

Generation "SMS"

An empirical, 4-country study carried out in Germany,
Poland, Peru, and Indonesia

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Abstract

In order to reveal patterns and underlying motivations of teenage mobile phone usage, an international comparative, partly exploratory survey was carried out investigating N = 1599 (weighted) students and their mobile phone usage. 11- to 18 year-old German, Polish, Peruvian, and Indonesian adolescents were surveyed about a range of topics to gain insights into aspects of mobile communication.

This work aims to supplement, expand, and support results from current research. Additionally it intends to provide answers to the following questions: How do adolescents use their mobile phones in everyday life? Do cultural differences lead to differences in the mobile phone usage of boys and girls?

The results of this investigation demonstrate that mobile phones foster the developmental processes of adolescence. The results also confirm that the mobile telephone is an integral part of a teenager's everyday life and that youth adapt their patterns of communication to mobile phones. A comparison between the different countries surveyed showed effects of glocalization.

Keywords:

SMS, text messaging, mobile telephone, mobile communication, youth, adolescents, international comparison, Poland, Germany, Peru, Indonesia, glocalization

1 Introduction

Today's youth are often referred to as the "SMS generation." They are the first generation to have grown up with mobile communication, and they often already own their own phone. It is obvious from the title: "Generation SMS" uses mobile phones extensively. In addition to telephoning, they primarily take advantage of text messaging.

The extensive use of mobile telephones generates both opportunities and risks for youth. For instance they can make more flexible use of their free time, stay more easily in contact with friends and still remain reachable by their parents. But problems often also arise. Mobile phone dependency for instance appears to be a new phenomenon, and youth often struggle to maintain an appropriate relationship to their mobile phones.

In addition to network operators and traditional game and ring tone providers, other sectors are now attempting to profit from the boom of mobile phones among youth – including the music industry. For instance the first music CD single bundled with a ring-tone version of the song for mobile phones was recently released. This indicates the highly dynamic nature of this research field.

2 Current state of research

Mobile phone use, particularly among young people, is a widely discussed, broadly researched topic. Researchers in various countries investigate issues that are often very specialized. The results typically reflect mobile phone usage in their specific country, occasionally reflecting regional differences.

Based on extensive existing research findings, the study presented here is a comprehensive investigation of mobile phone use among youth and illuminates a range of related aspects. A key feature of the study is the large, multinational sample. The study allows us to draw conclusions about international similarities and differences in mobile phone usage among

youth. The countries were selected to represent various continents and reflect a range of economic and social conditions. Existing results will be examined to determine whether the adoption of the mobile phone is uniform across different cultures. The investigation makes international comparisons, from a European perspective, of the globalization of certain groups of youth. Key issues include the impact of socio-economic conditions and the diffusion of mobile telephones in the respective countries. Cultural factors are also taken into consideration as much as possible. Let us begin with an overview of certain important findings on the relationship between youth and mobile telephones.

2.1 Significance and functions of the mobile phone for youth

The mobile phone as a device is allowed more bodily proximity than any other medium; users typically carry their mobile phones with them (cf. Fortunati, 2002). Youth often have a strong emotional attachment to their mobile telephone, and some users even consider the mobile phone to be an extension of the self, claiming: "It's part of me" (Hulme/Peters, 2001; see also Oksman/Rautiainen, 2003). Such an intimate relationship to a technological device often results when its use provides important gratification. Mobile phones and SMS (short message service) can provide pleasure for instance in using new technology and playing with language. Text messaging also sometimes serves purposes of mood management; activity when one is bored is experienced as positive (cf. Döring, 2002).

2.2 Norms of mobile phone usage

Individual media such as the telephone, and thus the mobile phone as well, provide primarily three types of gratification: the establishment of task-related contacts (instrumentality) and the cultivation and confirmation of emotional contacts (sociability and reassurance) (cf. Dimmick/Kline/Stafford, 2000). Text messages serve similar functions. They can be classified into five main text function groups consisting of contact, information, appeal, obligation, and declaration, whereas the first two types of text are the most common (cf. Döring, 2002). Texts of a positive tone predominate in SMS communication (cf. Döring, 2002). The messages are typically speech-based or hybrid (blend of spoken and written elements) in nature, which has an impact on language use, among other areas (cf. Fortunati/Manganelli, 2002; Thurlow, 2003). Sometimes however misunderstandings arise as a result (Eldridge/Grinter, 2001).

SMS is a way to discreetly ask others if communication is currently possible and desirable. Recipients can decide themselves whether, when, and in what manner to answer (cf. Geser, 2004). This is a major advantage late at night and at other critical times, considering that hardly any established, generally applicable norms or rules exist with respect to mobile communication, creating a situation of "normlessness" for many mobile phone users (cf. Geser, 2004). It has not been clearly established whether and in what situations in public and in the presence of others telephoning is allowed, and when it is perceived as impolite. Personal issues are often freely discussed in public; one problem association with public mobile phone use is that of voluntary or coerced eavesdropping (cf. Ling, 1997; Höflich/Rössler, 2002). Third parties are often unable to avoid listening to one side of the conversation, which can indeed be perceived as unpleasant by some. Personal conversations on mobiles in public generally necessitate a large degree of tolerance, both from those telephoning, who are unable to discuss personal issues without being overheard, and from those present, who may feel bothered for a number of reasons. Switching off the mobile phone in the presence of an interaction partner is a new way to show deference (cf. Geser, 2004).

