of the fact that you had a prepaid card and paid 20 cent per SMS." – Interviewee A-02).

Mediated interpersonal communication via e-mail was the second least used type among the early digital natives. Some reported that they already had an e-mail address in order to sign up for the first social networking sites and other services on the internet but none actually used it for communication with their friends. Just one female stated that she sometimes wrote an e-mail but this was "used less" in comparison with the other media that she considered.

The most popular medium for mediated interpersonal communication of all six early digital natives was the instant messenger "ICQ". MSN was mentioned by one interview. These kind of instant messengers were bound to the PC or laptop. The interviewees reported that they communicated with more friends than just the closest ones, basically all friends who used the messenger as well. It was very common during that time, which is why it was one of the first things they did when they came home from school – go online and chat on ICQ. It facilitated communication over distance without blocking the telephone and it made it possible to communicate with several friends simultaneously. Chatting was rather colloquial and mixed with abbreviations and acronyms as well as animated and ordinary emoticons. The topics varied between usual small talk and school topics like homework. All interviewees mentioned ICQ with an amazed reaction because it silently disappeared.

Skype (instant messaging, audio and video communication) and TeamSpeak (audio only) were merely used by the male interviewees. One female interviewee had a Skype-account but did not really use it yet. The other females did not even mention it. One male interviewee said that he started using them later in time. The remaining two males used these media especially in connection to computer games. Hence, they communicated with selected friends who were also gaming. The language was accordingly more colloquial and mixed with gaming terminologies.

The last medium that was mentioned by the early digital natives was social networking sites as for instance the first German platforms "schueler.vz" and "schueler.cc" that were quite popular. Four of the interviewees were active users, one female mentioned it but did not use it yet, and one male interviewee did not mention it at all. Especially the one female interviewee who graduated in 2012 used it a lot for communication after school. She used it to communicate about school-related topics with all classmates. ICQ was more popular for the other interviewees in this matter.

The early digital natives assumed that today's school friends particularly use WhatsApp and other smartphone apps for communication. In turn, two interviewees talked about stricter rules regarding the usage of smartphones and internet at school. Communication via WhatsApp would incorporate the usage of WhatsApp groups to communicate with the whole class about school-related topics. Three interviewees assumed that the late digital natives would use it even during lessons because it is much easier than writing a note. It might not even matter if the friend was sitting nearby or not, messages, pictures, and videos would be shared anyway. Almost all interviewees said that today's school friends would call each other less often. Apart from that, they may use Facebook and Skype as two respectively one interviewee assumed.

The last question asked in what way their media set could have influenced their communication with friends. All interviewees thought in some way that it had a positive influence. Not having a smartphone at that time was described as something positive because the mobile phone did not distract as much as a smartphone does today. However, other factors should be taken into account for this as for example regulations by parents, the general social environment, and the individual's choice. This was especially important to one of the interviewees as he described himself as rather conservative and therefore favouring face-to-face encounters and calling someone over texting. Favouring face-to-face and calling was also mentioned by two female interviewees who even stated a tendency to call people more often in general. Two interviewees, a male and a female, talked about the ordinary written media as something nice to receive or retrieve:

> *Ich glaube, dass ich zum Beispiel weiß, dass man auch Briefe schicken kann und dass Briefe auch schön sind, wenn man sie kriegt und dass es nicht unbedingt alles immer über E-Mail laufen muss oder über irgendwelche medialen Sachen.* ("I think that I for example, know that you can send letters too and that they are nice when you get them and that it does not necessarily have to be e-mail all the time or any digital thing." – Interviewee A-04).

Ach ich finde es eigentlich ganz gut, dass man sowas wie Briefbücher oder so geschrieben hat während der Schulzeit, weil wenn man sie jetzt noch hat, kann man sich nochmal daran erinnern. Der WhatsApp-Chat ist bestimmt irgendwann mal weg und dann sieht man es nie wieder. ("I think it is actually good that you wrote something like slam books during your schooldays because if you still have them, you can reminisce about it. The chat in WhatsApp is certainly gone some day and you will not see it again." – Interviewee A-05).

One interviewee reported that he might be more critical and careful in his media usage for example regarding data protection. New media always evoked some kind of general concern and disturbance in society. Future parents may not be as sceptical as generations before because they will not be able to relate to the analogue media environment as he said. One female interviewee said that in contrast to today's school friends who can constantly communicate, she knows that no communication for a while does not mean that the friendship is over. In turn, the early digital natives have an understanding of the previous media environment and may appreciate the new media more than younger generations.

4.2. Late digital natives

Table 3 presents the nine personal media forms that were mentioned by the late digital natives and the symbols indicate that seven of them were actually used. WhatsApp constituted the core of their communication and replaced the SMS. Ordinary written communication disappeared almost completely. The classical telephone conversation was able to stay as a component on second place. Skype and e-mail were slightly more used now, while social networking sites were not used at all for interpersonal communication. The mini-tour question (3 B) revealed that at least three of the interviewees had contact with their friends via WhatsApp even before they actually met at school. They mentioned it explicitly as the first type of communication with their friends but highlighted face-to-face communication as the dominant one in general.

Medium	B-07	B-08	B-09	B-10	B-11	B-12
note	0	0		0	0	
landline telephone	+ + +	0	+			+
smartphone				0	+ +	
SMS						
e-mail		+		0	+	
Skype	0	+		+ +	+	
social networking sites						
WhatsApp		+ + +	+ + +	+ + +	+ + +	+ + +
Snapchat				+		

Legend: used the most (+ + +) | used a lot (+ +) | used (+) | used less (0) | not used ( )

Table 3: Late digital natives' media for mediated interpersonal communication

The note was not really recognised as a medium but mentioned by four of the interviewees. If nothing else was possible, they may have written a small, hidden note to a friend during a lesson. The indicated usage should be understood as even less than in comparison with the early digital natives. Other forms of ordinary written communication were not used at all and the friendship or slam book was not even recognised.

All interviewees mentioned the landline telephone or smartphone for calling their friends. Not everyone declared explicitly which device they used but calling a friend always had a certain reason. For one interviewee the landline telephone was basically the main medium because he did not possess a mobile or smartphone. Besides the two that called their friends rarely, one female interviewee reported that she used to have long conversations on the landline telephone but recently tended to use voice messages via WhatsApp more often. Another female interviewee said that she called friends in the evening to talk about private topics more easily. Lastly, a male interviewee used the landline telephone in connection to WhatsApp calls with friends when they were playing video games in order to create a kind of conference.

