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What is This?

Social uses of interpersonal communication technologies in a complex media environment

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Abstract
This article investigates the patterns of social use of interpersonal communication technologies that can be discerned in today's complex media environment, in which people have many channels available for interpersonal communication. The article starts with a comprehensive review of the comparative uses and gratification research of interpersonal communication media. It argues that these studies are efficient in answering questions such as why one device is preferred over another, but the approach they take is less suitable for an analysis of the patterns of actual use of interpersonal communication devices. While they build on various typologies of motives for media use, based upon psychological theories of motivations and needs, this article proposes that a valid typology of actual social uses of interpersonal media should be based on a social action theory in order to find general patterns of social use of interpersonal communication devices. Hence, this article follows recent developments of the uses and gratification approach which suggest treating social use as a social action and finds a fruitful starting point in Habermas's typology of social action. From this, a typology of social uses of communication devices is derived, allowing a general and comprehensive, yet condensed empirical insight into the social uses of contemporary interpersonal communication technologies within a nationwide sample. Using various statistical techniques, an assessment is made of how five communication channels (i.e. mobile phone, short text messages, telephone, face-to-face and the Internet) are employed for four social uses, i.e. informational-cooperative, strategic, relational and expressive.

Keywords
information and communication technology, interpersonal communication, media use, social action, uses and gratifications

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With the rapid diffusion and the continuing development of mobile phone and Internet services, these technologies have been adopted by a large part of the population, thus playing an ever more important role as media for everyday interpersonal communication in contemporary societies (e.g. Castells et al., 2006; Katz, 2008; Kraut et al., 2006). Moreover, they have become inseparable elements of emerging late-modern societal forms such as personal communities (Wellman, 2001), network sociality (Wittel, 2001) and mobile sociality (Mascheroni, 2007). Even though differences between the Internet and the mobile phone still exist in European countries in terms of access, these technologies have become relatively common in the sense that they are used in day-to-day activities at home, in the workplace, at school and in other social contexts.

This also holds true for Slovenia, which serves here as the object of the empirical part of our research. Slovenia is, in fact, one of the most typical European Union (EU) countries with respect to information technology usage. According to most Eurostat information society indicators, it takes the median position among all EU countries. Within this context, we should also note that the use of mobile phones has, in the last few years, reached a stage of maturity comparable to that of the fixed telephone. Namely, while in 1997 only 13 percent of Slovenians used the Internet, and the percentage of mobile phone users was even smaller and did not exceed 8 percent, 13 years later, in the first quarter of 2010, 70 percent of people aged from 10 to 74 years regularly used the Internet, whereas the percentage of mobile phone users was 90 percent (Statistical Office of the Republic of Slovenia, 2010).

As communication technologies become an integral part of our everyday interpersonal communication landscape, the borders between them gradually fade, both with respect to the functions they are supposed to accomplish and to the uses people make of them. Furthermore, it is suggested that they intensively supplement or even substitute the prototypical role of face-to-face communication (Fortunati, 2005). The intention of this article is to empirically verify the assumption that such processes do indeed exist and to assess the extent to which they are present. More precisely, an empirical insight is offered into the general patterns that reflect people's integration of the totality of various communication channels into their everyday lives, and the related question of the patterns of social uses to which the 'old' and 'new' communication technologies are put is analysed.

As we summarize in the next section, such research endeavours can lean significantly on the uses and gratification (U&G) tradition, which offers a few 'comparative'[1] empirical studies that have examined a variety of technologies present in everyday interpersonal communication. These studies, however, do not embrace the totality of technologies for interpersonal communication that are available at present; and what is more important, they neglect the fact that the use of such devices cannot be conceptualized in the same way as the use of mass media (Rubin, 1994), which is usually related to concepts of media exposure or attention (Lin, 1999). As the use of interpersonal media is intersubjectively constituted social action (Gebhardt, 2008), the typology of uses could not be validly embedded in psychological theories of motivations and needs, but in a social action theory.

A stream of European communication research (Renckstorf et al., 1996) has already initiated a refined U&G approach by conceptualizing media use as social action. However, at least to the best of our knowledge, it has not yet been successful in developing a

typology of uses that would be based in social action theory. We suggest that the Habermasian typology of social action presented in his theory of communicative action (Habermas, 1984) might be useful in this sense. Hence, we have developed an innovative typology of social uses of interpersonal communication technologies built upon his conceptual framework. This way, we argue, is more suitable to pursue the intention of our article, which is not to discover particular uses that people put new technologies to, but to detect on the societal level regularities and patterns in social uses of various communication channels in a complex media environment. In order to do this, we conducted somewhat limited, but comprehensive empirical research of the social uses of mobile phones, the Internet, SMS/MMS and the fixed phone, using a representative nationwide sample.