2.3 Change in social relationships

The mobile telephone has now become an essential element in the everyday life of youth and in their emancipation process (cf. Ling, 2004). In this role, it also helps broaden the opportunities and options for youth and for instance provides them with a certain amount of freedom with respect to parents and teachers. Parents and teachers are unable to monitor with whom youth communicate about what (cf. Ling/Yttri, 2002; Oksman/Turtiainen, 2004). The mobile telephone is thus also of great significance in the formation of one's own identity, one of the decisive tasks in the psychological development of adolescents (Lobet-Maris, 2003; Mante-Meijer/Pires, 2002).

The mobile phone is also highly symbolic for boys and girls. It represents reachability and popularity, among other characteristics (cf. Ling, 2004). Although social networks are maintained via mobile phone, mobiles and SMS are used for more than just arranging meetings. Young people use SMS to discuss personal issues and express the entire range of emotions, particularly when they would not have the courage to say such a thing in person or by telephone (cf. Oksman/Turtiainen, 2004). In this way the mobile phone can foster the establishment of social relationships and help users flirt with one another. Romantic relationships are initiated, carried on, and ended via SMS (cf. Kasesniemi/Rautiainen, 2002). Although youth tend to want a mobile phone for peer contacts, it can also have a positive impact on their relationship with parents (Oksman/Rautiainen, 2003a). After all, the mobile phone makes the process of developing autonomy during puberty less traumatic by allowing parents and children to remain in contact even when apart (cf. Palen/Salzman/Youngs, 2001). As a result, a share of parents is positive about the mobile telephone, emphasizing aspects of safety and reachability of young people who carry a phone. Other parents on the other hand are critical of the mobile telephone and consider it to be an artificially generated desire of youth (cf. Ling/Yttri, 2002).

2.4 Mobile phones and school

Not only parents and children use mobile phones to keep in touch when apart; this is also widespread among peers. The mobile telephone allows users to be constantly reachable. Even those in physically enclosed situations can remain discreetly reachable simply by keeping the phone on and switching it to silent mode. This is also made use of at school (cf. Ling/Yttri, 2002), although mobile phones are often forbidden there, especially during class. Mobile phones are nonetheless present at schools and students develop a range of methods to conceal prohibited phone usage. The phone can be used outside the teacher's field of vision, for instance under a desk or in the pants pocket (cf. Ling/Yttri, 2002). Ito (2003) reported for example that most students at least occasionally send text messages during class.

2.5 Mobile phones and consumer socialization

Extensive use of SMS in particular sometimes creates financial problems for young people. But not only mobile communication in the more narrow sense contributes to high mobile phone costs; the use of additional services related to mobile phones also plays a role, including ring tones, logos, and phone covers. Their success among boys and girls is most certainly related to the emotional attachment that many teenagers develop to their mobile phones (cf. Oksman/Rautiainen, 2003). But the desire to own a mobile phone often originates from peer pressure (cf. Oksman/Rautiainen, 2002) and not one's own motivations.

An important aspect of mobile phone use among youth is certainly who pays the costs incurred. Increasingly more teenagers are responsible for their own expenses and must learn how to sensibly budget their allowance and phone usage (cf. Lobet-Maris/Henin, 2002). Pre-paid phone cards certainly play a major role in this and are particularly popular among younger phone users. Parents however still often continue to help defray the costs (cf. Höflich/Rössler, 2002).

2.6 Mobile phone users and non-users

Among the younger generation, peers without a mobile phone often seem unreachable. Possessing a mobile phone means staying in close contact with friends and being aware of what's going on (cf. Ling/Yttri, 2002). Adolescents who do not possess a mobile phone may run the risk of becoming outsiders and possibly mobile phone opponents. A study of adults showed that non-users are more likely to find ringing mobile phones annoying and their users to be show-offs. Mobile owners in contrast have nothing against ringing mobiles, even if they consider them inappropriate in certain public locations (cf. Mante, 2002).

2.7 Gender roles and mobile phones

A gender-related study of media usage by Lemish, Liebes, and Seidmann (2001) confirms existing gender roles. According to this study for instance, boys are more oriented toward technology. A further gender comparison showed that mobile phone brands and their technical functions are more important for male teenagers than for female teenagers; girls pay more attention to phone color and design (cf. Skog, 2002). The fact that many adolescents, but almost exclusively girls, archive their text messages in journals is compatible with this characterization (Kasesniemi/Rautiainen, 2002).

Strong gender differences have also been identified with respect to SMS language. Boys for instance tended to be relatively short and used a practical style of writing. Girls in contrast used all 160 characters significantly more frequently and exchanged more information in greater detail via SMS. They wrote more emotional text messages and in addition to a mere description of the situation included information about background details, circumstances, and feelings in certain situations (Kasesniemi/Rautiainen 2002). Communicative media such as the mobile phone, the telephone, email and chat groups are more important for girls (above a certain age) than for boys, and they carry on long, repetitive discussions via telephone (cf. Suoninen, 2001).