SMS came up in two interviews in regard to the own usage. The first interviewee recognised it as a possibility but it was not an option as he did not possess a mobile phone himself. However, another interview mentioned SMS as the alternative when there was no internet. The costs for an SMS were mentioned and that it basically has been replaced by WhatsApp. Furthermore, three interviewees, one male and two female, reported the usage of e-mail communication with their friends. Two of them framed it thematically as either a tool for certain student groups and events or for friends that did not have a mobile phone.

Skype was the third most popular medium among the late digital natives as four interviewees indicated using it. One interviewee explained that it was an easy and free of charge way to communicate with friends while being able to play on the computer simultaneously. Written colloquial communication was reported by him and two others said that they were calling and video-calling their friends. Two interviewees mostly used it with friends who do not have a mobile phone. Lastly, a female interviewee mentioned group projects with classmates who did not live nearby as a common task to approach via Skype. Basically all interviewees mentioned social networking sites but none of them used them to engage in mediated interpersonal communication. Some said that they did not even have an account or it was inactive and if they had one, they checked it only rarely. Besides Facebook, the interviewees talked about Instagram, YouTube, and one even about Twitter, which were used in general but not to communicate with their friends.

> *Und wenn ich jetzt zum Beispiel auf anderen Social Media Seiten bin wie Instagram, da ist das ja so, da kommuniziere ich mit Freunden nicht so, weil da ist das ja so eine Plattform, die irgendwie für mich, da gehört sowas irgendwie nicht hin.* ("And if for example, I'm on other social media sites like Instagram, then it is like I do not communicate with friends because that is a platform where this does not belong." – Interviewee B-11).

The most popular medium was WhatsApp. Five of the interviewees mentioned it with no doubt as the one that they used the most. The interviewee who did not report this was the

one who did not possess a smartphone and therefore could not access it. As mentioned before, three of these five WhatsApp-users, one female and two male interviewees, reported that they checked their messages directly after they woke up. Apart from that, it was rather used to communicate after school because of the regulations at school. Some interviewees said that it was sometimes used anyway during lessons. Most of the times, the interviewees actually turned it off and concentrated on their school day.

Communicating via WhatsApp meant mostly talking about school-related topics as the interviewees reported. They asked about homework and updated each other about cancelled lessons or if someone missed a lesson. Additionally, they talked about random topics without a specific reason, nonsense and funny pictures, arranging meetings, and serious topics. This was done via all possible features of the app: texting, sending voice messages, and calling each other. Texting was of course the main type of communication. The two male interviewees mentioned calling friends in addition and the three female interviewees used voice messages occasionally when they were lazy or just had one free hand.

Besides one-to-one communication with friends, the interviewees had a group chat for their own class in which the communication was mostly school-related. Separate groups were additionally formed for certain classmates (i.e., closest friends, the ones that cycle to school) and other social activities. Colloquial communication was especially typical in the class group as long as there was no teacher or adult involved. One female interviewee said that text messages to very good friends sometimes only consisted of emoticons. WhatsApp was described as the universal communication app that everyone used and that it replaced the ordinary SMS. They said that it was easy to use, quick, and free. It could be used anywhere as internet is standardly available and people were therefore more reachable than via other media. In comparison with Facebook, it was clearer with whom something was shared. WhatsApp was the one platform to communicate with friends because other apps focus on different aspects such as, for example, photos.

> *WhatsApp, das hat halt wirklich so ziemlich jeder, der ein Smartphone hat. Also ist man halt auch für jeden erreichbar und man erreicht halt auch fast jeden, wenn das Handy nicht aus ist. Bei WhatsApp ist man fast immer aktiv und das ersetzt halt SMS.* ("Pretty much everyone who owns a smartphone has WhatsApp. So you are contactable for everyone and you can reach almost everyone if the smartphone is not turned off. You are almost always online on WhatsApp and that simply replaces SMS." – Interviewee B-10).

> *WhatsApp einfach, weil es relativ schnell ist und ich es überall benutzen kann. Und Telefon ist halt das Problem, dass man nicht immer rangeht und dann kann man die Nachricht sehen und muss nicht auf den AB quatschen oder so.* ("WhatsApp because it is relatively quick and I can use it anywhere. And with telephone the problem is you do not always answer and then you can see the message and you do not have to leave a message on the answering machine." – Interviewee B-09).

The last medium was Snapchat, which was mentioned by only one interviewee. She used it with certain friends that were also using the app to exchange pictures with small notes about nonsense on them. Another interesting insight from the data is that three interviewees adapted to their friends and used certain media only for communication with them. This was mostly in relation to friends who did not use WhatsApp or Snapchat.

After reflecting a lot about their own mediated interpersonal communication, the late digital natives were asked about their assumptions of which media *Gymnasium* students from ten years ago used to communicate. Three of the interviewees said that it would have been less mediated interpersonal communication in general and less via mobile phones in specific. In turn, the landline was perceived as a primary medium by most of the interviewees if they did not meet in person. SMS, letters, and maybe even e-mail were mentioned as other means. One interviewee thought that Facebook had been more popular at that time.

The late digital natives acknowledged more or less that the current media set influenced their future communication with their friends. Everyone is constantly texting via WhatsApp, which has been characterised as disturbing and too extreme as people even text when they sit in front of each other. The new digital world was described as normal because they grew up with it in the way it is now and it may therefore be hard to compare with what has been before. There is a different relationship towards technology as one female interviewee phrased it.

> *Aber es hat auf jeden Fall schon einen Einfluss auf einen selbst, weil man einfach mit den ganzen Sachen aufwächst und weil das schon so normal ist einfach und man gar nicht mehr ohne teilweise kann.* ("But it definitely already has an influence on oneself because you simply grew up with all these things and because it is so normal you cannot do without it to some extent." – Interviewee B-11).

