ICA-11-10686

Abstract

This study was designed to identify, from a uses-and-gratifications point of view, the motives that young people (n = 755) in the age of 12 to 25 have for using SMS. The study also aimed to assess whether these SMS motives are related to age, gender, current education, mobile phone experience, SMS experience and SMS use. We located four types of motives for using SMS: entertainment, social interaction, immediate access, and efficiency (in time). Immediate access and social interaction were most salient and more often endorsed by young people than entertainment and efficiency (in time). The results of this study show that the most salient reason for young people in the age of 12 to 25 to use SMS is the convenience of being able to contact and interact with their peers whenever they want and wherever they are. To distinguish heavy SMS users from moderate SMS users, the following significant predictors were established: entertainment, social interaction, immediate access, mobile phone use, and current education. A remarkable finding from our study is that apparently, adolescents (age 12 to 18) use SMS more often for intrinsic or social use, like entertainment and social interaction, than young adults (age 18 to 25), who use SMS more often for instrumental or task-oriented use, like efficiency (in time). Another interesting finding was that although male and female users do not differ with respect to the number of messages sent, female users are apparently more enthusiastic about using SMS as a means of communication than male users.

ICA-11-10686

Motives for SMS use

The way the younger generation communicates has changed considerably in the last couple of years. Besides other new means of communication, like e-mail, chat (MSN, ICQ), and the Internet, the mobile phone (cellular phone) and mobile phone text-messages have become enormously popular means of communication for young people. In the Netherlands, for example, 17% of people in the age of 12 to 25 owned a mobile phone in 1999, while in 2001 this had more than tripled to 61%. About 75% of the young people is a prepay mobile phone user, and most of the money they spent was on sending and receiving text-messages on their mobile phone (Sikkema & Noordhuizen, 2001). Short Message Service (SMS) is the ability to send and receive text messages via mobile telephones. These text messages can comprise of words or numbers or an alphanumeric combination. Each short message is up to 160 characters in length when Latin alphabets are used, and 70 characters in length when non-Latin alphabets such as Arabic and Chinese are used. According to Parisonz (2000), there is no doubting the success of the Short Message Service, despite little proactive marketing by network operators and phone manufacturers. In the first quarter of 2002, 75 billion short messages were sent worldwide, which is an increase of 50% compared to the same period in 2001 (GSM Association, 2002). SMS was an accidental success that took nearly everyone in the mobile industry by surprise. Few people predicted that this hard-to-use service would take off. There was hardly any promotion for or mention of SMS by network operators until after SMS started to become a success. 'SMS advertising went from showing business people in suits entering text messages to bright pink and yellow advertisements aimed at the youth markets that adopted SMS' (Mobile streams, 2001). So why did SMS become so successful as a new means of communication for young people, despite this hard-to-use technology? In other words, which factors caused young people to use SMS rather than any other, easier means of communication, like the mobile phone or e-mail?

Media selection and use

Several studies offer different theoretical perspectives on which factors may explain why people do or do not use media. For example, from a diffusion of innovations perspective, adopting factors can be grouped into four major categories: 1) adopter-related personality variables; 2) socio-economic influences; 3) interpersonal communications influence; and 4) attributes of innovation and benefits (Leung & Wei, 1999). Recent studies within this diffusion of innovations area have focused on

adopting new information and communication technologies, such as the adoption of mobile phone (see for an extensive overview Leung & Wei, 1999).

In a study focused on people's choice between electronic mail and voice mail, El-Shinnawy & Markus (1998) found that other medium features besides media richness have an influence on individuals' media choice. El-Shinnawy & Markus' research provides stronger support for an explanation grounded in different technological features of communication media than the ability to transmit personal and social cues (richness). Media features of functionality, usability, and ease-of-use were found to have a major influence on media choice.

From a perspective of organizational theory, Fulk, Schmitz, and Steinfield (1990) developed a social-influence model of technology use. In this model, variable clusters representing media features, social influence, task features, media experience and skill, as well as task experience and skills together influence the variable cluster media evaluations and task evaluations. Taken together, these variables, along with situational factors have an influence on the outcome variable, media use.

Contractor & Eisenberg (1990) propose a simple, recursive model that extends the social information processing approach in two ways. First, by applying communication network concepts as one way of specifying the social mechanisms by which individuals' perceptions and behaviors with new media are shaped. Second, by describing the manner in which individuals' use of the media in turn influences their positions in emergent communication networks. Underlying both of these moves is Contractor & Eisenberg's contention that the social environment and applications of communication technologies are recursively linked to each other and to other organizing processes through the "duality" of social structure.