'Comparative' uses and gratifications research

The question of analysing the social uses to which technologies for interpersonal communication are put cannot ignore the U&G research tradition. We have recently witnessed a revival of this approach, which is claimed to be a fruitful framework for studying new communication technologies (Flanagin, 2005; Flanagin and Metzger, 2001; Leung and Wei, 2000; Morris and Ogan, 1996; Rubin, 1994; Van der Voort et al., 1998; Wei and Lo, 2006). Although the original approach (Blumler and Katz, 1974) was developed in the context of the uses that mass media are put to, it has more recently been argued (e.g. Ruggeiro, 2000) that the U&G approach is more suitable for analysing interactive technologies in a complex media environment, where people combine in-person communication with old and contemporary communication technologies to satisfy their interpersonal communication goals. For an increasing proportion of the population, the media environment is growing in its complexity, as the terrain of possible communication channels is expanding rapidly.

It has been shown that very little U&G research has addressed the issue of choosing new communication technologies in conjunction with old ones, yet 'it is a crucial [methodology] for gaining a better insight into the uses people have for new communication systems' (Flanagin and Metzger, 2001: 158). Such comparative studies are inescapable in today's complex media environment, where we can choose from at least a dozen technologies to communicate with others, alongside in-person encounters. The first comparative studies that, for instance, analysed the choice of email and video conferencing in comparison with other media (i.e. the fixed telephone, letter, memo, fax) and in-person interaction in the specific context of organizations (e.g. Webster and Trevino, 1995) only focused on the ability of communication technologies to address instrumental needs that occur in the execution of organizational tasks, and hence provided only limited evidence of how the processes of the overall mediatization of everyday interpersonal communication are affecting people's communicative practices. Rare exceptions (e.g. Perse and Courtright, 1993) analysed media choice outside organizational settings, but were limited in their generalizability due to the small diffusion of computers and the low adoption of email and bulletin boards.

Towards the dawn of the new millennium, when these were no longer such limiting factors, several research efforts (e.g. Flaherty et al., 1998; Westmyer et al., 1998) provided evidence that face-to-face communication was by far the most preferred way to

fulfil communication needs and achieve various social and communication goals. The telephone was found to be the most suitable functional alternative to face-to-face communication in terms of socializing, whereas newer communication channels were less preferred and less used for such activities (Cummings et al., 2002; Westmyer et al., 1998). Internet communication services, especially email, were found to be a functional alternative to face-to-face communication only in arranging schoolwork and exchanging information. Although the fixed phone and email were not seen as functional alternatives, it was suggested by Dimmick et al. (2000) that a wider spectrum of needs was being served by the fixed telephone, whereas email provided greater gratification opportunities.

The most recent comparative U&G studies indicate that the fixed phone is no longer seen as a functional alternative to face-to-face communication (Flanagin, 2005), whereas email has retained its low-ranking position for socializing. By contrast, both the mobile phone and instant messaging were found to be used significantly more than email for all needs satisfaction factors (Flanagin, 2005; Ramirez et al., 2008).

Uses of interpersonal communication technologies

The aforementioned studies are very informative about the motives and gratifications that can be fulfilled by using various communication technologies, but their orientation to motivations makes their approach less suitable for the purpose of our study. As has already been pointed out by commentators (e.g. Rubin, 1994; Ruggeiro, 2000), this is largely due to the fact that comparative U&G studies – as the U&G approach in general – did not make a necessary distinction between research into mass media, on the one hand, and media for interpersonal communication, on the other. A very important difference, which carries theoretical and methodological consequences, is in the treatment of the 'use' component. The widely accepted U&G model focuses on the notions of needs, motives and gratifications, while use is commonly treated as media exposure, the act of watching TV, reading the newspaper, etc. (Lin, 1999). In the process of using an interpersonal communication device, 'use' cannot be analogously conceptualized as media exposure, but is essentially a social relation between interlocutors who through interaction relate to each other and ascribe meanings to their actions.