3 Information about the investigated countries

	Germany	Poland	Peru	Indonesia
Continent*	Europe	Europe	South America	Southeast Asia
Capital*	Berlin	Warsaw	Lima	Jakarta
Population*	82.5 million	38.5 million	27.5 million	238.5 million (estimate)
Wage earners*	42.5 million	17 million (2003 estimate)	8.5 million	105.7 million (2003)
Average age	42	36	25	26
Per capita GNP **	\$24,000 (2002)	\$4,900 (2002)	\$2,100 (2002)	\$860 (2002)
Official language*	German	Polish	Spanish, Quechua, other languages	Bahasa Indones, other languages
Literacy (share of those over the age of 15 who can read and write)*	99% (1997 estimate)	100%	91%	88%
Religion*	Christian (34% each Protestant and Roman-Catholic)	Christian (95% Roman-Catholic)	Christian (90% Roman-Catholic)	Muslim (88%, followed by 5% Protestant)
Telephones/ 100 inhabitants **	144	77	17	9
Mobile phones/ 100 inhabitants **	79	45	11	6
Internet/ 100 inhabitants **	47	23	10	4

Table 1: Country overview (** cf. ITU, 2003; * cf. CIA, 2004)

4 Methods

4.1 Instrument

The data in this study were acquired with the help of a detailed standardized questionnaire developed by the authors. Its final version contained 137 items in 22 question blocks, addressing a broad range of aspects related to mobile phones and SMS, including:

- Mobile phone ownership
- Phone calls per mobile phone
- SMS per mobile phone
- Mobiles and everyday life
- Mobile costs
- Mobile contacts
- Mobile phones in the social environment
- Mobile phones at school

For the most part multiple-choice questions were used to enable international comparison. The questionnaire was available in four languages: German, Polish, Spanish, and Indonesian.

4.2 Data collection

Data was collected from a random sample of students in grades 7-12. In 2003, written group surveys were carried out in classes at German, Polish, Peruvian, and Indonesian secondary schools. Participants were allowed one hour of school time to fill out the questionnaire. The participating schools were recruited through cooperations of the TU Ilmenau with partner universities in Krakow, Lima, and Jakarta. From the questionnaire comments it was evident that the topic of mobile phones was very important and of great interest for the majority of the youth surveyed.

4.3 Data analysis

Since the available sample was relatively heterogeneous and additional data collection was not possible within the scope of the project, the data were weighted before analysis to yield better results. The goal of the weighting was not to achieve subsequent representativeness, which is impossible anyway. The task involved calculating group comparisons with a simple cell weighting to achieve uniform distribution. The factors country x gender x age were used to correct for sample bias. In order to reasonably limit the number of cells, developmental psychology criteria were used to suitably divide students into two age groups: 11- to 14-year-olds (early adolescence) and 15- to 18-year-olds (middle adolescence). 16 cells were defined as a result: country (Germany, Poland, Peru, Indonesia = 4) x gender (female, male = 2) x age (11-14, 15-18, = 2). It is important to note that two of the resulting cells contained fewer than 20 respondents (Poland, female, 11-14 years and Peru, female, 11-14 years).

4.4 Sample

Let us now describe the sample to be weighted and analyzed. The random sample consists of N=1599 youths between the ages of 11 and 18 years, on average M=14.79, SD=1.46. 50% of survey participants were female and 50 male. 25% of the students were from Germany, Poland, Peru, and Indonesia each. All surveyed teenagers were attending secondary educational institutions in grades 7-12. Due to the selected schools, distortions may occur as a result of self-selection. "Average" secondary school students were surveyed in Germany and Poland, whereas some of those surveyed in Peru and Indonesia were students at private and elite

schools, i.e. tended to belong to the upper class. The fact that all surveyed youth attended secondary schools also means that the results are not valid for youth in general. It should also be noted that the samples in Poland, Peru, and Indonesia were taken exclusively in (major) cities, and thus are presumably not representative of the countries on the whole. Data in Germany was collected in both cities and rural areas.

In terms of mobile phone ownership, the sample can be characterized as follows: A total of 58% of surveyed persons possessed one or more mobile telephones, while 43% had no mobile phone. The ownership figures varied considerably from country to country. 81% of those surveyed in Germany possessed a mobile phone, compared to 60% in Poland, 40% in Peru, and 49% in Indonesia.

5 Findings

5.1 Significance and functions of the mobile phone for youth

The results of the survey show that mobile phones are of great importance in the everyday life of youth. This is valid for mobile phone owners in all investigated countries.

Some 76% of youth consider their mobile phone to be important or very important, and 74% of survey participants reported that they normally carry the phone with them when they leave the house. In Indonesia, however, only 49% of mobile phone owners regularly carried their phone with them outside the home. This may be explained by the digital divide: conventional telephones are much less common in Indonesia than in other countries, and the mobile telephone may be seen there as an alternative to a land line. A majority of those surveyed (70%) usually kept their phones on during the day. But even at night, the mobile phones of 41% of the surveyed youth were “often” or “always” on, indicating the desire for contact at any time. The surveyed adolescents also sent SMS at all times of the day and night, most frequently in the afternoon (37%) and evening (44%) but also in the morning (2%) and at night (17%). This means that a temporal independence exists, allowing communication even at night and other critical times (e.g. lunchtime) without inadvertently bothering the communication partner. This is only possible among teenagers, since they usually possess their own personal mobile telephone through which they are directly reachable for third parties, especially their parents, and who can turn the device off or switch it to silent mode.

Between 0 and 18 mobile phone calls were made and between 0 and 51 SMS were sent and received daily, whereas the most text messages were sent in Indonesia and Peru. Various reasons for this are conceivable. It may be related to the novelty of text messaging or represent the expression of an upper-class socio-economic standard. On average the youth telephoned once per day and sent three SMS per day. 42% of survey participants would nonetheless like to receive more text messages. Very few found it to be too much: only 2% were often annoyed by their mobile phone contacts, 11% occasionally (Peru 33%).