Coming from a tradition of educational rather than communication research, Collis, Peters & Pals (2001) validated an integrated theoretical model (the 4-E Model) for predicting the likelihood of use of telecommunications-related technological innovations (in particular, e-mail, the WWW, and video conferencing) in learning-related settings. The four Es in the model stand for environmental factors, educational effectiveness, ease of use, and (personal) engagement. The validation of the 4-E model identified the importance of the organizational setting and the individual's own self-confidence in the decision to make use of information and communication technology in a learning context.

From a uses-and-gratifications research perspective, McQuail (2001) distinguishes three variants of media gratification processes (the 'traditional' media need-gratifications model, the

circumstantial model of media use, and the rational consumer model of selective media use), involving different relations between the three basic elements (cognitions/information, affective elements, and conative level (actions)) as well as a difference of sequence of these elements. The rational consumer model of selective media use variant applies when the audience has access to alternative media suitable for different purposes, is well-informed in advance about the content alternatives and is also conscious of certain needs and preferences. Media use is then the result of an informed selection (behavior), which is normally accompanied or followed by evaluation of the source and its utility, with implications for subsequent behavior.

A four-dimensional framework for categorizing media use motives

It is not so easy to combine or even compare the different factors that are found in literature to explain why people do or do not use media. Each theoretical perspective uses its own definitions or interpretations of the factors found, and even within the same theoretical perspective, different studies are using different definitions for the same factors.

In an attempt to get around this practical problem we constructed, a four-dimensional framework for categorizing media use motives at a more general level. The framework consists of four motive dimensions for media use: Profit, Convenience, Enjoyment, and Influence. The dimensions of the framework represent, at a more general level, the different dynamic factors that explain a person's choice of media use based on the studies of Leung & Wei (1999), e.g. socio-economic and interpersonal communications influences, attributes of an innovation and benefits; El-Shinnawy & Markus (1998), e.g. functionality, usability, and ease-of-use; Fulk, Schmitz, and Steinfield (1990), e.g. social influence and situational factors; Contractor & Eisenberg (1990), e.g. social environment and communication network participation; and Collis, Peters & Pals (2001), e.g. environmental factors, effectiveness, ease-of-use, and engagement.

Within the context of SMS we define Profit as the payoff users perceive (or do not perceive) from the use of SMS: the perceived added value. Convenience can be defined as the ability (or inability) to use SMS, not only at the instrumental level relating to usability (e.g. ease-of-use), but also at the situational (e.g. mobility) and social level (e.g. interaction). Enjoyment can be defined as the effect SMS use has on the state of mind of the user in terms of the perceived (or not perceived) pleasurable or entertaining experiences. Influence can be defined as the external causes of an individual's use of SMS, such as social environment or state of technology.

Uses-and-gratifications research approach

From a uses-and-gratifications research perspective several researchers have examined the motives people have for the uses of newer media by assessing their motivation to communicate in various contexts. For example, Papacharissi and Rubin (2000) examined audience uses of the Internet and found five gratifications: Interpersonal Utility, Pass Time, Information Seeking, Convenience, and Entertainment motives for using the Internet. Ferguson and Perse (2000) explored the similarity between television and the World Wide Web (WWW) to assess whether web surfing is a functional alternative to television viewing and found three major and two minor television-like reasons for web surfing: Entertainment, Pass Time, Relaxation, Social Information, and Information. Leung and Wei (2000) found Mobility, Immediacy, Instrumentality as the strongest instrumental motives in predicting the use of cellular phones, followed by intrinsic factors such as Affection/Sociability and Fashion/Status.

According to McQuail (2001), the uses-and-gratification research approach has proven capable of the hardly demanding, but still useful tasks of describing audiences in terms of tastes and expectations, of identifying types and patterns of selection behaviors and of characterizing audience perceptions of different genres, forms and content types. The failures of the uses-and-gratification research approach relate more to the aim of predicting audience demand, finding causal explanations of actual choices and use patterns as well as identifying key intermediating variables in effects research. In a suggestion for progress in the field of uses-and-gratifications research, McQuail (2001) describes four 'moments' in media selection and use, as 'an initial and quite pragmatic subdivision in terms of the main *moments* in a sequential account of media selection, attention and response. These *moments* constitute more or less autonomous topics or fields of enquiry, which require different kinds of methods and have their own set of goals. Very provisionally, these fields can be identified as having to do with: taste culture and life style; media and content choice; involvement in the ongoing media experience and uses of media; and reflection on and evaluation of the media experience.' The present study, in which we want to uncover the factors that are accountable for the use of SMS, can be categorized within the third *moment* in media selection and use: the involvement in media experience and uses of media. According to McQuail (2001), this moment involves two separate objects of research interests. One relates to satisfactions directly experienced from the content and behavior of media use, which are generally expressed by means of various forms of 'involvement'. The other

ICA-11-10686

relates to ‘secondary’ aspects and implementations of media as they fit into everyday routines and customary practices associated with different life-styles and special occasions. The context of use is central, but preferences for solitary or for sociable attention are equally important.

