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# Research Note: Individual Differences in Perceptions of Internet Communication

■ *Jochen Peter and Patti M. Valkenburg*

## ABSTRACT

■ Drawing on a survey among 687 adolescents, this article investigates to what extent their perceptions of internet communication differ and what background variables (i.e. age, gender, social anxiety, loneliness, need for affiliation) underlie these differences. The analysis focuses on how adolescents perceive the controllability, reciprocity, breadth and depth of internet communication in comparison with face-to-face communication. Younger, socially anxious and lonely adolescents more strongly value the controllability of internet communication and perceive it as broader, deeper and more reciprocal than older, non-socially anxious and non-lonely adolescent respondents. Boys perceive internet communication as more reciprocal than girls do. The greater the adolescents' need for affiliation, the more often they regard internet communication as deeper than face-to-face communication. The findings suggest that a stronger focus on perceptions of internet communication may improve understanding of the internet as a social medium. ■

**Key Words** adolescents, chat, computer-mediated communication (CMC), instant messaging, internet use

Over the last few years, the number of people who use the internet to communicate with others has increased dramatically. Scholars of

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Jochen Peter is associate professor and postdoctoral research fellow and Patti M. Valkenburg is professor at the Amsterdam School of Communications Research *ASCoR* at the University of Amsterdam, Kloveniersburgwal 48, 1012 CX Amsterdam, The Netherlands. [emails: j.peter@uva.nl; p.m.valkenburg@uva.nl]

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computer-mediated communication (CMC) attribute the internet's popularity as a social medium to at least four characteristics of internet communication. First, in internet communication, people have more time to reflect than in face-to-face communication. As a consequence, they can easily control if, when, how, how much and what they communicate to others on the internet; hence it offers *controllability* (McKenna and Bargh, 2000; Walther, 1996). Second, internet communication conveys fewer social status cues than face-to-face communication (Kiesler et al., 1984). As a result, contact between communication partners may not only emerge more easily in internet communication than in face-to-face communication, it may also be of greater *reciprocity* in the sense that communication partners feel that they and others are more responsive in internet communication than in face-to-face communication. Finally, due to anonymity and reduced visual and auditory cues, people may more easily overcome shyness on the internet than in face-to-face settings (McKenna and Bargh, 2000). This may make it easier for people to talk about a greater number of topics (*breadth*) and to feel less inhibited in disclosing personal or intimate information about a particular topic (*depth*).

Controllability, reciprocity, breadth and depth of internet communication are central to explanations of how and why people communicate online. It is, therefore, remarkable that research to date has neglected the fact that people may differ in how they actually perceive these characteristics. In the tradition of technological determinism, many studies on internet communication often mechanistically deduce how people will adopt and perceive internet communication from certain objective features of the internet. However, research on CMC has not only shown that people use computers for communicative purposes that are at odds with the objective features of computers (e.g. Walther, 1992), recent studies have also established evidence of differences in people's attitudes and perceptions regarding the internet in general (Tsai, 2004; Tsai and Lin, 2004). Furthermore, studies on organizational communication have pointed out that there is no necessary correspondence between the characteristics of computers and their communicative functions (e.g. Carlson and Zmud, 1999). Finally, uses and gratifications research has demonstrated that objective features of a medium may shape, but never fully determine, how people perceive mediated communication (for a review of this argument, see Ruggiero, 2000).

Thus, the divergence between the objective features of computers and actual communicative use suggests that it may be worth studying how people perceive computer-mediated or, more specifically, internet

communication. By internet communication we mean private, largely text-based interpersonal communication in a dyadic or small-group setting using internet applications such as email, internet relay chat or instant messaging. This study focuses on people's perceptions of the controllability, reciprocity, breadth and depth of internet communication, while investigating potential differences in such perceptions.

Once it has been established that people differ in how they perceive internet communication, the psychological underpinnings of such differences can be studied. To date, research has theorized about relationships between psychological characteristics and perceptions of internet communication – for example, when the internet's potential for intimate communication is thought to appeal to socially anxious people (McKenna and Bargh, 2000). However, such relationships have rarely been studied empirically. As a consequence, we have only indirect empirical knowledge about whether psychological characteristics shape how people actually perceive internet communication. In a first attempt to fill this research gap, we focus, in addition to age and gender, on three psychological characteristics – social anxiety, loneliness and need for affiliation. Establishing potential differences in people's perceptions of internet communication along with their psychological underpinnings may not only provide us with a more user-centred perspective on the role of internet communication in people's lives, it may also serve as an important baseline for research on the antecedents and outcomes of internet communication.