In research which is interested in actual uses, such as ours, it is thus imperative to shift the analytical focus from needs, gratifications and motives to the actual uses. This immediately brings up two challenges: one pertaining to the issue of how to conceptualize use and the second referring to the related issue of finding the criteria to categorize various uses in order to study patterns of uses. To solve the first problem we do not have to turn away from the U&G approach, since a fruitful terrain was opened by a stream of European researchers who introduced a refined U&G approach while conceptualizing (mass) media use as a social action (Renckstorf et al., 1996). We can already notice a move from the exclusive consideration of motivations to actual uses of media in the recent works that build on the U&G approach (e.g. Kaye, 2005; Stafford et al., 2004), but Renckstorf et al. (1996) had a hard job to model the whole process from the social action perspective in their Media Use as Social Action (MASA) model.

Following their work we suggest that media *use* can be understood as a form of social action – as an action that refers to other people and is oriented, conducted and ordered on

the basis of the meaning that the subject ascribes to it (Weber, 1968). It is argued that people engage in activities on the basis of their own interests, yet they are linked via a diversity of interactions with each other. Moreover, what is not mentioned by proponents of the MASA model, in the case of interpersonal communication devices, media use always involves not only the perspective of the communicator's motives and needs but also that of the receiver, involved in the same social interaction. In other words, as Gebhardt (2008) notes, the use of media in interpersonal communication is always inter-subjectively constituted by the interlocutors participating in the interaction. However, what is important for the purposes of our research are not the mechanisms on which the intersubjective reality of interpersonal media usage resides, but rather the awareness that *use* as one component in this process is manifested through a series of communication acts, which emerge as outcomes of the negotiation between interlocutors' intentions and motives (Gebhardt, 2008).

Searching for a valid typology of social uses of interpersonal communication technologies

As the MASA model focuses predominantly on the phenomenology of mass media experience, it leaves us with the problem of identifying a general typology of interpersonal media use. Namely, with an inductive approach we might end up with an idiosyncrasy of uses, which does not offer a condensed and exhaustive set of various uses. While it makes sense to stay in the field of social action, we propose that in order to build a conceptual typology, a fruitful direction might be to apply the typology of social action as developed by Habermas (1984).

His typology of social action is suitable for application on the level of uses of interpersonal technologies for at least two reasons. On the one hand, Habermas treats social action as essentially a communication process (Campbell, 1996), which implies that social use of interpersonal communication channels is a dialogical relation between two or more individuals. On the other hand, we find the Habermasian typology of social action to be a general, comprehensive and exhaustive typology, which renders it suitable for grasping a wide variety of different uses of interpersonal technologies in a systematic typology to detect general patterns. In what follows, we present the Habermasian typology in a loosely oversimplified way by pointing out the main conjectures which are relevant for analysing the social uses of technologies for interpersonal communication.

Habermas (1984) makes a distinction between social action that is oriented to success and action that is oriented to consensus. The latter is further differentiated into three subtypes, depending on the prevailing relation of the communication acts of which social action is composed, and based on the three 'worlds' that form the structural components of everyday life: the social world of relationships and norms that govern them; the objective world of facts and artefacts; and the subjective world of personal experiences, wishes, feelings and desires. Correspondingly, he distinguishes (a) normatively regulated social action that serves to establish and maintain social relations; (b) constative social action with the function of representing states of affairs; (c) dramaturgical social action, which serves to manifest personal experiences; (d) strategic action, which is oriented to

success. When applied to the level of uses of interpersonal communication technologies, we modified the labels of the general types of social action into categories of social uses, which might be closer to the terminology used in the U&G tradition. Our proposal of the typology of social uses of interpersonal communication technologies is thus the following:

1. Informational-cooperative use: the use of interpersonal communication media which is composed of communication acts that relate to the objective world of facts and artefacts and is realized as giving and receiving information, working on a common project, transmitting knowledge and learning.

2. Relational use: the use of interpersonal communication media which comprises communication acts that relate to the world of social relationships, interpersonal norms and other elements of interpersonal relations. It is manifested in the activities of establishing and maintaining social relationships, giving and receiving social support, friendship and so on.

3. Expressive use: the use of interpersonal communication media that comprises communication acts that relate to the subjective world of personal experience, desires and beliefs to which the individual has, in relation to others, privileged access, and about which he or she can decide whether they will be expressed in the external (social) world. Such use is manifested in exposing one's identity, presenting oneself, intimate communication and other forms of expressing one's inner states.

4. Strategic use: the use of interpersonal communication media for the conscious or unconscious attainment of personal goals, maximizing the effectiveness of one's actions where other communicators serve as a means to one's ends and not as actors with their own purposes and meanings in communication. It is manifested in satisfying practical goals, scheduling, escape, deception, amusement, surveillance and control.