Our study involved three research questions, which are designed to uncover the motives young people have for their involvement in SMS use.

Research Question$_1$: What are the motives of young people in the age of 12 to 25 for using SMS?

Research Question$_2$: How do age, gender, current educational system, mobile phone experience and SMS experience relate to SMS motives?

Research Question$_3$: Which media use motives can be identified as being most important to SMS use?

Method

Sample and Procedures

Our study involved a survey which was conducted from December, 2001 until March, 2002 among students of a Dutch university and different Dutch high schools and vocational education schools countrywide. University students were contacted via e-mail to participate in the on-line version of the questionnaire. The high school students and vocational education students were visited at their institution, where several classes were selected at random to participate. A paper version was handed out to students, which they were asked to fill in at the end of their class. Students also were contacted via postings on SMS newsgroups to participate in the on-line version of the questionnaire. Participation in the study was voluntary, and a total of 755 respondents took part. The sample was 53,1% female (n = 401) and 46.9% male (n = 354), and ranged in age from 12 to 25 (M = 17.97, SD = 3.22); 45.6% of the participants were university students (n = 344), 44.6% were high school students (n = 337), 6.9% were vocational education students (n = 52), and 2.9% students came from another type of educational system (n = 22).

Measurement

SMS Motives. Three pilot studies based on a total sample of 141 respondents were conducted to find items that might reveal different motives for using SMS. The first pre-test (n = 67) was drawn from sets of television viewing motivations (Rubin, 1981) which were adjusted to the use of SMS. Sophomore communication students were asked to indicate on a 5-point Likert scale (1 = not at all, 5 =

exactly) to what extent their personal motives for using SMS were similar to these motives for using SMS. Only few of the 27 reasons for using SMS were salient to our respondents, with responses means and standard deviations ranging from $M = 1.37$, $SD = 0.69$ to $M = 3.87$, $SD = 1.07$. The three highest mean scores were: 'I use SMS to be in contact with my friends and family' ($M = 3.87$, $SD = 1.07$); 'I use SMS because my friends and family also send me SMS-messages' ($M = 3.43$, $SD = 1.08$); and 'I use SMS just because it's available' ($M = 2.51$, $SD = 1.22$).

The second pre-test study ($n = 40$) consisted of twenty persons in the age of 12 to 18 and twenty persons in the age of 18 to 25, all of whom came from different educational systems and sent at least five SMS-messages a week. They were asked in an open interview to sum up motives for their use of SMS. Table 1 gives an overview of the categorized motives.

Based on these two pre-test studies and other previous studies by Rubin (1981), Papacharissi & Rubin (2000), Leung & Wei (2000), and Ferguson & Perse (2000), we constructed a SMS motives scale to measure motives for using SMS. To refine the questionnaire, a third pre-test study was held: a sample of 40 representative respondents were used to pre-test 45 statements representing 15 possible a priori categories that might reveal different motives for using SMS. Respondents stated their levels of agreement with these statements on a 5-point Likert scale (1 = not at all, 5 = exactly). Nine items were eliminated and five items were altered to refine the final questionnaire and to improve the reliability of the dimensions.

Table 1

Categorized Motives for Using SMS

Motives for using SMS ($n = 40$)	Times mentioned
Just for fun	17
To be available (at all times)	13
Functional messaging	11
Because it's practical	10
A prompt means of communication	9
Exciting (in context of friendship or relation)	9
For social contact	9
Not to disturb someone	9
It's cheaper (in comparison with long phone calls)	5

ICA-11-10686

To be able to reply	3
Low barriers for sending messages	2
No reaction required	1

Experience. To measure their mobile phone experience, respondents were asked for how long they had owned a mobile phone. We defined two levels of experience: moderate experience, indicating users who owned a mobile phone for less than two years, 58.1% (n = 439) of the sample and advanced experience, indicating users who owned a mobile phone for more than two years, 41.9% (n = 316) of the sample. The average respondent had been using a mobile phone for just over two years (range = 0 to 72 (months), M = 25.02, SD = 12.45).