This study focuses on internet communication among adolescents for three reasons. First, adolescents are the defining users of the internet (e.g. Madden and Rainie, 2003). They use internet-based communication technologies, such as instant messaging, more frequently and more intensively than adults (Chak and Leung, 2004). As a result, they have become the focus of much recent research (e.g. Gross et al., 2002; Tsai, 2004; Tsai and Lin, 2004). Second, the internet has become the medium of choice for adolescents, and adolescents strongly integrate internet communication into their social lives (e.g. Gross et al., 2002). Third, previous research on internet communication among adults often investigates groups of people that are similar in demographic and personality characteristics (e.g. Parks and Floyd, 1996). This may result partly from the fact that, especially among adults, internet communication continues to be unevenly distributed. Among adolescents, however, internet communication has become a mass phenomenon, at least in the Netherlands where this study was conducted (Huysmans et al., 2004). Therefore, adolescents may be a more suitable population than adults to

study how internet communication is related to users' psychological characteristics.

## **Psychological underpinnings of internet communication**

### *Age and gender*

Adolescent theories generally assume that early adolescents (i.e. 12- to 15-year-olds) are more self-conscious about their personal and social self than pre-adolescents and late adolescents (e.g. Schaffer, 1996). Dramatic developmental changes along with intense feelings of being misunderstood (e.g. Williams and Currie, 2000) make this age group the most likely to engage in internet communication, taking into account both its volatile and its intimate character. We thus predict a non-linear relationship between age and the four characteristics of internet communication: in comparison with pre-adolescents and late adolescents, early adolescents will generally value the controllability of internet communication more and perceive it as more reciprocal, broader and deeper than face-to-face communication.

Women are generally less assertive in conversations than men (Costa et al., 2001). Because internet communication allows the less assertive to be heard (e.g. McKenna and Bargh, 2000; McKenna et al., 2002), female adolescents may perceive internet communication as more reciprocal than male adolescents do. Furthermore, intimate conversations are arguably more important to females than to males (Caldwell and Peplau, 1982). The possibility of self-disclosure in internet communication without the awkwardness that occasionally characterizes self-disclosure in face-to-face communication may thus appeal more strongly to female adolescents than to male adolescents. This may positively influence female adolescents' perception of the depth of internet communication. Existing research does not suggest gender differences in perceptions of the controllability and breadth of internet communication.

### *Social anxiety and loneliness*

Social anxiety refers to discomfort in the presence of others and may also include avoidance of others and fear of negative evaluation (e.g. La Greca and Lopez, 1998). Loneliness may be defined as an emotional response to a discrepancy between desired and achieved levels of social contact (e.g. Russell, 1996). Based on research on social anxiety and loneliness, we

expect both social anxiety and loneliness to shape how adolescents perceive the four characteristics of internet communication in question.

First, socially anxious people prefer settings in which they can plan ahead (Arkin and Grove, 1990) and lonely people generally feel less socially competent than other people in face-to-face situations (Spitzberg and Canary, 1985). As a result, the controllability of internet communication may be attractive for socially anxious and lonely adolescents. Second, the socially anxious generally talk less and are less assertive in social situations (Garcia et al., 1991). Likewise, lonely people are socially passive (Vitkus and Horowitz, 1987). Therefore, both socially anxious and lonely adolescents may perceive the internet, with its slower and more egalitarian communication, as more reciprocal compared with their non-socially anxious, non-lonely counterparts.

Third, in face-to-face settings, both socially anxious and lonely people rarely actively influence the issues or the course of an interaction (Leary et al., 1987; Segrin, 1996). As a result, they may perceive internet communication, with its ease of raising different issues, as broader than adolescents who are not socially anxious or lonely. Finally, both socially anxious and lonely individuals have difficulties with self-disclosure in face-to-face situations (Meleshko and Alden, 1993; Solano et al., 1982). Therefore, socially anxious and lonely adolescents may perceive internet communication, with its possibility of anonymous self-disclosure, as deeper than do non-socially anxious and non-lonely adolescents.