5.2 Norms of mobile phone usage

Mobile communication makes it no longer necessary to wait at home for a call. This allows a certain amount of independence and freedom. Those surveyed reported using the mobile phone relatively independent of location, both at home and away, although more text messages were sent from home. Because mobile phones can be used practically anywhere, communication partners usually don't know where the user is located and whether communication would be a disturbance, without asking. Despite this fact, youth on average only seldom or sometimes explicitly mentioned their location in SMS communication ($M=2.66$; $SD=0.94$;

scale: 1=never to 5=always) and on average only sometimes knew where their SMS communication partner was at the moment ($M=2.85$; $SD=0.94$; scale: 1=never to 5=always). Furthermore, nearly constant reachability was expected as a result of the independence of location and time. In addition to the fact that text messages were sent at all times of the day, it was observed that reaction times to SMS were very short. 86% of those surveyed expected a response to sent text messages immediately or within a few minutes. 92% of adolescents surveyed answered text messages within this time frame. Response times in Indonesia were significantly shorter, whereas Germans took the longest to answer. It appears that response time to SMS increases with increasing GNP of a country. The phenomenon of SMS “discussions” in which text messages are rapidly sent back and forth took place on average several times per month among the youth ($M=4.14$; $SD=2.03$; scale: 1=never to 7=daily). Those teenagers who expected quicker response times to text messages ($r=-.27$; $p<.001$) and themselves answered quickly ($r=-.17$; $p<.001$) were significantly more often involved in SMS discussions. Youths who carried out more SMS discussions also assessed themselves as more strongly “mobile phone-dependent.” 20% of mobile phone owners in fact felt they were rather or very “mobile phone-dependent.” This self-assessment does not appear unfounded, considering that significant correlations were found between perceived “mobile phone dependence” and both the number of mobile phone calls made ($r=.23$; $p<.001$) and the number of text messages sent ($r=.27$; $p<.001$). But although the Peruvians (30%) more often considered themselves “dependent” than youth from the other surveyed countries, they did not use their mobile phones more on the whole. While they did telephone the most, they also sent fewer SMS.

The mobile telephone represented a highly personal medium for the adolescents in the surveyed sample; loaning phones was very unusual. Contrary to existing research results, received text messages were only seldom to sometimes shown to friends ($M=2.50$; $SD=0.99$; scale: 1=never to 5=always) and even less frequently written jointly with friends ($M=2.29$; $SD=0.95$; scale: 1=never to 5=always). In other words, the contents of communication were normally kept private and confidential. 15% of the teenagers however reported that their mobile phone was often to very often accessed without their permission.

Despite treating their mobile phones as very confidential, only 9% of the youth surveyed found it unpleasant to use the mobile phone in the presence of friends, compared with 14% who found it unpleasant to use the mobile phone in public. It was significantly most unpleasant for Indonesians, much more so than the other nationalities surveyed, to use their mobile phone in the presence of others. This indicates a special cultural characteristic, i.e. a very polite and restrained use of mobile phones. This finding may be related to the fact that Indonesians least frequently carry their phones with them. Youth are likewise not at all or only slightly bothered by mobile phone use of others in their presence. In increasing order, they felt bothered by friends who use mobile phones in their presence ($M=1.49$; $SD=0.86$; scale: 1=never to 5=very often/always) followed by people who use mobile telephones in public ($M=1.69$; $SD=0.97$; scale: 1=never to 5=very often/always). The teenagers felt most bothered by fellow students who use their mobile phone at school ($M=1.70$; $SD=1.02$; scale: 1=never to 5=very often/always). In Peru, mobile phone usage was considered significantly least bothersome in all areas, in Indonesia the most. This may be related to cultural differences between the countries. Overall it appeared that the adolescents were relatively tolerant and open when it comes to mobile phone usage. At least some on the other hand had a negative view of advertising via SMS: 37% of teenagers felt rather or very bothered by this. German youth considered SMS advertising as particularly bothersome. Youth in Poland found it less bothersome, followed by adolescents in Peru and Indonesia. Other than SMS advertising, it was relatively seldom that communication received via mobile phone was considered bothersome, whether phone calls, text messages, or voice mail. The fact that the issue of bothering appeared to be of particular importance in Peru relative to other countries may explain why youth there most often feel annoyed by their mobile phone contacts (see section Significance). It

was not possible to conclusively ascertain whether the limits of disturbance are simply defined differently in Peru, or whether and why mobile phones are actually used more intrusively there.

In comparing the average frequency of SMS use among youth in certain moods, it was observed that the most text messages were sent when those surveyed were happy about something. SMS were sent with decreasing frequency in the case of boredom, loneliness, sadness/frustration, and fear. When asked about the content of their SMS communication, the surveyed adolescents reported sending the most text messages to remain in contact and to arrange personal meetings (see Fig. 1). Both types of content fulfill a contact function.