To measure their SMS experience, respondents were asked for how long they had used SMS. We defined two levels of experience for SMS: moderate experience, indicating users who had used SMS less than two years, 68.5% (n = 517) of the sample and advanced experience, indicating SMS users who had used SMS for more than two years, 31.5% (n = 238) of the sample. The average respondent had been sending SMS-messages for almost two years (range = 0 to 48 (months), M = 22.34, SD = 10.97).

SMS use. We operationalized the amount of SMS use as the total number of SMS-messages sent in one week. Based on the number of messages sent, we defined two types of SMS users in our sample: moderate SMS users, who send at least one and maximally five SMS-messages a week, 38.8% (n = 293) and heavy SMS users, who send more than 5 SMS-messages a week, 61.2% (n = 462). On average the sample had been sending 9.69 SMS-messages a week (range = 1 to 150, SD = 13.90).

Demographics. Respondents were asked about their age, gender and current educational system (current education). Age was categorized into two categories: adolescents (age 12 to 18) and young adults (age 18 to 25). The factor ‘current educational system’ was categorized into four categories: high school, vocational education, university and other educational systems.

Statistical Analysis

After scale construction and reliability analysis, several steps were taken to answer the three research questions. We used an unrelated one-way analysis of variance to identify significant differences between Age, Gender, Current Education, Mobile Phone Experience, SMS Experience, and SMS Use.

We used principal-components analysis with varimax rotation to extract and interpret possible SMS motive factors (e.g. Reagan, 2000). We required an eigenvalue of 1.0 or higher to retain a factor. Responses to the retained items were summed and averaged to form the scales representing each factor. Paired *t*-test identified significant differences among the strength of motives.

An unrelated one-way analysis of variance was used to identify significant differences for each of the four SMS motives as well as Age, Gender, Current Education, Mobile Phone Experience, and SMS Experience.

A hierarchical multiple regression analysis (e.g. Reagan, 1998) was used to examine the multivariate relationships among each of the variables and SMS Use. We entered SMS motives on the first step, Mobile Phone Experience and SMS Experience on the second step, and demographics on the third step.

Results

Outcomes of Mobile Phone Experience, SMS Experience, and SMS Use

Table 2 summarizes the means and standard deviations of Mobile Phone Experience, SMS Experience, and SMS Use. The age group 12-18 (n = 418) differs significantly from age group 18-25 (n = 337) for Mobile Phone Experience (F = 26.66, df = 1, 753, p < .001), for SMS Experience (F = 13.00, df = 1, 753, p < .001), and SMS Use (F = 8.98, df = 1, 753, p < .01). The mean for Mobile Phone Experience for age group 18-25 (M = 27.58) seems to indicate a more extensive mobile phone experience than in age group 12-18 (M = 22.96). Likewise, the mean for SMS Experience for age group 18-25 (M = 23.93) seems to indicate a more extensive SMS experience than in age group 12-18 (M = 21.06). The mean for SMS Use for age group 12-18 (M = 11.04) suggests that they send more SMS-messages a week than age group 18-25 (M = 8.01). Female users (n = 401) differ significantly from Male users (n = 354) with regard to Mobile Phone Experience (F = 24.62, df = 1, 753, p < .001), and SMS Experience (F = 5.08, df = 1, 753, p < .05). SMS Use did not differ significantly (F = 0.02, df = 1, 753, p = .890). The mean for Mobile Phone Experience for Male users (M = 27.38) seems to indicate a more extensive mobile phone experience than Female users (M = 22.94). Similarly, the mean for SMS Experience for Male users (M = 23.30) suggests a more extensive SMS experience than Female users (M = 21.50). High School (n = 337), Vocational Education (n = 52) and University (n = 344) differ significantly with regard to Mobile Phone Experience (F = 11.81, df = 1, 730, p < .001), SMS Experience (F = 6.49, df = 1, 730, p < .01), and SMS Use (F = 7.94, df = 1, 730, p < .001). The

group Other (n = 22) was excluded. For Current Education the means for Mobile Phone Experience seems to indicate a more extensive mobile phone experience for Vocational Education (M = 29.04), followed by University (M = 26.84), and then High School (M = 22.84). The means for SMS experience suggests a more extensive SMS experience for Vocational Education students (M = 24.94), followed by University students (M = 23.53), and then High School students (M = 20.90). The means for SMS Use suggests a more frequent SMS use for Vocational Education students (M = 14.69), followed by High School students (M = 10.55), and then University students (M = 7.65).