One interviewee explained that he tried to keep himself out of the general hype, resisted social media in that sense without seeing any disadvantage in it. He was often confronted with surprised reactions upon this. One interviewee did not acknowledge an influence because he got his smartphone recently and was actually having more contact with his friends because of that. This could in turn be framed as an actual influence that is rather positive in comparison to the views stated before. Some said that there has maybe been more face-to-face communication and that there were no situations like in the statement below. However, one female interviewee said that there are always some people that explicitly put their smartphones away and give someone their full attention and vice versa.

> *Es gibt ein Bild mit einer Mutter und zwei Kindern und spricht die die ganze Zeit an und die reagieren nicht. Dann holt sie ihr Handy raus und schreibt „was wollt ihr essen?“ und dann reagieren sie.* ("There is a picture of a mother and two children and she speaks to them all the time and they do not react. Then she takes out her mobile phone and texts them 'what do you want to eat?' and then they react." – Interviewee B-08).

4.3. Comparison of the media sets

In total, there were twelve different personal media that came up in this study. Both groups of digital natives mentioned almost the same number of personal media. The letter, friendship or slam book, ICQ and MSN, and TeamSpeak disappeared from the media landscape of the late digital natives. The mobile phone was replaced by the smartphone, which facilitated the emergence of WhatsApp and Snapchat. In turn, WhatsApp replaced the SMS and took over a core position in the mediated interpersonal communication of the late digital natives. Telephone conversations in general were a solid, second component in both groups. Lastly, the reactions concerning the media's influence was phrased positively by the early digital natives but negatively by the late digital natives.

All interviewees had a tendency to favour one medium for their communication. However, this favouring seemed to be more definite for the late digital natives. Overall, the usage between the groups differed not only regarding the medium but also in terms of the general amount. The usage level declined for several media forms and was more concentrated for the late digital natives. The media forms that were used at least to some extent ranged between eight and four in the group of the early digital natives and between six and two in the group of the late digital natives. Additionally, the interviews showed that there was a tendency among the early digital natives to mention more than one medium that was "used the most", while the late digital natives were more likely to state WhatsApp with a clear gap towards the next medium.

Two of the three media for ordinary written communication, the letter and the friendship or slam book, were not part of the late digital natives' mediated interpersonal communication. In contrast, notes were still considered by today's *Gymnasium* students although less than ten years ago. While the letter was used for communication outside of school with certain pen friends, the notes were clearly a medium for communication at school. The friendship or slam books were exchanged at school but mainly written at home. Although these three media were considered in different contexts, they can be seen as one group that has similar media capabilities (see Appendix C). This group stuck out because of its high reprocessability that no other media forms could really reach. The immense amount of data produced in a WhatsApp-chat cannot be reprocessed in its entirety after ten years as for example a friendship or slam book. However, the latter was not recognised by the late digital natives and letters were apparently not able to compete with WhatsApp. However, the results showed that the note was not replaced completely but rather seemed to compete with WhatsApp in the usage at school.

Furthermore, because of these displacement effects regarding the ordinary written media, the media set shifted in its constellation regarding the medial-conceptional distinction (see Appendix C). Three sheer graphic media disappeared (the letter, friendship or slam book, and ICQ), one was replaced (SMS), and another one not considered any longer (social networking sites). The media technological developments made it possible to combine graphic and phonic communication, which was obviously appreciated by the late digital natives. Their media set was composed of two sheer phonic and graphic media forms and three media forms that were a mix between graphic and phonic communication. This change

implied that the communication shifted towards the informal and spoken end of the conceptional dimension.

It can be stated that calling someone via the traditional landline became less popular over time. However, it stayed as an important component of the mediated interpersonal communication with friends as it ranked as the second most used medium in both groups of digital natives. While the mobile phone was not really used to call someone at that time, the smartphone was used to some extent to actually call a friend. The mobile phones did only have basic functions and the relation to it was basic as well, which is totally different in comparison to the role of today's smartphone and its functions. SMS had a rough start with the early digital natives because of its high costs, which was why the usage was rather low. The late digital natives did not use it at all because WhatsApp took over its function and as long as there was internet, they would not need to send and pay for an SMS.

The instant messenger "ICQ" that was used at home made an extreme development between the two interview groups. It was the most popular medium for the early digital natives but disappeared completely in the media set of the late digital natives. It had a similar position for the early digital natives as WhatsApp today and both were followed by the telephone in the corresponding group. Both instant messengers were used because of their popularity. Furthermore, both were characterised by colloquial written language as well as private- and school-related topics but differed because ICQ was stationary bound to the personal computer or laptop, while WhatsApp could be used mobile. This finding is entirely supported by Feierabend et al. (2015) and Feierabend and Rathgeb (2007) in the JIM-studies: ICQ and WhatsApp are used the most in the corresponding years.

E-mail's role changed as the interview data shows as well. The early digital natives used it to sign up for the first social networking sites or instant messengers and did not recognise it as a medium for interpersonal communication, which changed with the late digital natives. Although it was mostly mentioned in the context of communicating with friends that do not use WhatsApp, it still had a more established place in the current media environment than compared with the previous one. E-mail differentiated itself from the other media especially because of its more formally written conception, which has become less because letters were not considered any longer.

Only e-mail and Skype seemed to counteract the general tendency of a declining usage of other media forms besides WhatsApp. Skype was still connected to the computer, although it can be used mobile as well nowadays. For the early digital natives Skype was related to gaming and being at the computer anyways, while the late digital natives rather saw it as another way to communicate with their friends and eventually used the video call function or worked on school projects. TeamSpeak was not mentioned at all by the late digital natives. While the emerging social networking sites were used by four early digital natives, none of the late digital natives considered it. This goes hand in hand with the decline in the usage of online communities as demonstrated by the JIM-study from 2015 (Feierabend et al., 2015). Lastly, Snapchat was introduced as well to the media set of the late digital natives, although only one of them actually used it.

The early digital natives were right with their assumption about WhatsApp being the main medium for current school friends. In contrast, the late digital natives could not really pinpoint the detailed mediated interpersonal communication of the early digital natives from around ten years ago. Nonetheless, they came up with the landline telephone as one part of it. Both interview groups stated interestingly that there was an influence in relation to the different media sets that they experienced when they grew up and were at school. While the early digital natives tended to phrase it as rather positive to have been grown up with the older personal media set, the late digital natives tended to mention slightly negative aspects first. However, both did not exclude the general positive sides of the new technological environment.