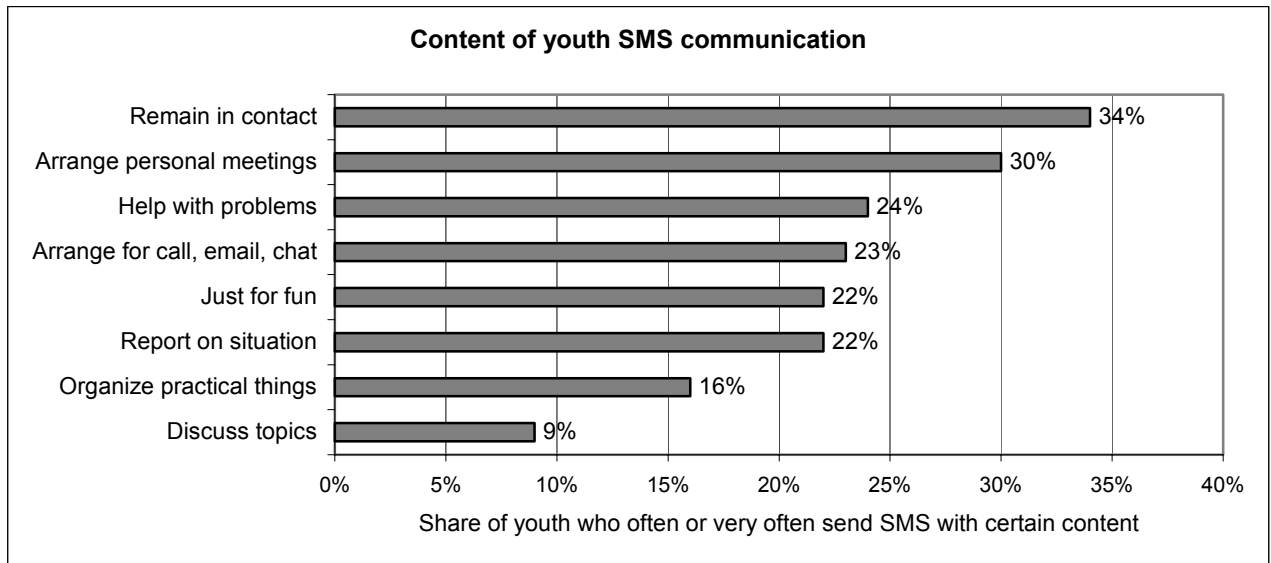


Figure 1: Share of youth who often or very often send SMS with certain content

To give and receive assistance for problems (appeal function) was the third-most frequent reason for sending SMS. This was followed by text messages to arrange to change medium, those written simply for fun (contact function), and messages reporting on a situation (information function). Only seldom did youth experience misunderstandings during SMS communication, for instance with respect to content, context, tone, or abbreviations used.

5.3 Change in social relations

Whereas adolescents used their mobile phone to contact friends and acquaintances, new contacts were hardly ever established via SMS; primarily existing friendships and acquaintances were cultivated and maintained instead. This also explains the personal and rather positive content of text messages. In other words, SMS was used mainly for follow-up communication. The boys and girls had an average of 68 numbers saved in their phone books. They were in regular mobile contact with 9 of these persons on average.

The teenagers often communicated via mobile phone with the opposite sex: text messages were used to flirt and express love and friendship (see Table 2).

	Flirting via SMS	Expressions of friendship and love via SMS
Germany	22%	36%
Poland	29%	36%
Peru	18%	9%
Indonesia	8%	5%
Average	20%	24%

Table 2: Flirting behavior of youth; share of those who often or very often/always use their mobile phone for this purpose

As indicated in Table 2, there were major differences among countries in terms of flirting via SMS and expressions of love and friendship via text message. More SMS on average were written during the previous week in Indonesia than in Germany and Peru (no data were available for Poland), but text messaging overall was clearly used the least in this area by Indonesians, and only slightly more by the Peruvians. This may have to do with the fact that both countries are very religious and thus may not approve of romantic relationships among youth. Relationships were overall only seldom started or ended via SMS. It appears inaccurate to describe SMS as a “medium of flirtation,” considering that just as many or more text messages were sent in all other situations.

The older the youth were, the more they telephoned with ($r=.15$; $p=.01$) and sent text messages to ($r=.11$; $p=.07$) a steady boyfriend or girlfriend, presumably because romantic partnerships typically become more important and serious with increasing age. Overall the romantic partner was the primary mobile phone contact person. The hypothesis that parents rank behind peers in importance was refuted. As shown in Table 3, youth in Germany, Poland, and Indonesia did not communicate less with parents via mobile telephone than with their friends and acquaintances. The adolescents for instance may have used their mobile phone to inform parents that they would be out longer or needed to be picked up. Parents for their part were always able to get in touch with their children. This may also explain why older boys and girls telephoned more with their parents: presumably because they were away from home more often. The youth maintained significantly more frequent SMS contact with their peer group than with their parents. Apparently even internationally, SMS is particularly a medium of young people.

		Friends SMS / telephone	Boyfriend/ girlfriend SMS / telephone	Parents SMS / telephone
Germany	Total	33% / 19%	70% / 45%	9% / 27%
Poland	Total	77% / 31%	93% / 74%	31% / 31%
Peru	Total	64% / 54%	73% / 52%	17% / 48%
Indonesia	Total	51% / 27%	88% / 59%	53% / 45%
Total	11-14 year-olds	51% / 28%	75% / 55%	30% / 29%
	15-18 year-olds	56% / 32%	81% / 57%	22% / 41%
	Total	54% / 30%	79% / 56%	26% / 36%

Table 3: Share of surveyed youth who maintain frequent SMS/phone contact (daily or several times per week) with the respective relationship partner (**boyfriend/girlfriend figures apply only for those youth with such a partner**)

Mobile phone usage of youth in early (11-14 years) and middle (15-18 years) adolescence reflects the transition through certain age-specific developmental processes. Peers increase in importance, adolescents start to learn how to interact with the opposite sex, and they begin to disengage from their home and parents. The mobile phone may in fact promote the process of becoming autonomous due to the constant reachability it provides.