Table 2

Mean & SD Mobile Phone Experience, SMS Experience, and SMS Use

	Age		Gender		Current education		
	12-18	18-25	Female	Male	High school	Vocational education	University
Mobile Phone Experience	22.96	27.58***	22.94	27.38***	22.84	29.04	26.84***
	(12.02)	(12.51)	(11.26)	(13.30)	(12.42)	(12.01)	(12.21)
SMS Experience	21.06	23.93***	21.50	23.30*	20.90	24.94	23.53**
	(10.90)	(10.86)	(10.44)	(11.84)	(10.83)	(11.65)	(10.82)
SMS Use	11.04	8.01**	9.75	9.61	10.55	14.69	7.65***
	(14.55)	(12.86)	(13.43)	(14.42)	(14.43)	(19.58)	(11.63)

Note: Standard deviations are in parentheses, *p < .05, **p < .01, ***p < .001

SMS Motives

Research Question$_1$ examines the motives of young people in the age of 12 to 25 for using SMS. The 34 SMS motive statements, means and standard deviations are summarized in Table 3. It was clear that not all of the reasons for using SMS were salient to our respondents. As such, items with medians below 3.00 were eliminated from further analysis.

The factor analysis of the SMS motive statements yielded four interpretable factors that accounted for 58.2% of the rotated solution's variance: Entertainment, Social Interaction, Immediate Access and Efficiency (in time). Factor 1, *Entertainment* accounted for 17.3% of the common variance in the rotated solution. This factor signaled a use for SMS motivated by enjoyment. Items such as "it's enjoyable", "it amuses me", and "it is pleasant" loaded high on this factor. Factor 2, *Social Interaction* accounted for 16.2% of the common variance in the rotated solution. This factor signaled a use for SMS motivated by (peer) influence. Items such as "to keep contact with my friends", "to strengthen my relations with my friends", and "to keep my friends up-to-date" loaded high on this factor. Factor 3,

Immediate Access accounted for 14.7% of the common variance in the rotated solution. This factor signaled a use for SMS motivated by convenience. Items such as “because I can use it everywhere”, “because I can use it whenever it suits me”, and “to be able to give a quick reaction” loaded high on this factor. Factor 4, *Efficiency (in time)* accounted for 10.0% of the common variance in the rotated solution. This factor signaled a use for SMS motivated by profit. However, its Cronbach’s alpha was relatively low at .46. Items such as “to prevent long phone calls” and “because sending a message doesn’t take much time” loaded high on this factor.

Item responses were averaged to create scale scores for each of the SMS motives. Immediate access (M = 3.67, SD = 1.03, alpha = .76) had the highest mean scores, followed by Social interaction (M = 3.19, SD = 1.02 alpha = .78). Entertainment (M = 2.93, SD = 1.14, alpha = .81) and Efficiency (in time) (M = 2.81, SD = 1.08, alpha = .46) were less salient reasons for using SMS. Paired t-tests showed that Immediate access was significantly more endorsed than Social interaction (t[755] = -11.33, p < .001), than Entertainment (t[755] = -15.73, p < .001), and than Efficiency (in time) (t[755] = 19.42, p < .001). Social interaction was more endorsed than Entertainment (t[755] = -6.79, p < .001), and than Efficiency (in time) (t[755] = 8.11, p < .001). Entertainment was more endorsed than Efficiency (in time) (t[755] = 2.40, p < .05). Most motives correlated moderately. The highest correlations were between Social interaction and Entertainment (r = .53), Social interaction and Immediate access (r = .34), and Efficiency (in time) and Immediate access (r = .33), all p < .001.

Table 3

Factor Analysis for SMS Motives

SMS Motive Items Factors “I use SMS …”	SMS Motive			
	1 Entertainment	2 Social Interaction	3 Immediate Access	4 Efficiency (in time)
Because it’s enjoyable (2.90, 1.23)	,81	,26	,17	.07
Because it amuses me (3.07, 1.29)	,80	,19	.05	.08
Because it is pleasant (3.68, 1.25)	,72	,28	,16	-,11
Because Internet also enables me to do so (3.73, 1.25)	,47	,11	-.07	,32
To keep up contact with my friends (3.61, 1.27)	,27	,78	,14	,10
To strengthen my relations with my friends (2.76, 1.38)	,26	,75	.08	-.08
To keep my friends up-to-date (3.33, 1.24)	,27	,64	,16	,20
To congratulate someone (2.71, 1.25)	.00	,55	.09	.05