### *Need for affiliation*

The need for affiliation describes the motive to seek and maintain interpersonal relationships (Murray, 1938). People with a strong need for affiliation write more letters (Lansing and Heyns, 1959) and are more emotionally involved in relationships (Baron and Byrne, 2003). This suggests that content-related features of communication, such as breadth and depth, may be more important to people with a strong need for affiliation than to those with a low need for affiliation. As a result, we expect that the greater the adolescents' need for affiliation, the more often they will perceive internet communication as broader and as deeper than face-to-face communication. Studies on the correlates of need for affiliation do not suggest a relationship between the perceived controllability and reciprocity of communication and need for affiliation (Baron and Byrne, 2003).

## Method

### *Sample*

In 2004, we conducted a survey among 687 adolescents between 10 and 17 years of age who had reported experience with internet communication. The adolescents were recruited from six schools in urban and non-urban areas in the Netherlands and included participants of all educational levels. After we had obtained parental consent, the questionnaires were administered in the respondents' classrooms. Completing the questionnaire took about 15 minutes.

### *Measures – dependent variables*

*Perceived controllability* We operationalized perceived controllability of internet communication with two items: 'On the internet, I have more time than in a face-to-face encounter to think about what I want to say' and 'On the internet, I have more time than in a face-to-face encounter to think of how I say will something'. Response categories ranged from 1 (very important) to 5 (not at all important) and were inversely coded. A scale was formed by averaging the items ( $M = 3.11$ ,  $SD = 0.90$ ), which led to a Cronbach's alpha of .80.

*Perceived reciprocity* This construct was measured with four items. Examples of the items are: 'I feel that people listen to me more carefully on the internet than in a face-to-face encounter' and 'I feel that I can listen better to others on the internet than in a face-to-face encounter'. Response categories ranged from 1 (agree entirely) to 5 (disagree entirely) and were inversely coded. The items formed a unidimensional scale, with a Cronbach's alpha of .88. We created an index by averaging the items ( $M = 2.25$ ,  $SD = 0.91$ ).

*Perceived breadth* We measured this concept with four items: for example, 'On the internet I talk about different topics more easily than during a face-to-face encounter'. Response categories ranged from 1 (agree entirely) to 5 (disagree entirely) and were inversely coded. The items formed a unidimensional scale ( $\alpha = .72$ ). We created an index by averaging the items ( $M = 2.55$ ,  $SD = 0.82$ ).

*Perceived depth* This concept was operationalized with five items: for example, 'On the internet, I talk more easily about my inner feelings than

in a face-to-face encounter'. Response categories ranged from 1 (agree entirely) to 5 (disagree entirely) and were inversely coded. The items formed a unidimensional scale ( $\alpha = .83$ ). We created an index by averaging the items ( $M = 2.58$ ,  $SD = 0.93$ ).

### *Measures – independent variables*

*Age and gender* The measurement of age ( $M = 13.31$ ,  $SD = 1.77$ ) and gender was straightforward. Females (46 percent) were coded with 0, males (54 percent) with 1.

*Social anxiety* We used four items from the social avoidance and distress – new people subscale of the Social Anxiety Scale for Adolescents developed by La Greca and Lopez (1998) to measure social anxiety. La Greca and Lopez's subscale consists of six items. However, because two of these items loaded less than 0.40 on the principal component that they helped to define, we used only the four remaining items of the original subscale.<sup>1</sup> In our study, these four items loaded on one factor and resulted in a Cronbach's alpha of .81. We created an index by averaging the items ( $M = 2.66$ ,  $SD = 0.87$ ).

*Loneliness* From the 20 items of the UCLA loneliness scale (Russell, 1996), we selected the eight items with the highest item-total correlations (items 3, 4, 7, 10, 13, 14, 16 and 20; Russell, 1996). Three of these items had a positive valence (e.g. 'I often feel close to people') and five of them had a negative valence (e.g. 'I often feel alone'). Response categories ranged from 1 (agree entirely) to 5 (disagree entirely). We conducted a principal components analysis on the eight items, which led to a two-factor solution that explained 63 percent of the variance. The five items with a negative valence defined the first factor and the three items with a positive valence defined the second. This two-factor structure suggests that the adolescents in our sample had problems with adjusting their answers to the valence of the items. Therefore, we decided to use only the five items with the negative valence, which resulted in a Cronbach's alpha of .84. We created an index by averaging the items ( $M = 1.78$ ,  $SD = 0.77$ ).