65% of surveyed youth received their mobile phone as a gift, most of them presumably from their parents. Evidently they also largely found it important to equip their children with a mobile telephone (e.g. for safety reasons). Moreover, parents assumed the costs of the mobile phone, completely or at least partially, for 74% of mobile phone users; these costs ranged from EUR 0-100 per month, with an average of EUR 12. Mobile telephones were likewise very common among the parents themselves: 46% of youth reported that their parents often or very often used a mobile phone. Many parents however still need to learn how to properly use mobile phones, a medium which is often new for them. In this way, the generations can assist one another. The teenagers surveyed were on average only seldom criticized by their parents about their mobile phone usage ($M=1.73$; $SD=1.04$; scale: 1=never to 5=very often/ always). It can thus be concluded that the mobile telephone hardly represents a field of conflict between parents and youth. Consequently, describing youth as “Generation SMS,” in distinct conflict with the generation of their parents, appears inappropriate. No significant differences between countries were observed in our international study; the role of the mobile telephone in the adolescent development process appears globally similar.

5.4 Mobile phones and school

The mobile phone was a constant presence not only during free time but at school as well. 63% of adolescents often or very often carried it with them in this context. 60% also reported leaving their phone on more than seldom, typically in silent mode. However mobile telephones were hardly used at school. According to students, the mobile phone was used on average only seldom, both in class ($M=1.75$; $SD=0.99$; 1 = never to 5 = very often/always) and during breaks ($M=2.08$; $SD=1.04$; scale: 1=never to 5=very often/always). It can be concluded that the mobile telephone is a well-established element in everyday school life, although used there relatively little. Students also perceived the mobile phone as only mildly disruptive at school. 19% of surveyed mobile users reported getting in trouble with a teacher at least once due to a mobile phone. Punishment typically involved confiscating the mobile phone, reported by 9% of the youth. 11% indicated having used a mobile phone to cheat during a test.

In order to gain an overview of the boys' and girls' existing knowledge of the topic of mobile communication, the study examined how many of the participants knew what the common abbreviations SMS and GSM stand for. A total of 29% of those surveyed knew the meaning of SMS (short message service). Spelling errors and other minor deviations such as plurals were ignored. Adolescents were significantly more familiar with the abbreviation in Germany (58%) and Indonesia (52%) than in Poland (4%) and Peru (1%); a certain global digital divide was evident here. None of those surveyed knew that GSM stands for "Global System for Mobile Communications." Even its former meaning of "Group Spéciale Mobile" was not cited. While no global statements may be possible on the basis of this analysis, it is interesting to note that the surveyed abbreviations related to mobile phones were relatively unknown.

5.5 Mobile phones and consumer socialization

To gauge how well youth manage their mobile phone usage, the study asked about their mobile phone debt. After all, there are more costs associated with mobile communication than the mere purchase of the device; it also costs money to use it. Youth should learn to properly manage the medium and its use; mobile phone debt indicates that these skills have not yet been acquired. The findings show that financial problems among boys and girls due to use of mobile communication are apparently not as common as frequently portrayed. Only 3% of those surveyed reported current debt due to mobile phone costs (see Table 4). In individual cases however this debt was considerable, amounting to up to EUR 850 according to those affected. Respondents' high level of education may account for the small share of mobile phone debt within the sample. The social unacceptability of debt may also have distorted answers to this question.

	GNP per capita	SMS / week	Phone calls/ week	Debt	Mobile costs	Allowance	Parents as (co-) financers	Most common brands
Germany	\$24,000	21	5	1%	15 €	37 €	55%	Nokia, Siemens, Motorola
Poland	\$4,900	no information	6	3%	13 €	17 €	83%	Nokia, Siemens, Motorola
Peru	\$2,100	25	7	4%	11 €	15 €	86%	Motorola, Nokia, Ericsson
Indonesia	\$860	28	5	3%	9 €	12 €	85%	Nokia, Siemens, Ericsson
Total		24	6	3%	12 €	21 €	74%	

Table 4: Comparison of characteristic consumption-related figures between countries

Of the youth surveyed, 71% used pre-paid mobile phone cards while only 29% had a contract. This may also account for the low share of debt among respondents, since it is easier to keep track of costs with a pre-paid card. Only 2% of those with a pre-paid card were in debt, in contrast to 4% of those with a phone contract. Mobile phone costs also varied accordingly. Youth who used pre-paid mobile phone cards had average expenses of EUR 11 per month; those with mobile phone contracts paid on average EUR 15 per month. The overall average monthly mobile phone costs amounted to EUR 12. Interesting parallels arise between per-

capita GNP, allowance, and mobile phone costs when one compares the individual countries surveyed. In Germany, where students receive the most allowance, parents contribute the least to the actual mobile phone costs. Adolescents in this country are apparently granted a relatively large degree of financial freedom. Youth in Poland, Peru, and Indonesia are given significantly less allowance, but parents help defray mobile phone costs significantly more frequently.