ICA-11-10686

Not only to friends, but also to acquaintances (2.79, 1.37)	,23	,50	,14	,22
Because I can use it everywhere (3.16, 1.17)	.08	,14	,84	.09
Because I can use it whenever it suits me (2.82, 1.33)	.06	.09	,81	,13
To be able to give a quick reaction (3.38, 1.30)	,11	,22	,71	.06
To prevent long phone calls (2.79, 1.22)	-,10	,11	.02	,80
Because sending a message doesn't take much time (2.67, 1.48)	,29	.08	,35	,61
Because it is available (2.63, 1.35)	,43	,14	,25	,47
*To not feel alone (1.63, 1.04)				
*To pass time (2.00, 1.17)				
*Because it excites me (1.55, 0.98)				
*Because I can get information anytime, anywhere (2.17, 1.26)				
*To communicate also with people that I do not know that well (2.04, 1.10)				
*Because it's a habit, something I just do (2.10, 1.24)				
*Because it's a pleasant break (1.71, 1.04)				
*Because it thrills me (1.74, 1.05)				
*To escape from what I'm doing (1.75, 1.05)				
*So I don't have to think about school, work or other things (1.80, 1.13)				
*To pass time especially when I am bored (2.11, 1.27)				
*To make me feel less lonely (1.52, 0.94)				
*When I have nothing better to do (2.12, 1.25)				
*Because it relaxes me (1.73, 1.05)				
*Because I like to try new things (1.96, 1.21)				
*In reaction to a TV or radio program (1.47, 0.94)				
*Because it's a new way of communicating (2.25, 1.22)				
*So I can escape from family or other people (1.60, 1.01)				
*Because typing SMS-messages on my mobile phone is very easy (2.57, 1.35)				
Sum of Squared Loadings	2.59	2.43	2.21	1.50
Eigenvalue	4.84	1.67	1.17	1.04
Variance explained in rotated solution (%)	17.3	16.2	14.7	10.0
Mean	2.93	3.19	3.67	2.81
SD	1.14	1.02	1.03	1.08
Internal Consistency Reliability (Cronbach's alpha)	.81	.78	.76	.46

Note: Item means and standard deviations are in parentheses.

*Items excluded from further analysis.

ICA-11-10686

Research Question$_2$ examines how age, gender, current educational system, mobile phone experience and SMS experience are related to SMS motives. To answer Research Question$_2$ the means of the motives scale scores were analyzed using an unrelated one-way analysis of variance (see Table 4). It was found that there was a significant effect of Age on Entertainment (F = 116.39, df = 1, 753, p < .001). The mean for age group 12-18 (M = 3.30) seems to indicate higher Entertainment scores than for age group 18-24 (M = 2.46). Moreover, a significant effect of Age on Social interaction (F = 17.70, df = 1, 753, p < .001) was found. The mean for age group 12-18 (M = 3.33) suggests higher Social interaction scores than for age group 18-24 (M = 3.01). There was a significant effect for Gender. The means for Female users seems to indicate higher scores than for Male users on all four motives: Entertainment (F = 67.68, df = 1, 753, p < .001), Social interaction (F = 37.90, df = 1, 753, p < .001), Immediate access (F = 3.97, df = 1, 753, p < .05), and Efficiency (in time) (F = 12.32, df = 1, 753, p < .001). There was a significant effect for Current Education on Entertainment (F = 72.17, df = 2, 730, p < .001), Social interaction (F = 7.65, df = 2, 730, p < .001) and Immediate access (F = 3.27, df = 2, 730, p < .05). The category Other was excluded. The mean for High School (M = 3.35) suggests higher scores than for Vocational Education (M = 3.24) and University (M = 2.44) on Entertainment. The mean for High School (M = 3.33) seems to indicate higher scores than for Vocational Education (M = 3.20) and University (M = 3.02) on Social interaction. The mean for Vocational Education (M = 3.93) indicates higher scores than High School (M = 3.70) and University (M = 3.57) on Immediate access. There was a significant effect for Mobile Phone Experience on Entertainment (F = 8.94, df = 1, 753, p < .001), and on Efficiency (in time) (F = 4.56, df = 1, 753, p < .05). The mean for experience group 0-24 (M = 3.03) seems to indicate higher scores than experience group 24-72 (M = 2.78) on Entertainment. The mean for mobile phone experience group 24-72 (M = 2.91) suggests higher scores than mobile phone experience group 0-24 (M = 2.73). There was a significant effect for SMS Experience on Efficiency (in time) (F = 5.10, df = 1, 753, p < .05). The mean for SMS experience group 24-48 (M = 2.94) indicates higher Efficiency (in time) scores than SMS experience group 0-24 (M = 2.75).