*Need for affiliation* We used four items from the preference for affiliation subscale of the Sociotropy-Autonomy Scale developed by Bieling et al. (2000). Bieling et al.'s subscale consists of 11 items, and we used the four

items with the highest factor loadings. These items formed a unidimensional scale and resulted in a Cronbach's alpha of .64. We created an index by averaging the items ( $M = 3.25$ ,  $SD = 0.78$ ).

*Online communication* We included adolescents' internet communication as a control variable in the regression model. Because adolescents' internet communication may affect how they perceive it (and vice versa), the potential influences of personality variables could be spurious if this variable is not controlled for. We operationalized online communication with three items: (1) 'How many days of this week have you been online to chat?'; (2) 'On the last day that you were online, how many times did you chat?'; and (3) 'On the last day that you were online, for how long did you chat?' The first two items required open-ended responses. Response categories for the third item ranged from 1 (about 15 min) to 7 (three hours or more). Responses to the three items were standardized. The items formed a unidimensional scale and resulted in a Cronbach's alpha of .64.<sup>2</sup>

## Results and discussion

### *Descriptive analyses*

Forty-five percent of the adolescents perceived internet communication as more controllable than face-to-face communication, whereas, 27 percent saw no difference between the controllability of internet and face-to-face communication. With respect to the reciprocity of internet communication, 16 percent of the adolescents considered internet communication to be more reciprocal than face-to-face communication, with 10 percent perceiving internet and face-to-face communication as having equal reciprocity. In terms of breadth of internet communication, 25 percent of the adolescents perceived internet communication as broader than face-to-face communication and 9 percent considered both internet communication and face-to-face communication to be equally broad. Finally, 30 percent perceived internet communication to be deeper than face-to-face communication, while 9 percent saw no difference between the depth of internet and face-to-face communication.

### *Explanatory analyses*

To investigate the influence of our predictor variables on the perceived controllability, reciprocity, breadth and depth of internet communication,



we performed multiple regression analyses. The findings are shown in Table 1.

*Age* In line with our expectations, age predicted both perceived controllability and depth non-linearly: early adolescents (i.e. 12- to 15-year-olds) were more likely than other age groups to perceive internet communication as more controllable and deeper than face-to-face communication. However, as far as reciprocity and breadth of internet communication were concerned, we did not find the expected non-linear effect. Further analyses without the squared age term showed a linear negative age effect: the younger the adolescents were, the more likely they were to perceive internet communication as more reciprocal and broader than face-to-face communication.

Taken together, these results concur with the finding that, in pre-adolescence and early adolescence, the quality of real-life friendships and, thus, of face-to-face communication is lower than in late adolescence (e.g. Schaffer, 1996). Compared with older adolescents, the younger may thus depend more on internet communication to engage in quality communication.

*Gender* Contrary to our expectations, it was not the female adolescents, but the male adolescents who perceived internet communication as more reciprocal than face-to-face communication. Moreover, there was no gender difference in the perception of the depth of internet communication. The non-significant relationships between gender and perceived controllability, as well as between gender and breadth of internet communication, confirmed our expectations.

The finding that boys perceived internet communication to be more reciprocal than face-to-face communication is in line with recent research from educational psychology. This research suggests that boys increasingly turn into the 'problematic gender' because many of them feel ignored, misunderstood and less privileged than girls, in particular in face-to-face situations such as in the classroom (Veendrick et al., 2004). Therefore, it seems plausible that they perceive internet communication as more reciprocal when asked to compare it with face-to-face communication.