At first sight it seems that the proposed typology does not bring much that is new to the terrain of U&G research, yet we argue that it simultaneously subsumes the motivational typologies of the U&G approach and also brings notable advantages. Although Habermas does not make any explicit links between the types of social action and psychological states, it could be claimed that the majority, if not all, interpersonal motives that appear in the U&G research of interpersonal media can actually be categorized as one of the proposed action types. However, motives and uses cannot simply be equated, for several reasons: (1) a motive can be present, but it is not fulfilled and consequently not manifested in the corresponding use; (2) no motive can be present, but through the communication process certain uses can be intersubjectively constituted, which enables satisfaction of a corresponding latent motive; (3) a motive could be fulfilled through consensus-oriented or success-oriented action, thus corresponding to two essentially different uses.

We suggest that the focus on the actual uses rather than on motives might be more relevant not only when exploring the uses of interpersonal communication media, but also for analysing the social consequences of these uses. In this context, it is important to make a distinction between strategic and other types of social action, since, as Habermas claims, when social actions based on consensus are overwhelmed with actions which

only strive to success, this leads to negative outcomes for integrative processes such as social cohesion and trust (Habermas, 1984; King, 2009).

Before applying the proposed typology, one should be aware that types of uses should be understood as ideal types, which can serve as the conceptual background for the development of measurement instruments that can be used on the empirical level. In other words, a single empirical use of a communication device can be comprised of different types of uses, with one exception. According to Habermas, three consensus-oriented uses are not congruent with the strategic one. In any case, the four-fold typology should be understood as a first attempt in trying to introduce the Habermasian typology into a broader discussion of integrating the U&G and social action perspective and is applied in our empirical research in order to address the following research questions (RQs):

RQ1: What are the patterns of social use of various communication technologies and face-to-face communication? In the context of this research question, we should be able to answer such specific questions as what percentage of people are self-expressing only with the use of SMS and not with any other available communication channel, even face-to-face.

RQ2: What are the general and particular differences in the social use of various communication channels? Analysis of this research question will provide answers to such specific queries as which communication channels are most often used generally and which for particular social uses.

Method

Procedure

The data used in this study were drawn from the Slovenian implementation of the official Eurostat Community Survey on ICT Usage in Households and by Individuals 2005.[2] The basic purpose of this survey was to measure the factual aspects of the usage of computers, the Internet and other information communication technologies. A harmonized Eurostat core questionnaire conducted in all 25 EU member states was used for this purpose. In addition, a special 20-minute block of questions was added to the Eurostat questionnaire in Slovenia. This additional module had two versions: one focused on social and communication aspects of the usage of the fixed telephone, the mobile phone and the Internet, while the other focused on social network aspects.

Sample and data

The units were persons aged 10–74 and their households. The sampling frame was based on the Central Population Register (CRP). The face-to-face survey was performed between 4 April and 31 May 2005 and demonstrated a high response rate. Out of the initial sample size of 2000 units, there were 1827 eligible units, and 1422 persons took part in the survey, giving a response rate of 78 percent according to the American Association for Public Opinion Research (AAPOR) standards.[3] As indicated above, only half of the respondents were allocated the module that included the social and communication topics. As some respondents refused to participate in the second module, the final sample we analysed comprised 651 units. We treat these units as a representative sample

of the general population (10–74 years). The sociodemographic structure is similar to that revealed by the 2002 Slovenian Census (Statistical Office of the Republic of Slovenia, 2005), e.g. 51 percent of the respondents were men, 16 percent had some university education, 45 percent of them were employed and 20 percent attended school (primary, secondary, university).

A large majority (88 percent) of the respondents had access to a desktop computer or a laptop in their household; 375 (58 percent) respondents had used a computer in the last three months. Out of the 651 respondents, 353 (54 percent) had access to the Internet in their household, and 337 (52 percent) had used the Internet in the last three months. Some 586 (89 percent) respondents in the sample had a fixed phone in their household, while 556 (85 percent) respondents were mobile phone users. Further, 213 (38 percent) mobile phone users made or received one to four calls on a typical working day, 115 (21 percent) sent and received SMS daily, while 79 (14 percent) had never used multimedia messages. Taken together, among the 651 respondents, 299 (46 percent) had access to all four communication technologies and face-to-face communication. We may add that from 2006 to 2010 there were only minor changes in the figures related to mobile phone usage – which was already saturated in 2006 – while the percentage of regular Internet users somewhat increased, from 52 percent in 2006, to 70 percent in 2010 (Statistical Office of the Republic of Slovenia, 2010).