Table 4

One-Way Analysis of Variance for SMS Motives

	Age	Gender	Current Education	Mobile phone Experience (months)	SMS Experience (months)

ICA-11-10686

	12-18	18-25	Female	Male	High school	Vocational education	University	0-24	24-72	0-24	24-48
Entertainment	3,30	2,46***	3,23	2,58***	3,35	3,24	2,44***	3,03	2,78***	2,97	2,84
Social interaction	3,33	3,01***	3,40	2,95***	3,33	3,20	3,02***	3,24	3,12	3,20	3,15
Immediate access	3,74	3,59	3,74	3,59*	3,70	3,93	3,57*	3,68	3,66	3,68	3,66
Efficiency (in time)	2,83	2,78	2,94	2,66***	2,83	2,83	2,79	2,73	2,91*	2,75	2,94*

Note. *$p < .05$, ***$p < .001$

Predictors of SMS Use

Research Question $_3$ examines which media use motives can be identified as being most important to SMS use. SMS Use (0 = moderate use, 1 = heavy use) was regressed on three blocks: the four SMS motives (Entertainment, Social interaction, Immediate access, Efficiency (in time)) followed by Mobile Phone Experience and SMS Experience, and demographics (Age, Gender, Current Education).

The total variance explained for SMS Use was 17.0%. The four SMS motives explained 13.9% of the variance on SMS Use. Entertainment ($\beta = .155$, $p < .001$), Social interaction ($\beta = .140$, $p < .001$), and Immediate access ($\beta = .119$, $p < .001$) were significant contributors to the equation. Experience explained an incremental variance of 1.2% on SMS Use, Mobile Phone Experience was the only significant contributor to the equation. The demographic variables explained an incremental variance of 1.9%, the only significant (negative) predictor was University ($\beta = -.243$, $p < .001$).

Table 5

Hierarchical Regression to Predict SMS Use

Predictors		Standardized β
Block 1		
Entertainment		.155***
Social interaction		.140***
Immediate access		.119***
Efficiency (in time)		.059
Adjusted R^2	.139	
R^2 increments	.139	
F	31.46***	
Df	4, 750	

ICA-11-10686

Block 2		
Mobile phone Experience		.156**
SMS Experience		-.042
Adjusted R^2	.151	
R^2 increments	.012	
F	23.31***	
Df	6, 748	
Block 3		
Gender		-.002
Age		.018
High school		-.098
Vocational education		.017
University		-.243*
Adjusted R^2	.170	
R^2 increments	.019	
F	15.08***	
Df	11, 743	

Note. *$p < .05$, **$p < .01$, ***$p < .001$

Conclusions and discussion

This study was conducted to uncover the motives young people in the age of 12 to 25 have for using SMS. We located four types of motives for using SMS: entertainment, social interaction, immediate access, and efficiency (in time). Immediate access and social interaction were most salient and more endorsed by young people than entertainment and efficiency (in time). Within the four-dimensional framework for categorizing media use motives, enjoyment is signaled by entertainment; (peer) influence is signaled by social interaction; convenience is signaled by immediate access; and profit is signaled by efficiency (in time). The results of this study show that the most salient reason for young people to use SMS is the convenience of being able to contact and interact with their peers whenever they want and wherever they are. Hoeflich & Roessler (2001) found similar findings in their study on motives for SMS use. According to them the most important dimension of SMS use is mutual reassurance, followed by contact maintenance, the availability of the medium, and fun in usage. Mutual

reassurance and contact maintenance are comparable with social interaction, the availability of the medium with immediate access and efficiency (in time), while fun in usage is comparable with entertainment.

When we compare the findings of our study to the research reported by Leung & Wei (2000) on the uses and gratifications of the mobile phone, the same intrinsic or social and instrumental or task-oriented motives are applicable to SMS. Respondents' intrinsic motivations for SMS use involve sending SMS-messages to socialize with peers and using SMS for entertainment; while instrumental motivations for SMS use concern the utility of sending SMS-messages to have immediate access and to be efficient with respect to time management. Our findings show that both the social and utilitarian uses of SMS are important to young people.

Although this study was not conducted with a view to comparing the similarities and differences in the motives of e-mail, mobile phone and SMS, the findings of this study do indicate an integration of SMS into young people's daily communicative behavior. However, functions of the mobile telephone and e-mail are only partly replaced.

A remarkable finding of this study is that adolescents (age group 12-18) who have less SMS experience, send more SMS-messages a week than young adults (age group 18-25). Moreover, adolescents score higher on entertainment and social interaction than young adults, while young adults score higher on efficiency (in time). Apparently, adolescents use SMS more often for intrinsic or social use, like entertainment and social interaction than young adults, who use SMS more often for instrumental or task-oriented use, like efficiency (in time). When we relate the motives for SMS use to the actual SMS use (i.e. the total number of SMS-messages send in one week), entertainment, social interaction, and immediate access predicted SMS use. This suggests that those who send more than 5 SMS-messages a week (the heavy SMS users), did so mainly for enjoyment, to socialize with peers or for convenience. The hierarchical regression analysis identified one negative predictor of SMS use: current education, i.e. university. This is not surprising, if we consider that university students send significantly fewer messages a week, and score significantly lower on entertainment, social interaction, and immediate access than high school students and vocational education students. Hoeflich & Roessler (2001) found similar results for the relation between SMS use and educational level.