But not only text messages and mobile telephony incur costs. As a multifunctional end device, the mobile phone offers a range of additional services, such as WAP and MMS. An array of ring tones, logos, and games can also be added to many mobile devices. Despite in many cases massive advertising campaigns for instance on radio channels or accompanying youth-oriented television programs, these additional services were not particularly popular among the surveyed youth. 3% of teenagers used logos, 6% ring tones, and 10% MMS more than once per week. 53% however played games from several times a week to daily. A comparison of the individual countries shows that these additional services were significantly more popular in Peru and Indonesia than in Germany and Poland (see Table 5). One reason may be that mobile telephones are not so common in Peru and Indonesia, therefore relatively new among teenagers and hence more interesting.

Mobile service	Germany	Poland	Peru	Indonesia
	Used several times per week – daily / Never used			
Games	42% / 6%	48% / 5%	50% / 9%	77% / 2%
Alarm	38% / 22%	-	56% / 20%	68% / 12%
Calendar	19% / 33%	-	68% / 7%	20% / 58%
SMS via internet	8% / 41%	29% / 20%	47% / 4%	3% / 71%
Voice mailbox	9% / 57%	10% / 33%	14% / 10%	28% / 50%
MMS	4% / 26%	14% / 17%	8% / 30%	18% / 12%
SMS info services	2% / 67%	7% / 54%	13% / 26%	11% / 32%
Ring tones	1% / 50%	3% / 23%	13% / 34%	14% / 18%
WAP	1% / 73%	3% / 64%	11% / 64%	8% / 75%
Logos	1% / 55%	2% / 37%	2% / 70%	8% / 31%
Email	1% / 80%	2% / 68%	7% / 21%	7% / 76%

Table 5: Comparison of use of additional mobile services between countries

Globalization trends could be observed with respect to mobile phone brands. The most common phone brands were similar in all countries (see Table 4). The most popular mobile phone brand overall among teenagers was clearly Nokia (49%), followed by Siemens (18%) (multiple responses were possible).

5.6 Non-users of mobile phones

Young mobile phone users hardly used their mobile telephone to show off or impress their fellow students and peers. Only 13% (30% in Indonesia) reported using the phone at least occasionally to impress others. This contradicts the theory of the mobile phone as a status symbol for teenagers. But it can be observed that the motivation of impressing others is on average stronger in Indonesia than in Peru, Poland, or Germany; in other words, this figure increased with decreasing per-capita GNP and allowance.

Although those surveyed felt that they themselves hardly ever purposefully show off their mobile telephone, they assessed the behavior of their fellow students differently. The share of boys and girls who use their mobile phone to impress others was reported as 32% and 33% respectively, more than twice as high. Assessment of self and others apparently diverges here. But social taboos may have again distorted answers here.

Students who did not possess a mobile phone were hardly more looked down upon ($M=1.36$; $SD=0.63$; scale: 1=not at all looked down on to 4=very much looked down on) than those who did own one. This loss of prestige was greatest in Germany, followed by Poland, Peru, and Indonesia, presumably due to socio-economic conditions, i.e. because mobile phone usage is a matter of course in Germany but limited to the upper class in Peru and Indonesia. Mobile phone users also had a worse image of non-users than the non-users themselves. This potential loss of standing however appears to be of no consequence, since mobile phone users had on average twelve good friends ($M=11.94$; $SD=14.91$), compared to non-users with thirteen ($M=13.09$; $SD=13.88$). In other words, no major difference arose. This contradicts the image of non-users as outsiders or misfits. Pressure to conform appears to be fairly unusual.

And not even all non-users necessarily want to own a mobile phone. Some were even strong opponents of mobile phones. The group of non-users could thus be sub-divided into mobile phone opponents and “not yet” users. The opponents gave reasons such as “Has not been important up to now,” “I hate being constantly reachable,” and “I don’t need a mobile telephone.” Other reasons cited include that costs are perceived as too high and concerns about mobile phone radiation. “Not yet” users often shared a family mobile with parents and siblings. Money worries or forbiddance by parents are likewise frequent reasons for not yet using a mobile phone.

But even the non-users had an overall positive view of mobile communication. The change in interpersonal communication generated by the mobile phone was perceived by both users and non-users not as a deterioration but clearly as an improvement (see Table 6).

		Communication improved	Communication unchanged	Communication worse
Germany	Users	68%	17%	15%
	Non-users	42%	18%	40%
Poland	Users	86%	10%	3%
	Non-users	76%	10%	13%
Peru	Users	90%	7%	3%
	Non-users	76%	22%	2%
Indonesia	Users	90%	6%	4%
	Non-users	95%	5%	-
Total	Users	82%	11%	7%
	Non-users	79%	13%	8%

Table 6: Perception of the change in interpersonal communication among users and non-users

If one compares the data from the various countries individually, Germany, Poland, and Peru in particular showed differences between users and non-users. Mobile phone owners perceived the change in communication substantially more positively than those without a mobile phone – the first indications of a digital divide between users and non-users. Interpersonal communication was perceived to have improved overall, reported 92% of those surveyed in Indonesia, 82% in Peru and Poland, but only 64% in Germany. Since the rate of mobile phone usage was also highest in Germany, this result may be related to the fact that due to a high diffusion rate, the mobile telephone is practically standard in Germany and people are no longer explicitly aware of the positive changes it has brought about. Both mobile phone owners and non-users on average hardly felt bothered by the mobile phone use of others.

5.7 Gender roles and mobile phones

Overall, SMS appears to be a medium that appeals more strongly to girls. In the studied sample, the girls proved to be significantly more communicative than their male peers. When they left home or were at school, they more frequently took their mobile phone with them. In the course of a week, they also sent approximately one text message more on average than male teens. Girls also more frequently sent SMS longer than 160 characters, consisting of two or three parts, in addition to conducting more SMS discussions than the boys. Female adolescents had saved an average of 74 persons in their phone books, significantly more than boys with on average 61 persons. They nonetheless maintained regular mobile contact with about the same number of persons. Girls however more often admitted to being “mobile phone-dependent” (25%) than boys (14%).