*Social anxiety and loneliness* As expected, social anxiety consistently influenced adolescents' perceptions of internet communication. Socially anxious adolescents valued the controllability of internet communication more than non-socially anxious adolescents did. Moreover, compared with

**Table 1** Predictors of adolescents' perceptions of internet communication

	<i>Controllability</i>		<i>Reciprocity</i>		<i>Breadth</i>		<i>Depth</i>	
	<i>Zero-order</i>	$\beta$	<i>Zero-order</i>	$\beta$	<i>Zero-order</i>	$\beta$	<i>Zero-order</i>	$\beta$
Age	-.05	-.05	-.19***	-.22***	-.15***	-.18***	.00	.00
Age-squared	.07	-.09*	-.19***	.02	-.17***	-.05	.04	-.15***
Male	-.07	.00	.03	.10**	-.01	.06	-.03	.06
Social anxiety	.29***	.26***	.28***	.26***	.29***	.26***	.30***	.26***
Loneliness	.18***	.11**	.29***	.22***	.25***	.17***	.21***	.15***
Need for affiliation	.14**	.07	.07	.03	.09*	.03	.14***	.11**
Internet communication	.07	.09*	.09*	.14***	.14***	.18***	.18***	.19***
Adj. $R^2$		.12		.19		.17		.17

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (two-tailed).

adolescents with low social anxiety, adolescents high in social anxiety perceived internet communication to be more reciprocal, broader and deeper than face-to-face communication.

We found a similarly consistent pattern regarding the relationship between loneliness and perceptions of internet communication. In comparison with adolescents who are not, lonely adolescents appreciated the controllability of internet communication more and also perceived it to have more reciprocity, more breadth, and more depth than face-to-face communication.

Our consistent findings regarding the relationship between social anxiety as well as loneliness and perceptions of internet communication demonstrate that internet communication may be an important means for socially anxious and lonely adolescents to overcome their inhibitions of face-to-face settings. In internet conversations, socially anxious and lonely adolescents appear to feel less distressed and less passive, as well as being able to address more diverse and more intimate topics than in face-to-face conversations.

*Need for affiliation* Need for affiliation was not related to the perceived breadth of communication. There was also no relationship between the need for affiliation and the perceived controllability or reciprocity of internet communication. In line with our expectations, however, the stronger the adolescents' need for affiliation, the more often they perceived internet communication as deeper than face-to-face communication. This finding may be explained by the tendency of people with a strong need for affiliation to be more emotionally involved in relationships (Baron and Byrne, 2003). Thus, if people with a strong need for affiliation want to engage in intimate conversations, internet communication, with its ease of self-disclosure, seems to be an important way to do so.

For all four characteristics of internet communication, the use of internet communication proved to be an important control variable. Adolescents who communicated more on the internet also perceived internet communication as more controllable, more reciprocal, broader and deeper than face-to-face communication.

## Conclusion

To date, internet research has devoted little attention to how people actually perceive internet communication. The majority of internet studies rather deterministically relate objective features of the internet to

how and why people communicate on the internet. The studies therefore implicitly assume that people perceive internet communication, by and large, in a similar fashion. The results of this study have demonstrated that this assumption is generally not tenable. Moreover, our results have shown that a fairly homogeneous group of determinants – age, social anxiety and loneliness – explain the differences in how internet communication is perceived.

Future internet research may find it interesting to study how people's perceptions of internet communication may mediate or moderate the impact of personality characteristics, such as social anxiety and loneliness, on actual internet use. Alternatively, it is conceptually also conceivable that perceptions of internet communication may condition the influence of internet communication on indicators of psychosocial well-being. Such approaches are urgently needed to deepen our knowledge about the underlying mechanisms of the social consequences of internet communication.

## Notes

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1. In selecting items for the abbreviated forms of the social anxiety, loneliness and need for affiliation scales, we follow principles of classic test theory (e.g. Urbina, 2004). Reducing the number of scale items did not affect the concurrent and construct validity of the constructs.
2. The somewhat low internal consistency values of need for affiliation and internet communication should be seen in the light of the number of items used and the inter-item correlations within the two constructs. Cronbach's alpha heavily depends on the number of items and does not say anything about the unidimensionality of the concept (e.g. Cortina, 1993). For need for affiliation, we used four items and obtained a mean inter-item correlation of  $r = .32$ . For online communication, we used three items and obtained a mean inter-item correlation of  $r = .36$ . Factor analyses confirmed the unidimensionality of the two constructs. Thus, the major criteria of scale construction were met.

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