The main points of the early digital natives were about the appreciation of today's media environment and at the same time of the older one because they knew how difficult it has been before and therefore valued the advantages of the newer media more than the late digital natives. Moreover, they could relate better to older media form, appreciated the speciality of receiving a letter for example. The whole topic has had a nostalgic factor for the early digital natives, which underlined this appreciation. On the other hand, the late digital natives' negative formulations of their media environment centred on the general amount of texting via WhatsApp, which was interpreted as too extreme sometimes, and the less attention that was given to people right next to oneself.

5. Discussion

This section discusses the main findings in relation to the theoretical background of this study. First, the core change between the media sets is discussed in relation to the presented theories and the concept of mediated interpersonal communication. Second, the corresponding communicative changes are examined. Third, the impact of the media environment is reasoned.

5.1. Concentrated mediated interpersonal communication

One of the main findings concerns the fact that the usage of personal media is more concentrated, meaning it is more focussed on one medium, among the late digital natives than among the early digital natives. Although the number of media forms in the sets of the two groups remains almost the same, the early digital natives are more likely to use more media forms than the late digital natives. The results show that WhatsApp takes over the means of mediated interpersonal communication. From the point of view of media niche theory, one can argue that it may look like as if the media complement each other and occupy slightly different niches in the early media set. In turn, this would mean that WhatsApp may cover the niches of certain media forms of the early media set and is superior to them, which would be why it turns out to be the main medium of choice for the late digital natives.

Taking into account the media capabilities of the whole media set may show this superior character of WhatsApp and that it overlaps with the others' niches. Having the five media

capabilities in mind – feedback, symbol variety, parallelism, rehearsability, and reprocessability (see Dennis & Valacich, 1999) – the media forms for mediated interpersonal communication of the early digital natives cover many possible variations of the five factors (see Appendix C). Additionally, there are media forms that are phonic and graphic in terms of the medial-conceptional distinction but also one that covers both – although Skype is only popular among the male early digital natives. Hence, it makes sense that the media forms in the early media set rather complement each other because they are composed of varying capabilities, are connected to different contexts, and sometimes even to specific topics.

WhatsApp basically scores high on three and medium on two of the five media capabilities because of the variety of features that it offers: written communication, emoticons, voice messages, and calls. Depending on which specific feature is used, a certain arrangement of the capabilities is dominant during the usage. Overall, it is able to compete with the variety of media capabilities that are composed by the total media set of the early digital natives and is even superior in certain factors. This communication app is primarily used on the smartphone and therefore mobile, which makes it independent from a specific context. WhatsApp seems to incorporate the entire variety of the early media set's media capabilities. However, when it comes to reprocessability in specific, it may only score up to medium because at some point the digital messages may not be stored any longer or are simply deleted because of the immense amount of data that is produced.

In relation to the previous research that has been reviewed, this finding is in contrast to what Ledbetter (2010) states about friendship communication. He concludes that friends engage in communication via multiple channels in order to maintain the relationship (Ledbetter, 2010). This is supported by the results of the early digital natives and their diverse set of media that is actually used for mediated interpersonal communication. However, the late digital natives show the concentrated usage of WhatsApp as the main component and do not engage in the same amount of multiple channels as the early digital natives. Nevertheless, WhatsApp's emergence and overtake in the newer media set can be related to the fact that media define and redefine their niches in relation to each other, which can be argued as having happened in this media environment (Ledbetter, 2008).

It seems to be clear that the emergence of WhatsApp with all its features outplays almost the entire media set of the early digital natives, which led to the new mediated interpersonal communication of the late digital natives. WhatsApp covers the broadness of the earlier media forms' media capabilities in one simple app that is described as a standard for everyone who has a smartphone, which in turn is kind of a standard as well among today's adolescents in Germany. Although Ledbetter (2008) states that communication in friendships uses multiple channels, the late digital natives' mediated interpersonal communication decreased to fewer media forms than the early digital natives used. The reason for this seems to be connected to WhatsApp's superiority and the fact that it is popular among the adolescents.

Nevertheless, WhatsApp is not the only medium that is considered by the late digital natives. Telephone conversations via the landline telephone or the smartphone are still a major second component of their mediated interpersonal communication. This can be, again,

connected to the results of Ledbetter (2008), in which he states that the telephone is mostly associated with relational closeness in the friendships of 2002 and correlates with all other means of communication. It may be that this is a standard factor in the media set that WhatsApp cannot replace that easily but may displace it slightly because of WhatsApp voice message feature. Similarly, the remaining media forms, as for example notes, can be argued to compete with WhatsApp in a very specific niche at school. Skype and e-mail, on the other hand, seem to compete with WhatsApp in the form of being the alternative media for late digital natives who are not using the popular instant messenger. WhatsApp cannot cover this niche as it satisfies communicative gratifications to individuals who are not using WhatsApp.

All in all, the development towards a more concentrated mediated interpersonal communication shows mainly two things in the light of the theoretical background of this study: First, the media capabilities and the medial-conceptional distinction demonstrated that the superiority of certain media can be seen as a determining factor of the mediated interpersonal communication. Second, the niche theory showed that the media can anyway have a solid position within the competitive media set by covering a certain niche. The role of the telephone conversation seems to be special because it is a solid second component in both sets, which can be related to its correlation with all other means of communication as shown by Ledbetter (2008). Lastly, the usefulness of the term "mediated interpersonal communication" should be highlighted. Although there is a tendency to use other concepts in the general research field, the study showed that the chosen concept is well suited to cover all relevant aspects of the research problem.

5.2. Communicative changes

The previous section examined the change towards a concentrated mediated interpersonal communication in relation to the theoretical background. This is now taken as the basis to discuss further communicative changes that correlate with this.

The mediated interpersonal communication of the early digital natives is quite diverse. They have a balanced media set that facilitates synchronous as well as asynchronous communication, they communicate while being at different places but also have some media for mediated interpersonal communication at the same place. However, each medium that they use is linked to a specific context. The late digital natives' mediated interpersonal communication, on the other hand, is similarly characterised by both synchronous and asynchronous communication. WhatsApp's mobile character makes communication equally possible at the same place and at different places, although they are not equally appreciated. This is, for example, expressed in the fact that the late digital natives value given attention in a face-to-face encounter and criticise it when friends tend to focus on their smartphones instead.