The stereotype confirmed here of girls being more communicative simultaneously refutes another stereotype: that they are averse to technology. But male teenagers were nonetheless more interested in the technology of mobile communication than their female counterparts. For instance it was much more important for the boys that their mobile telephone be at the cutting edge of technology. Accordingly they more frequently tested the various technical features in order to better understand the technology of the mobile phone. In contrast, the phone’s user friendliness and appearance were much more important to girls. The gender comparison also showed that girls were more emotional about the medium of SMS than boys. Girls also emphasized the safety aspects of the mobile telephone significantly more strongly, reporting that their mobile had often helped them in difficult situations or emergencies. Male teenagers on the other hand more frequently employed the mobile phone to annoy others and used it somewhat more often to impress others.

In summary, certain similarities could be observed on the one hand between male and female mobile communication, which may be the result of more balanced conditions of socialization (girls for instance have equal access to the mobile phone as a technical device); however, traditional gender roles were confirmed for the most part.

5.8 Overview of country comparison

In comparing youth in Germany, Poland, Peru, and Indonesia at a meta level, only a few major differences can be identified; for the most part, youth in these countries appear to have a similar relationship to their mobile telephones. The mobile phone is highly important to all youth, is used at all times of the day, and serves to maintain the social network in particular with peers, to cite just a few examples. In other words, globalization trends could clearly be observed.

Upon more detailed consideration however, it is not difficult to recognize that obvious, significant differences and local features do in fact arise to a certain extent. Mobile communication of youth appears to vary with their socio-economic status, while attitudes, opinions and certain manners of use appear to depend on the diffusion of mobile phones in the country and the affluence of the nation. Minor indications of a digital divide between users and non-users were apparent, both nationally and globally.

An interrelationship between globalization and localization can thus be recognized, for which British sociologist Roland Robertson introduced the neologism of “glocalization.”

6 Summary and outlook

The objective of this study was to analyze and investigate topics related to mobile phone usage among youth, which are currently of great interest and very popular in the media. Partially on the basis of already existing results from previous studies, data were collected in Germany and other countries to confirm these findings and gain new insights. Key elements of the survey were its international orientation and the intercultural comparison of mobile phone usage among youth in Germany, Poland, Peru, and Indonesia. The comparison of countries is exploratory in nature. The study largely confirmed current research findings, including in the international sample.

Mobile communication appears to accompany and foster the development of youth and the changes in their social relationships. The mobile phone is frequently used to communicate in romantic partnerships, with friends and acquaintances, but also with parents. It would nonetheless be inaccurate to refer to the mobile telephone as a “medium of flirtation.” Even the label “Generation SMS,” in the sense of a strong conflict-based differentiation from the parental generation, is misguided, considering that parents in our study also found it important to equip their children with mobile phones. Non-users of mobile phones were not relegated to the role of outsiders or misfits. Both users and non-users saw an improvement in interpersonal communication due to the mobile telephone and only seldom perceived it as a disturbance. They were tolerant towards public use of mobile phones. The youth apparently perceived hardly any problems in this respect. They used their mobile telephone relatively independently of whether they were at home or away, constantly carried it with them, and also expected to be able to reach others at all times. In other words, the youth enjoyed more options and freedom. Although the youth often carried their mobile phone with them and kept it turned on, it posed no significant disturbance at school, at least from their point of view. The text messages sent by the adolescents served primarily contact functions and were sent mainly when in a positive mood. Only seldom did misunderstandings arise related to the content, context, tone, or language of text messages. Additional mobile phone services were used by adolescents much less overall than previously assumed. Twenty percent of the boys and girls considered themselves to be “mobile phone-dependent.” Despite this fact, very few teenagers had mobile phone debt; in certain cases however, this debt was substantial. Both similarities and differences were observed when comparing the mobile phone usage of boys and girls. For example, as many girls owned mobile phones as boys, and both girls and boys communicated most frequently with their boyfriend/girlfriend. However traditional gender roles were also confirmed, such as boys’ stronger interest in technology.

Glocalization trends were observed when comparing the countries that participated in the study. The values of the quantitative research results for instance were similar for the most part, indicating globalization. But significant differences were observed in many of the surveyed items, highlighting local features. Financial aspects of mobile phone usage in particular were closely related to the affluence of the respective countries and the socio-economic status of the youth within the society. Signs of a digital divide between countries were

also identified, despite the fact that primarily upper-class Peruvian and Indonesian youth were surveyed in the sample.

Based on the exploratory findings from the comparison of German, Polish, Peruvian, and Indonesian data, more advanced studies could be conducted to test hypotheses. The topics could be expanded to include current developments in mobile communication and technology. For instance one could explore how youth take advantage of new possibilities in the domain of SMS and their reaction to new additional services. Of particular interest here might be the domain of mobile games, the array and quality of which are constantly increasing. The trend towards internet access and cameras in nearly all new mobile telephones entering the market may also lead to changes in usage among youth. The adaptation of Multimedia Messaging Service, in which regular SMS can be expanded to include image, audio, and video files, appears to be of interest. An increase in the proliferation of UMTS mobile phones will also raise new research questions.

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