Another interesting finding was that although male users and female users do not differ with respect to the number of messages sent; female users score significantly higher on all four motives of

entertainment, social interaction, immediate access, and efficiency (in time). Apparently, female users are more enthusiastic about using SMS as a means of communication than male users. This finding may be explained by the fact that female users, according to Hoeflich & Roessler (2001) have a preference for written communication means: They not only send more extensive SMS-messages than male users, but they also write more letters. In the context of cellular phone use, Leung & Wei (2000) argue that the gender difference in conventional telephone use seems to have extended to cellular phone use. They found that male users tended to use their cellular phone as an instrument to do business while younger female users tended to use it to make longer calls while on the go.

As an exploratory study, this research has several limitations. First of all the self selective sampling, our respondents provide information by volunteering their opinions; secondly, our respondents are of Dutch origin; and in the third place, all our respondents are students, which limits the generalizability of our findings to the whole population of people in the age of 12 to 25. Not only may the use of communication means differ between students and young people who are employed, but the use of SMS may also be influenced by cultural and ethnical differences.

References

Collis, B., Peters, O., & Pals, N. (2001). A model for predicting the educational use of information and communication technologies. *Instructional Science, 29*(2), 95-125.

Contractor, N. S., & Eisenberg, E. M. (1990). Communication networks and new media in organizations. In J. Fulk & C. Steinfield (Eds.), *Organizations and communication technology* (pp. 143-172). Newbury Park, CA: Sage Publications.

El-Shinnawy, M., & Markus, M. L. (1998). Acceptance of communication media in organizations: richness or features? *IEEE transactions on professional communication, 41*(4), 242-253.

Ferguson, D. A., & Perse, E. M. (2000). The world wide web as a functional alternative to television. *Journal of Broadcasting & Electronic Media, 44*(2), 155-174.

Fulk, J., Schmitz, J., & Steinfield, C. W. (1990). A social influence model of technology use. In J. Fulk & C. Steinfield (Eds.), *Organizations and communication technology* (pp. 117-140). Newbury Park, CA: Sage Publications.

GSM Association (2002, May). *GSM Statistics.* [On-line report]. Available: http://www.gsmworld.com/news/statistics/index.shtml.

Leung, L., & Wei, R. (1999). Who are the mobile phone have-nots? *New Media & Society, 1*(2), 209-226.

Leung, L., & Wei, R. (2000). More than just talk on the move: uses and gratifications on the cellular phone. *Journalism & Mass Communication Quarterly, 77*(2), 308-320.

McQuail, D. (2001). With more hindsight: conceptual problems and some ways forward for media use research. *Communications: The European Journal of Communication Research, 26*(4), 337-350.

Mobile streams Ltd (2001, December). *SMS History Zone.* [On-line report]. Available: http://www.mobilesms.com/history.asp.

Papacharissi, Z., & Rubin, A. M. (2000). Predictors of internet use. *Journal of Broadcasting & Electronic Media, 44*(2), 175-196.

Parisonz (2000, October). *What is SMS?* [On-line report]. Available: http://www.wirelessknowhow.com/mwap/sms/sms.htm.

Reagan, J. (1998). Building a set of standards for use of regression in the journal of broadcasting & electronic media. *Journal of Broadcasting & Electronic Media, 42*(4), 535-539.

Reagan, J. (2000). Theory into practice: Toward a set of standards for use of factor analysis in the journal of broadcasting & electronic media. *Journal of Broadcasting & Electronic Media, 44*(2), 324-328.

Hoeflich, J. R., & Roessler, P. (2001). Mobile schriftliche Kommunikation – oder: E-mail fuer das Handy. Die Bedeutung elektronischer Kurznachrichten (Short Message Service) am Beispiel jugendlicher Handynutzer, [Mobile written communication, or e-mail on your cellular phone. The significance of SMS use by adolescent cellular phone users]. *Rundfunk und Fernsehen: Forum der Medienwissenschaft und Medienpraxis, 49*(4), 437-461.

Rubin, A. M. (1981). An examination of television viewing motivations. *Communication Research, 8,*141-165.

Sikkema, P., & Noordhuizen, M. (2001). *Jongeren 2001: altijd met elkaar verbonden.*[Young people 2001: always connected]. Amsterdam: Qrius.