What makes their mediated interpersonal communication especially different is most probably its mobile character. The context or environment in which they communicate with their friends via WhatsApp can change during the communication takes place. They can walk or sit on a bus and drive somewhere else, while they are typing a message, recording a voice message, or calling a friend via WhatsApp. Depending on which feature they are using

and in which environment or context this happens, the latter will have a different impact on their communication (Allwood, 2002; Knapp & Vangelisti, 2009; Trenholm & Jensen, 2000). Moreover, if the environment changes during the communication, its components change as well and may be the basis for new forms of possible, appropriate, or impossible communication that may be easily violated.

Besides the aspect of changing environments while communicating, the late digital natives talk about the appropriateness of mediated interpersonal communication in certain contexts. The texting via WhatsApp is described as being too extreme sometimes, especially while being with friends in a face-to-face situation. This means that the general mobile character and therefore possible communication throughout the day at any place with an internet connection influences the values of appropriate mediated interpersonal communication. It seems that new rules need to be established and used in relation to the changed mediated interpersonal communication. The previous media environment is composed of context-specific media forms that are not really able to change their context and therefore do not produce such potential problems.

Hence, the new media environment facilitates a context independent communication. The students are now able to communicate with each other before they even meet at school and can stay in contact as soon as they go separate ways instead of waiting until they could write to each other via ICQ at home. This independence from a specific context or place to communicate is most probably linked to a higher amount of communication as well. A continuous flow of communication is now possible without the typical interruptions between leaving school and being online on ICQ at home, which has been the case for the early digital natives. The smartphone and therefore WhatsApp is almost always close-by, which makes it more likely that one can contact and reach a friend at any time. While several media forms in cooperation were needed to facilitate the communication of the early digital natives (Ledbetter, 2009), WhatsApp alone is able to facilitate this continuous flow of communication and may therefore be in its position.

5.3. The impact of the media environment

The question is to which extent such medial and communicative changes in the mediated interpersonal communication of the German *Gymnasium* students are related to the new media environment as such. Of course having more options to choose from affects the choice of the students. Anyhow, it should not be taken for granted that the students attend to the new choices in the advanced media environment.

The late digital natives do not consider media forms offering ordinary written communication as much as the early digital natives. This has primarily effects on the mediated interpersonal communication at school, which became slightly less. The question is if that is positive or negative, something that can be discussed extensively from both standpoints and will therefore only be a statement itself at this point. However, it can be discussed why the late digital natives do not consider the additional kind of mediated interpersonal communication via ordinary written communication as another channel for communication at school.

WhatsApp clearly outperforms many media forms and has significant advantages outside the school but the smartphone is prohibited at school, which limits the usage of WhatsApp. The context school would therefore be more suitable for ordinary written media forms such as the friendship or slam book and the note. This is something that needs to be highlighted in this discussion. The students do not consider it, although it is still accessible and most probably less regulated as a form of mediated interpersonal communication in comparison to the smartphone and in turn WhatsApp. This shows that media environment and its general advancement may have an impact on the choice of media forms for mediated interpersonal communication.

It makes sense that the students choose the most advanced medium, which clearly outperforms the residual media forms in many cases. Mediated interpersonal communication is apparently disclaimed completely when this specific media form is not available instead of considering an older media form that would be suitable in the restricted context at school. A possible reason could be that the loss of gratifications is too big and the students are satisfied with face-to-face communication and the very limited usage of WhatsApp at school. Nevertheless, the new media environment influences the mediated interpersonal communication in one way or the other as the students mentioned the note as a possibility but rather tended to write a short message via WhatsApp. The advancements seem to displace the previous media forms significantly, although they may sometimes be able to facilitate satisfying mediated interpersonal communication.

The popularity of a certain medium is another influence that is related to the media environment. The instant messengers "ICQ" and "WhatsApp" are both characterised as trendy and are used the most for mediated interpersonal communication in the corresponding group of digital natives. It can therefore be argued that a medium gains superiority by being popular at a certain time as well and this is not necessarily connected to its superiority over the residual media. However, this popularity does not mean that everyone will use it just like that. A medium may be considered because of its superiority in general but an individual has still own criteria for choosing certain media out of the overall set, which can result in a different composition of mediated interpersonal communication.

This can be seen in both groups of digital natives. Among the late digital natives, for example, there is one boy who does not want to have a mobile or smartphone and does therefore not use WhatsApp. It is his active choice that goes against the general tendency among his friends. An active decision about one's mediated interpersonal communication can also be seen in the one girl who said that she uses Snapchat although it is currently not popular among the other interviewees. Similarly, there are two early digital natives that attended to letters to communicate with pen friends and there are two others that did not see a value in friendship or slam books. Such preferences can be the case for exactly these two groups of interviewees and may not be true for other interviewees in a similar study design. However, they signify the individual's choice in contrast to the general preferences or trends.

6. Conclusions

The study demonstrated how the mediated interpersonal communication among friends at German *Gymnasien* differed between early and late digital natives. Early digital natives engaged in a broad variety of mediated interpersonal communication. On the other hand, the late digital natives' media usage was concentrated and focussed almost only on WhatsApp. Telephone conversations were a solid component in both groups. Only one medium for ordinary written communication was considered by the late digital natives. Skype and e-mail were the only media that were considered slightly more by the late digital natives. Media that were popular or trendy were used the most – ICQ by the early and WhatsApp by the late digital natives. In relation to the influence of their corresponding media sets, the early digital natives phrased their answers rather positively, while the late digital natives focussed on negative aspects.

The study discussed possible assumptions of why these changes occurred and what they mean from a communicative point of view. These assumptions were argued in relation to the study's theoretical background. While the media capabilities and the medial-conceptional distinction demonstrated that the superiority of certain media can be seen as a determining factor, the niche theory showed that the media can anyway have a solid position within the competitive media set. The study demonstrated how much they differed in their mediated interpersonal communication and how quickly communicative changes can take place. These communicative changes concerned mainly a development towards a continuous flow of communication between friends. The communication flow of the early digital natives was interrupted a lot because of a change in context and therefore medium. In turn, the mediated interpersonal communication of the late digital natives may be connected to contextual changes because of WhatsApp's mobile character.