Measurement instruments

The theoretical definitions of the four types of interpersonal communication use served as starting points for the deduction of statements that measured the intensity of use of a certain communication technology for certain communication practices. Ideally, several items per each use should be deduced, which would allow us to estimate different properties of measurement instruments, such as discriminant and convergent validity, unidimensionality and reliability. We were however very limited in putting items in the questionnaire (single item per technology), thus the validity and reliability of each use could not be estimated.[4] This should be taken into account in reading the statistical analyses.

The four different uses of interpersonal communication media were thus operationalized by single survey statements, which were used separately for four different communication technologies (fixed phone, mobile phone, SMS/MMS and the Internet's interactive services) and for face-to-face communication. For example, the instrument for measuring four social uses of Internet[5] interpersonal communication channels was as follows:

1. Informational-cooperative use: 'How often do you use Internet-based services such as email, MSN, Skype to talk about work, business and school matters (e.g. to arrange work meetings, to coordinate work/research/school projects, to send and retrieve news, to communicate with customers/schoolmates)?'[6]
2. Socializing use: 'How often do you use Internet-based services such as email, MSN, Skype to chat, socialize and exchange messages that are a resource of companionship and social support (e.g. to keep in touch with family, friends or relatives; to keep up, support or revive personal relationships)?'

3. Expressive use: 'How often do you use Internet-based services such as email, MSN, Skype for talking about personal-intimate matters that, for example, include the sharing of your personal emotions, desires or feelings?'
4. Strategic use: 'How often do you use Internet-based services such as email, MSN, Skype to get things done, such as arranging practical matters, setting a place or time to meet, determining transportation to a given location or locating someone else in a busy park?'

These statements were then repeated in the separated questionnaire modules for face-to-face communication and also for all other communication technologies.

Results

Before addressing our research questions, it should be noted that the largest percentage (95 percent) of mobile phone users draws on this device for strategic use, 77 percent of them reported using a mobile phone for socializing, while 69 percent of them gave an account of using it in terms of cooperation and exchanging information (see Table 1). Conversely, only 38 percent of SMS/MMS users reported sending and receiving messages of an informational-cooperative nature and an even smaller percentage (28 percent) for exchanging expressive messages. A total of 82 percent of fixed-telephone users draw on the telephone for strategic use, whereas 67 percent of them use it for socializing. Almost all the respondents are involved in face-to-face communication for reasons of optimizing their activities (96 percent) and socializing activities (95 percent). A remarkable proportion of Internet users reported using the Internet for communication practices related to getting information and exchanging knowledge (59 percent), strategic use (59 percent) and socializing (56 percent), whereas only 21 percent reported using the Internet for expressive purposes.

Table 1. Percentages of communication channel users across all communication activities

Type of social use	Mobile phone[a]	SMS/MMS[b]	Fixed telephone[c]	Face-to-face[d]	Internet[e]
Informational-cooperative	69	38	58	75	59
Strategic	95	63	82	96	59
Socializing	77	54	67	95	56
Expressive	47	28	34	82	21

Notes: Variables measuring the frequency of communication technologies use on a five-point scale (1 = never, 5 = daily) were recoded as follows: 0 = never, 1 = at least occasionally.
[a]$n = 539$, [b]$n = 533$, [c]$n = 628$, [d]$n = 638$, [e]$n = 318$.

The analysis of RQ1 was aimed at combinations or patterns of use of various interpersonal communication technologies. The first row in Table 2 shows that the majority of respondents used all five communication channels for all four communication activities. Namely, 38 percent of mobile-phone users use the device for all four activities. Similarly, 19 percent of SMS/MMS users, 22 percent of fixed-telephone users and 18

Table 2. Percentages of communication channel users according to their patterns of communication activities

Patterns of social uses	Mobile phone		SMS/MMS		Fixed telephone		Face-to-face		Internet	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Informational-cooperative, strategic, socializing and expressive	204	38	101	19	137	22	406	64	57	18
Informational-cooperative, strategic and socializing	103	19	54	10	125	20	53	8	69	22
Informational-cooperative, strategic and expressive	9	2	3	1	10	2	3	0	4	1
Strategic, socializing and expressive	35	7	33	6	43	7	96	15	7	2
Informational-cooperative, socializing and expressive			2	0	5	1	2	0		
Socializing and expressive			7	1	2	0	6	1		
Strategic and expressive	6	1	2	0	8	1	5	1		
Strategic and socializing	61	11	61	11	86	14	30	5	23	7
Informational-cooperative and socializing	3	1	6	1	5	1	5	1	10	3
Informational-cooperative and strategic	44	8	26	5	50	8	8	1	22	7
Informational-cooperative and expressive					4	1				
Informational-cooperative	9	2	8	2	22	4	2	0	27	8
Strategic	49	9	57	11	51	8	7	1	6	2
Socializing	11	2	25	5	14	2	6	1	13	4
Expressive	1	0	1	0	1	0				
No social purpose	4	1	145	27	59	9	6	1	80	25
Total	538	100	531	100	622	100	635	100	318	100

Notes: Each variable that measured the frequency of communication technologies use for carrying out communication activities (from 1 = never, 5 = daily use) was recoded as follows: 0 = never, 1 = at least occasionally. By using the dichotomously recoded variables, a new variable was defined for every communication channel whose values ranged from 0 to 15 and corresponded to the 16 theoretically possible patterns of communication activities (listed in the first column 'Patterns of social uses' of the table).

percent of Internet users use the respective device for informational-cooperative activities, maximizing one's success, socializing and self-expression. The percentages of respondents who used communication technologies simultaneously for informational-cooperative activities, maximizing one's success and socializing (but not for self-expression) were slightly smaller, with the exception of the Internet, where this pattern of use was a little more represented (22 percent) than the pattern where the Internet is put to all four uses (18 percent). Among those respondents who used communication channels for carrying out only one social activity, the largest group of Internet users is involved in informational-cooperative activities (8 percent), whereas the 'single-activity' users of the other three technologies mostly engage in strategic use. For instance,

Table 3. Doubly-repeated-measures 4 × 5 factorial analysis of variance for social use of communication channels

Source	d.f.	F	η^2
Within-subjects			
Communication channel (C)	3.77	268.40***	.48
Type of social use (U)	2.52	202.68***	.41
C × U	11.08	21.67***	.07
C within-group error	1122.99	(2.65)	
U within-group error	750.65	(2.82)	
C × U within-group error	3301.86	(1.00)	

Notes: The Huynh–Feldt correction of error terms and *F* statistics are reported, as the Mauchly's test of sphericity was significant beyond the 5 percent level and, therefore, the null hypothesis of homogeneity of covariance was rejected. Values enclosed in parentheses represent mean square errors. ***p < .001. *N* = 299. The doubly-repeated-measures 4 × 5 factorial ANOVA was performed on a subsample of respondents, who had access to all five communication channels.

11 percent of SMS/MSS users draw on texting exclusively for strategic purposes. Interestingly, 27 percent of SMS/MMS users reported that they never engage in any of the social activities stated when exchanging SMS/MMS, indicating that this communication channel might be open to some specific uses or uses that are not intersubjective in their nature. Finally, the empty cells in Table 2 indicate that nobody uses the selected communication channel for a particular pattern of social activities. For example, nobody among either mobile phone or Internet users reported using the two technologies exclusively for socializing or self-expressing.

For the analysis of RQ2, a doubly-repeated-measures 4 × 5 factorial ANOVA was performed on the above variables, treating the communication channel and type of social use as two within-subject factors. Since the assumption of sphericity of the variance covariance matrix was violated, the Huynh–Feldt correction for heterogeneity of variance (*F*-values) was applied (Girden, 1992). In addition, Cohen's effect size (Cohen, 1988) with equivalent values of η^2 is also presented. By convention, effect sizes with .01 ≤ η^2 < .06 are deemed small, .06 ≤ η^2 < .14 are moderate, and η^2 ≥ .14 are large. Pairwise comparisons after doubly-repeated-measures ANOVA were made with the sequential Bonferroni method.