Almost all ordinary written media were not used by the late digital natives, although there might still be a specific context for them. This, in turn, testified that the media environment has a considerable impact on the mediated interpersonal communication. It was acknowledged that the media compete with each other on an overall and an individual level. The individual's choice can be in contrast to the current trends in the mediated interpersonal communication in terms of which medium is popular among one's friends. Even if the media environment advanced throughout the last years and influenced the late digital natives, their active choice for or against a medium can still be different from its general appreciation.

Overall, the results gave a valuable insight into mediated interpersonal communication in friendships among German adolescents who were all characterised as digital natives. A contribution was especially made to this specific research field within interpersonal communication that still lacks a thorough depth and broadness. Differentiating between at least two groups of digital natives was reinforced. The specific focus of the study limited the possible generalisation of its results. However, the results may be generalizable for the German media environment. It should be considered that the mediated interpersonal communication may be different in another culture, country, or even region. In turn, it may be affected and therefore changed differently because of different developments in the corresponding media environment.

6.1. Future research

The insight of this study was rather small, which is why a follow-up study on a bigger scale would be of interest to investigate if the results are similar for a bigger part of Germany. Additionally, the research field would benefit of a more extensive study in terms of more groups – a group of digital natives born before 1992 and 1993 as well as a comparison to digital immigrants. A cross-cultural study approach between Germany and another country would be specifically interesting because of potentially different media cultures on top of general cultural differences.

From a theoretical point of view, the research problem may be worth to examine with the help of social presence theory and media multiplexity theory for additional insights. Furthermore, taking into account the general communicative changes in the schools' communication environment – with students, teachers, and parents – can relate the changes in mediated interpersonal communication more specifically to the school context. This would advance an understanding of what it means to the late digital natives to not really have an additional mediated channel for communication inside the school.

Video communication is the kind of mediated interpersonal communication that comes the closest to face-to-face communication. However, it did not play a significant role in the students' mediated interpersonal communication. It would therefore be of interest to the general research field to question the reasons behind this. Finally, it needs to be investigated how the media environment during the adolescence of these digital natives influences the future communication throughout their lives.

7. Notes

1. See https://icq.com/ (last accessed on June 26, 2016), https://www.skype.com/en/about/ (last accessed on June 26, 2016), and https://blog.whatsapp.com/10000617/WhatsApp-support-for-mobile-devices (last accessed on June 26, 2016).

2. Snapchat is available since 2011 (see http://snapchat-blog.com/post/22756675666/lets-chat; last accessed on June 26, 2016). Users can share photos via the app that are deleted after a few seconds.

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9. Appendices

A. Interview guide

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Master in Communication
Gothenburg, Sweden, March 2016

UNIVERSITY OF GOTHENBURG

Interview Guide

Part I - Introduction

Zu Beginn einige Informationen über den Ablauf: Das Interview besteht aus 14 Fragen, die du entweder kurz und knapp, in Form einer Auflistung oder etwas ausführlicher beantworten mögest. Falls eine Frage unklar oder unverständlich ist, formuliere ich sie gerne um oder gebe ein kleines Beispiel. Ich werde mir an der einen oder anderen Stelle Notizen machen und falls relevant auch noch eine Nachfrage stellen. Hast du vorab noch irgendwelche Fragen?

Some information about the procedure beforehand: The interview consists of 14 questions that you may answer briefly, in form of a list, or in detail. If a question is unclear or incomprehensible, I may reformulate it or even give a small example. I will take notes at one point or another and may ask a follow-up question if relevant. Do you have any questions before we start?

Part II - Demographics

(1)   In welchem Jahr bist du geboren?   *What year are you born in?*

(2 A)   In welchem Jahr hast du dein Abitur gemacht?   *When did you graduate?*

(2 B)   In welcher Klasse bist du aktuell?   *What grade are you currently in?*

Part III - Exploring friendship communication

(3 A)   Erinnere dich an einen gewöhnlichen Schultag von vor zehn Jahren, von früh morgens nach dem Aufstehen bis du abends wieder ins Bett gegangen bist. Wie hast du dich deinen Freunden mitgeteilt bzw. wie habt ihr euch den Tag über ausgetauscht?
Recall a usual day in school from ten years ago, starting early in the morning when you got up till the evening when you went to bed. How did you communicate with your friends during the day?

(3 B)   Denk an deinen gestrigen Schultag, von früh morgens nach dem Aufstehen bis du abends wieder ins Bett gegangen bist. Wie hast du dich deinen Freunden mitgeteilt bzw. wie habt ihr euch den Tag über ausgetauscht?
Think about yesterday and your day in school, starting early in the morning when you got up till the evening when you went to bed. How did you communicate with your friends during the day?

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Gothenburg, Sweden, March 2016

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Part IV – Exploring mediated interpersonal communication in friendship

Lassen wir direkte Gespräche von Angesicht zu Angesicht von nun an außen vor und konzentrieren uns nur auf Kommunikation mittels eines Mediums – damit ist alles gemeint von einer Nachricht auf dem Papier, über ein Gespräch am Telefon, bis hin zu der Vielfalt an digitalen Möglichkeiten. Beispiel ist immer noch ein gewöhnlicher Schultag von vor 10 Jahren bzw. dein gestriger Schultag.

Let us exclude direct, face-to-face conversations from now on and focus only on communication via a medium – referring to everything from a written note to a conversation on the phone and the variety of digital possibilities. The example is still an ordinary school day from 10 years ago respectively your school day of yesterday.

(4)   Wie hast du mit deinen Freunden ansonsten kommuniziert?
       How did you communicate with your friends apart from that?

(5)   Mittels welcher dieser Medien hast du am häufigsten mit deinen Freunden kommuniziert?
       Via which of these media did you communicate the most with your friends?

(6)   Hast du mit deinen Freunden mittels anderer Medien kommuniziert, je nachdem ob ihr in der Schule gewesen seid oder nicht? Wenn ja, welche hast du mehr innerhalb und welche mehr außerhalb der Schule genutzt?
       Did you communicate with your friends via other media depending on whether you were in school or not? If yes, which did you use more inside and which more outside of school?

Part V - Comparing media for mediated interpersonal communication

(7)   Hast du für die Kommunikation mit verschiedenen Freunden unterschiedliche Medien genutzt? Wenn ja, warum?
       Did you use varying media for the communication with different friends? If yes, why?