As shown in Table 3, the analysis yielded a large main effect for communication channel use, $F(3.77, 1,123.00) = 268.40$, $p < .001$, $\eta^2 = .47$, indicating that the mean scores for the frequency of use of five communication channels differ significantly beyond the .1 percent level. As shown in detail in the last row of Table 4, the Bonferroni adjusted pairwise comparisons among the levels of the within-subjects communication channel factor revealed that among the respondents with access to all five communication technologies, face-to-face conversation was significantly the most frequently used channel, followed by the mobile phone, which was used significantly more often than the fixed telephone. There were no differences between the SMS/MMS and the Internet; however, both were significantly less frequently used than the fixed phone. Moreover, the type of social-use factor had a large main effect that was significant beyond the .1 percent level,

Table 4. Mean ratings of frequency of use of channels for communication activities – comparison by communication activities

Type of social use	Mobile phone	SMS/MMS	Fixed telephone	Face-to-face	Internet	Total[†]
Informational-cooperative	3.34	2.04	2.98	4.09	2.61	3.01$_a$
Strategic	4.09	2.78$_a$	2.90$_a$	4.34	2.33	3.29
Socializing	3.35	2.56$_a$	2.50$_{ab}$	4.25	2.29$_b$	2.99$_a$
Expressive	2.14	1.72$_a$	1.69$_a$	3.04	1.39	2.00
Total	3.22	2.27$_a$	2.51	3.93	2.16$_a$	

Notes: Means with matching subscripts within the same *row* are *not* significantly different from one another. [†]Means with matching subscripts within the same *column* are *not* significantly different from one another. The means that do not share the same subscripts differ significantly at $p < .05$ by Bonferroni post-hoc pairwise comparison tests. $N = 299$. The doubly-repeated-measures 4×5 factorial ANOVA was performed on a subsample of respondents, who had access to all five communication channels.

$F(2.52, 750.65) = 202.68, p < .001, \eta^2 = .41$, indicating that differences exist in the mean ratings of frequency of types of social uses. The results of post-hoc analyses reported in the last column in Table 4 revealed that, on average, communication channels were most frequently put to strategic use and least frequently to expressive use. The means of frequency of informational-cooperative uses and socializing did not differ significantly; however, they were significantly lower than those of strategic use and higher than those of expressive uses.

Finally, and most relevant regarding our second research question, an interaction effect between communication channel and type of social use was observed, $F(11.08, 3,301.86) = 21.67, p < .001, \eta^2 = .07$. This suggests that significant but modest differences exist in usage patterns of communication channels. Bonferroni pairwise comparisons give detailed insight into this interaction. The results in Table 4 indicate that all social activities are most often performed in face-to-face situations compared to any mediated communication. Although the respondents have access to all the communication technologies, the means related to the social uses of the four technologies are all significantly lower than the means for face-to-face communication. Remarkably, respondents are involved in face-to-face communication for informational-cooperative matters, maximizing one's activities and socializing almost daily, whereas expressive uses were reported less frequently. The mobile phone was significantly more frequently used for all four types of social use than the other three communication technologies. Further, no significant differences were found in the frequency of SMS/MMS and fixed telephone in terms of strategic use, socializing and expressive use. The same can be argued for the fixed telephone and the Internet in terms of drawing on these technologies for socializing. Finally, the results show that the Internet was significantly the least frequently used communicative channel for exchanging expressive messages in comparison to the other four channels, whereas texting was assessed as being significantly the least often used technology for informational-cooperative activities.

Discussion and conclusion

The aim of this study was to discover patterns regarding the social uses of communication technologies in everyday interpersonal communication. For this purpose we performed a quantitative empirical analysis of the complex interpersonal media environment on the basis of conceptualizing social use as a social action. The analysis shows that, in general, all communication technologies seem to enjoy high levels of interpretative flexibility (Pinch and Bijker, 1987) as they are employed in various combinations of social uses and are rarely confined to single uses. Nevertheless, the results of the doubly-repeated-measures ANOVA indicate that people still engage most frequently in face-to-face conversations, followed by the mobile phone, the fixed telephone, SMS/MMS and the Internet. Although new technologies have quickly become integrated into the everyday lives of their users, face-to-face communication has clearly preserved its dominant mode of interaction, which is, to a large extent, consistent with other comparative U&G studies. The results, however, indicate that the mobile phone has managed, in a relatively short period of time, to become almost as common as face-to-face interaction not only in terms of strategic and informational-cooperative use, but also for purposes of socializing and self-expressing. Together with the observed homophily between users of SMS/MMS and fixed telephones, these results suggest that the thesis of supplementation or substitution of face-to-face conversations by mediated types of communication has weak empirical support and that we are instead witnessing a pluralism of various communication channels complementing each other.

Considering not only the upsurge of new social applications on the Internet and mobile phones, within which human conduct is an amalgam of online and offline activities, but also the profound changes in forms of human sociality (Castells et al., 2006; Wellman, 2001), it is plausible to believe that the trend of pluralization and dispersion of interpersonal communication will align new communication technologies even closer with face-to-face communication in the near future. The changing forms of human sociality that are grasped with various concepts like mobile sociality (Mascheroni, 2007) or 'connected presence' (Licoppe, 2004) are clearly alluding to forms of human existence that are inherently connected with contemporary communication technologies. Under such conditions, as Urry (2004) notes, face-to-face communication has certainly become only one of today's possible ways of staying in touch or being together. However, the evidence that face-to-face communication has remained stable in terms of frequency of use suggests that it has taken a distinctive role within people's communication practices. In other words, together with the advent of new forms of technologically mediated sociality, new normative contexts are emerging, where physical encounters are felt to be obligatory, appropriate or desirable (Urry 2007).

This might also be connected with our finding that communication devices in general are most inviting for strategic uses. According to Habermas this sort of use corresponds to self-interested behaviour, potentially problematic for social cohesion and trust, and is therefore less socially acceptable than other, consensually oriented uses of interpersonal communication. However, since sanctions of socially unacceptable behaviour are less embarrassing for individuals in mediated than in face-to-face settings (Petrič 2007), it

seems that mediated communication offers less normative pressure and better affordances for strategic behaviour. On the other hand, however, some caution is needed in reading this finding, as strategic action is also most common in face-to-face situations; this might be due to loose wording of the indicators and consequently their low correspondence with the definition of strategic use, which comprises a plethora of particular uses of communication technologies. Furthermore, this suggests that strategic use might be further partitioned into subtypes of actions oriented to success.

Suggestions for future research

A significant part of the article was devoted to the reconceptualization of use and development of a typology of social uses of interpersonal communication technologies. The full range of implications of the proposed conceptualization still need to be assessed, but we believe that it would be fruitful to apply it in the context of analysing a complex structuration process in which sociotechnical structures and changes impact the ways people use interpersonal communication technology and in which these social uses carry consequences for closer and wider social circles and structures (Petrič et al., 2010). Our research made just a first step in presenting a general illustration of social uses of all key interpersonal communication technologies on a nationwide representative sample in an average performing European country in terms of ICTs use. We did not address here the questions of where these uses emanate from and what they amount to, although a social-action perspective on media uses does, in principle, allow one to do so (Renckstorf et al., 1996). In our opinion, these subjects warrant further examination through additional research in at least three directions. First, future research needs to look at specific cultural and social contexts in understanding the social uses of communication technologies and to connect the tense relation between strategic and consensus-oriented uses and specific social consequences. Second, the present study gives an insight into the social uses of five communication technologies with a single cross-sectional survey. With such a design it is impossible to disentangle the changing relations between them. Hence, the next step could be to repeat a study or to undertake a longitudinal analysis using panel data to trace paths of changes between communication technologies. Lastly, whereas personal, fixed telephone and mobile channels are relatively mature, the versatility of the Internet and the increasing number of applications for interpersonal communication, such as social network sites, would need a more detailed breakdown across Internet-based communication channels (e.g. social network sites, mobile web, email). We believe that (re)conceptualizing social uses as social action might provide a sound basis in all these regards.

Notes

1. The term comparative studies refers to investigations that examined and compared the uses and gratifications of various interpersonal communication channels simultaneously.
2. The international data are available on Eurostat's home page at: epp.eurostat.ec.europa.eu, Themes Science and Technology, Data Information Society Statistics.
3. We talk here about RR2 and REF1 according to AAPOR 2006 Standard Definitions; available at: www.aapor.org/pdfs/standarddefs_4.pdf.
4. The decision on single statements stems from a practical rationale: our measurement instruments were only part of a much broader but representative Eurostat questionnaire, where we had to consider the possible effect of the non-negligible length of the questionnaire and the response burden, and thus had to make necessary reductions. If we, for instance, had decided to measure each use with two statements, this would have resulted in an additional 4 (uses) × 5 (technologies) = 20 statements.
5. In this study the Internet is operationalized as a single communication medium, although it should be clearly noted that 'Internet-based interpersonal communication' is a very broad practice that includes a number of communication modalities, which include a wide variety of Internet applications. The main reason for treating the Internet as a single entity lies in the research focus of the article: its major intention is to uncover the differences in social uses between the Internet and other 'old' and 'new' communication technologies (and not to analyse the structural diversity of social uses of different modes of Internet-based interpersonal communication).
6. For each statement the respondents answered on a five-point scale, where 1 = 'never' and 5 = 'daily'.

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