(8)   Hast du dich mit deinen Freunden über unterschiedliche Themen ausgetauscht, je nachdem mittels welcher Medien ihr kommuniziert habt? Wenn ja, kannst du dein Beispiel geben?
       Did you communicate with your friends about different topics depending on via which media you communicated? If yes, may you give an example?

(9)   Würdest du sagen, dass du umgangssprachlicher mittels bestimmter Medien kommuniziert hast – gesprochen oder geschrieben – als mittels anderer? Wenn ja, bei welchen Medien und warum?
       Would you say that you communicated – spoke or wrote – more colloquial via certain media than via other? If yes, via which and why?

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Part VI - Reasoning mediated interpersonal communication behaviour

(10) Warum hast du diese Medien den anderen vorgezogen, um mit deinen Freunden zu kommunizieren?
Why did you prefer these media to the others for communicating with your friends?

(11) Hat deine Schule Auflagen zur Nutzung von bestimmten Medien festgelegt? Wenn ja, inwiefern und in Bezug auf welche Medien?
Did your school define terms for the usage of certain media? If yes, in what way and regarding which media?

(12 A) Welche Medien nutzen deiner Vermutung nach heutige Schulfreunde zum Kommunizieren?
Which media do you assume today's high school friends use to communicate with each other?

(12 B) Welche Medien haben deiner Vermutung nach Schulfreunde von vor 10 Jahren zum Kommunizieren benutzt?
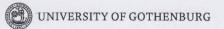*Which media do you assume high school friends from 10 years ago used to communicate with each other?*

Part VII - Future mediated interpersonal communication

(13 A) Inwiefern könnte es deine aktuelle und zukünftige Kommunikation mit Freunden beeinflusst haben, dass du mit einem älteren Medienset aufgewachsen bist als das du nun zur Kommunikation mit deinen Freunden zur Verfügung stehen hast?
In what way could it have influenced your current and future communication with your friends that you grew up with an older set of media than you can access now for communicating with your friends?

(13 B) Inwiefern könnte es deine zukünftige Kommunikation mit Freunden beeinflusst haben, dass du mit diesem neuen Medienset aufgewachsen bist?
In what way could it have influenced your future communication with your friends that you grew up with this new set of media?

Part VIII - Completion

(14) Möchtest du abschließend noch etwas zu der Thematik hinzufügen oder fragen?
Would you like to add or ask something in conclusion to this topic?

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B. Informed consent (German and English)

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Tim Voigtländer
Master in Communication
Göteborg, Schweden, März 2016

Informationsblatt und Einverständniserklärung
zur Interview-Teilnahme

Sehr geehrte/r Teilnehmer/in,

im Rahmen meiner Masterarbeit führe ich eine Studie durch, die sich mit mediatisierter interpersoneller Kommunikation unter Schulfreunden beschäftigt. Das bedeutet, dass ich mir anschaue wie sich Schülerinnen und Schüler mit ihren Freunden austauschen und dies nicht in einem direkten Gespräch von Angesicht zu Angesicht, sondern über verschiedene Arten von Medien – von einer Nachricht auf dem Papier bis hin in die digitale Welt. Insbesondere interessiert mich dabei wie sich diese Art von Kommunikation im Verlauf der letzten zehn Jahre verändert hat. Die Möglichkeiten sich mit Freunden in und nach der Schule auszutauschen sind heutzutage andere als noch vor zehn Jahren und dementsprechend liegt es nahe, dass sich die mediatisierte interpersonelle Kommunikation verändert hat.

Sollten etwaige Fragen zu meinem Abschlussprojekt aufkommen – vor, während oder nach dem Interview – können Sie sich jederzeit an mich wenden. Ansonsten bitte ich Sie die folgenden Bedingungen zur Teilnahme an dem Interview zur Kenntnis zu nehmen und Ihr Einverständnis zu geben. Sofern Sie unter 18 Jahre alt sind, bitte ich um die zusätzliche Unterschrift eines Erziehungsberechtigten.

Die Teilnahme an diesem Interview ist freiwillig, unentgeltlich und kann zu jedem Zeitpunkt ohne Begründung abgebrochen werden. Um eine fundierte Analyse zu ermöglichen, wird das maximal dreißigminütige Interview aufgezeichnet. Die Audiodatei wird nach der schriftlichen Ausführung des Interviews gelöscht. Es wird vollständige Anonymität im gesamten Forschungsverlauf gewährt und diese Einverständniserklärung wird in keinem direkten Zusammenhang mit dem durchgeführten Interview gebracht. Die schriftliche Ausführung des Interviews wird zwar gespeichert, um eine Nachprüfung der Erhebung zu ermöglichen, aber nicht im Anhang der Arbeit veröffentlicht. Lediglich in Form von anonymen Beispielen im Rahmen der Masterarbeit, können Ausschnitte des Interviews zitiert werden. Da die Arbeit in Englisch verfasst wird, werden diese Ausschnitte nach meinem Ermessen übersetzt und die deutsche Originalformulierung als Fußnote abgefasst. Es werden weder Namen noch andere persönliche Informationen, die zur Identifizierung Ihrer Person führen könnten, veröffentlicht. Sofern Namen oder persönliche Informationen im Interview erwähnt würden, werden diese in dessen schriftlicher Ausführung anonymisiert.

Neben den Antworten zu den gestellten Fragen werden ausschließlich folgende personenbezogene Daten erhoben und mit dem Interview in Verbindung gebracht: Geschlecht, Geburtsjahr und die aktuelle Jahrgangsstufe beziehungsweise das Abschlussjahr. Die Fragen zum Interview sind festgelegt, können aber, falls notwendig, durch Nachfragen ergänzt werden. Dieser Fragenkatalog ist auf Wunsch des Erziehungsberechtigten vor dem Interview einsehbar. Für den Interviewteilnehmer selbst sind die Fragen vorab nicht zugänglich. Es ist allerdings möglich die schriftliche Abfassung des Interviews im Nachhinein einzusehen sowie über die Verwendung von Zitaten in der Masterarbeit informiert zu werden.
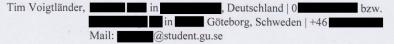
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UNIVERSITY OF GOTHENBURG

Tim Voigtländer
Master in Communication
Göteborg, Schweden, März 2016

Das Interview wird von mir persönlich durchgeführt, schriftlich ausgeführt und analysiert. Dementsprechend hat keine andere Person Zugriff auf personenbezogene Daten, die zu Ihrer Identifizierung mit der schriftlichen Ausführung des Interviews führen könnten.

Das Forschungsprojekt ist Teil meiner Masterarbeit im Studiengang Master in Communication an der Universität Göteborg, Department of Applied Information Technology unter der Betreuung von Mikael Jensen. Der aktuelle Titel der Arbeit lautet wie folgt:

Mediated interpersonal communication in friendships among digital natives:
A qualitative analysis of how media changed German high school students' communication

Verantwortlich für die Ausführung dieser Studie ist

Tim Voigtländer, ████████ in ████████, Deutschland | 0████████ bzw.
████████ in ████ Göteborg, Schweden | +46████
Mail: ████@student.gu.se

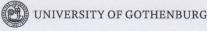Mit Ihrer Unterschrift und gegebenenfalls der Unterschrift eines Ihrer Erziehungsberechtigten, erklären Sie, dass Sie dieses Informationsblatt zur Kenntnis genommen haben und mit allen Bedingungen zur Teilnahme an diesem Interview einverstanden sind.

_____

Datum und Unterschrift des Interviewteilnehmers

_____

ggf. Unterschrift eines Erziehungsberechtigten

_____

Datum und Unterschrift des Verantwortlichen

2

Informed Consent

Dear interviewee,

As part of my master thesis, I must conduct a study that attends, in my case, to mediated interpersonal communication among high school friends. This means the way in which high school friends communicate via different kinds of media. Including everything from written notes to digital messages and excluding face-to-face communication. I am especially interested in how this kind of communication has changed within the past ten years. The possibilities of communicating with one's friends inside and outside school are completely different today than they were ten years ago, which means that it is likely that the mediated interpersonal communication has changed also.

If there are any further questions about my degree project – before, during or even after the interview – please do not hesitate to contact me. In other respects, I would like you to take note of the following conditions regarding the interview and to assent to the information stated in this document. If you are under the age of 18, I would like to have the additional signature of one of your parents or legal guardians.

The participation in this interview is voluntary, non-paid, and can be terminated at any time without justification. In order to enable a well-founded analysis, the interview (up to a maximum of thirty minutes) is going to be recorded. The audio file will be deleted after the transcription. Complete anonymity is granted throughout the research process and this informed consent will not be directly linked with the conducted interview. The transcription will be saved for potential verifications of the investigation but it will not be published as entire appendix of the master thesis. It is possible that parts of the transcript may be anonymously cited as an example in the context of the master thesis. Because the thesis is written in English, such examples will be translated at my discretion and the original wording will be mentioned in a footnote. Neither names nor any other personal information that may lead to the identification of you will be published. If names or any other personal information are mentioned during the interview, they will be anonymised in the transcript.

Besides the answers to the posed questions, the only kind of personal data that is collected and linked to the interview is the following: gender, year of birth, current grade for those in education, and the year of graduation for those no longer in education. The interview questions are specified but may be complemented by further questions if necessary. The list of questions can be accessed on enquiry by the parents or legal guardians beforehand. They are not accessible beforehand for the interviewee. Nevertheless, the interviewee may access the final transcript and may be informed about the usage of it in form of citations within the thesis.

The interview is performed, transcribed, and analysed by myself alone. Accordingly, there is no third party involved that has access to the personal data that may lead to the identification of you in relation to the transcript.

1

UNIVERSITY OF GOTHENBURG

Tim Voigtländer
Master in Communication
Gothenburg, Sweden, March 2016

This study is part of my master thesis in the Master in Communication at the University of Gothenburg, Department of Applied Information Technology under the supervision of Mikael Jensen. The current title of the thesis is the following:

Mediated interpersonal communication in friendships among digital natives:
A qualitative analysis of how media changed German high school students' communication

Responsible for the execution of this study is

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Mail: ███████@student.gu.se

With your signature and if necessary the one of one of your parents or legal guardians, you assent to the stated terms and conditions of participating in this interview.

_____

Date and signature of the interviewee

_____

If necessary, signature of one parent or legal guardian

_____

Date and signature of the responsible researcher

2

C. Characterisation of the relevant media

The first part of the characterisation is based on Dennis and Valacich's (1999) media capabilities and their classification of selected media. It is updated and adapted to the current media environment in accordance with the interview data.

Media Capabilities	Feedback	Symbol Variety	Parallelism	Rehearsability	Reprocessability
letter	low	low - medium	high	high	high
friendship / slam book	low	low - medium	high	high	high
note	medium	low - medium	medium	medium	high
landline telephone	medium	low	low	low	low
mobile phone	medium	low	low	low	low
SMS	low - medium	low - medium	medium - high	medium - high	medium
e-mail	low - medium	low - medium	medium - high	medium - high	medium - high
ICQ / MSN	medium	low - medium	medium - high	medium - high	low - medium
Skype / TeamSpeak	medium - high	high	low - high	low - high	low - medium
social networking sites	low - high	low - high	low - medium	low - high	low - medium
WhatsApp	medium	medium - high	low - high	low - high	low - medium
Snapchat	low - medium	medium - high	medium - high	medium - high	low

The second table comments on the medial-conceptional distinction of Koch and Oesterreicher (1994; 2007). The positioning on the conceptional dimension needs to be interpreted in relation to the other media and does not provide a coherent view of any possible form of communication as applied by Koch and Oesterreicher (1994; 2007).

Medial-Conceptional Distinction	Medial Dimension	Conceptional Dimension informal spoken — formal written
letter	graphic	✖ (formal/written)
friendship / slam book	graphic	✖ (mid-formal)
note	graphic	✖ (mid-formal)
landline telephone	phonic	✖ (informal/spoken)
mobile phone	phonic	✖ (informal/spoken)
SMS	graphic	✖ (medium)
e-mail	graphic	✖ (mid-formal)
ICQ / MSN	graphic	✖ (medium)
Skype / TeamSpeak	phonic / graphic	✖ (informal)
social networking sites	graphic / phonic	✖ (informal-medium)
WhatsApp	graphic / phonic	✖ (informal)
Snapchat	graphic / phonic	✖ (informal)