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A Social Theory of Internet Uses Based on Consumption Scale and Linkage Needs

Jordi López-Sintas[1], Nela Filimon[2], and Maria Ercilia García-Álvarez[3]

Abstract

The authors analyze the understudied relationship between social class and Internet-in-practice in the Spanish social space in order to develop a social theory of Internet use based on the concepts of scale of consumption, technological, social, and information linkage needs of individuals, and Bourdieu's suggested homology between the social and consumption spaces. The authors test their theory with interdependence methods of analysis, which are suitable methodological instrument for relating Internet uses to social structure through the concepts of scale and linkage needs. The authors' theory suggests that, since Internet uses are socially structured, the first-level digital divide may be reduced but will not disappear, and Internet uses will continue to differ (second-level digital divide). The theory not only explains Spaniards' Internet use and more recent empirical findings but also proposes answers to critical contemporary social questions regarding the use of digital technologies and the digital inequality debate.

Keywords

Internet uses, digital divide, social theory of consumption

In the last 10 years, substantial research efforts have been invested in assessing the effects of technology on society and studying how the Internet is adopted and used (DiMaggio, Hargittai, Neuman, & Robinson, 2001; Selwyn, 2004; van Dijk, 2005; Warschauer, 2003). Research assessing the effects of the Internet on individuals and society consists of numerous studies with rather controversial findings; although initial evidence suggested that technology has a negative influence on the psychological well-being of individuals and on their level of social participation (Kraut et al., 1998; Nie & Erbring, 2002), more recent results do not point to any negative influence at all (Koku, Nanzer, & Wellman, 2001; Kraut et al., 2002; Wellman, Quan Haase, Witte, & Hampton, 2001). As for Internet adoption (first-level digital divide), debate has arisen in regard to what is referred

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to as the digital divide, indicating that low-status consumers lag behind high-status consumers in adopting and using the Internet because of differences in digital skills (van Dijk & Hacker, 2003) and technological equipment (Robinson, 2009). However, recent findings suggest that even when no differences exist between low- and high-status consumers in terms of Internet adoption, patterns of use still differ (Warschauer, 2003), suggesting that a second-level digital divide comes into play.

In this article, we focus our attention on patterns of Internet use and the second-level digital divide by studying a sample of the Spanish population. Interpretation is based on a theoretical framework that combines the sociology of consumption (Bourdieu, 1984) with the anthropology of consumption (Douglas & Isherwood 1979). We find that Internet uses are related to the individual's social status and age through the scale of technological consumption and linkage needs. The explanation of different patterns of Internet use observed points to structural reasons, based on individual technological, social, and informational linkage needs because of the individual's social standing. In other words, having Internet (technological) access and skills is not enough. If there are differences in social and informational linkage needs due to social standing, the digital divide will remain.

Our findings and theoretical framework contributes to Internet-in-practice knowledge by theorizing that Internet use differs on the basis of social class. Building on existing Internet-in-practice research and general digital inequality research, we present evidence for a social theory of Internet use. The conceptual relationship between social status and Internet use is not new (Anderson & Tracey, 2001; Bucy, 2000; DiMaggio, Hargittai, Celeste, & Shafer, 2004; DiMaggio et al., 2001; Franzen, 2003); however, in this research, we go a step further by unifying the research field with compelling data and analysis, describing a novel theoretical framework that also has the predictive capacity to answer critical contemporary social questions, such as whether the digital divide will close or continue to widen in the coming years. Additionally, we provide the methodological instruments necessary to apply the theory to research into social uses of Internet-in-practice.

The article is organized as follows: The section on Theoretical Framework provides a brief review of the literature on which the theoretical framework is based. The section on Methodology describes the research design and the data analysis. In the next section, findings are reported, and the building of our theory of Internet social usage is discussed in the section on Discussion. Finally, is the section on conclusions.

Theoretical Framework

Internet Uses: Recent Findings

Kraut et al. (1998), using a sample of 256 people studied over a period of 2 years, were the first to examine the social and psychological impact of the Internet. Even when individuals used the Internet extensively for communication purposes, researchers found that greater Internet use was associated with deteriorated communication with family members. This effect was considered paradoxical, as it was expected that heavy use of the Internet for communication purposes would produce a positive effect. A few years later, the same authors performed a follow-up research study based on 208 individuals from the original panel, finding that the negative effects had dissipated (Kraut et al., 2002). Interestingly, the authors reported that Internet use predicted better outcomes for individuals with more rather than less social support.

The effects of the Internet on social relationships have also been studied by Nie and Erbring (2002). Using data from a national random sample of U.S. adults, these researchers found a negative effect: the more time spent using the Internet, the more contact was lost by individuals with their immediate social environment. Nevertheless, this finding could be biased, as the authors only studied the effects of the Internet on face-to-face relationships—an interpretation supported by evidence provided by Koku et al. (2001), who found that use of the Internet for communication complements face-to-face contact. Individuals who see each other more often and work closely together also e-mail each other more frequently. Although communicating through the Internet helps individuals without strong local ties to stay in touch, it is mostly used by scholars who have strong face-to-face relationships with the recipients of their mails. Wellman et al. (2001) studied a sample of 39,211 visitors to the National Geographic Society's website and found similar evidence, with people's interactions online supplementing face-to-face and telephone communications. The same authors also found that Internet usage was associated with increased participation in voluntary organizations and politics.

As far as Internet adoption is concerned, research has focused on the gap between low- and high-status individuals; labeled the digital divide, this concept suggests that individuals can be divided into the elite and the proletariat of the digital information society (DiMaggio et al., 2001; Selwyn, 2004; van Dijk & Hacker, 2003). It also suggests that individuals with better social status are more likely than low-status individuals to improve their capital endowment through Internet usage (Bucy, 2000; Franzen, 2003).

Franzen (2003), who conducted a longitudinal survey of a random sample of Swiss individuals in 1998 and 2001, found that although Internet was adopted sooner by individuals with high economic, cultural, and social capital, the time individuals allocated to using the Internet was taken away from the time spent watching television; moreover, time use was distributed differently among social classes, with low-status individuals typically spending more time watching television.

Other researchers, on the other hand, looked for a possible relationship between social status and the binomial of technical equipment–digital skills (Bucy, 2000; DiMaggio et al., 2004; Mossberger, Tolbert, & Stansbury, 2003; van Dijk, 2005). Their findings indicate that upper-class individuals not only have better quality equipment and use the Internet more but also have better digital skills. As noted earlier, the implication of these results is that access to technology and digital skills combined contribute to the separation of higher and lower social class individuals.

Attention has more recently focused on patterns of usage of certain services delivered by the Internet. Anderson and Tracey (2001) argued that Internet adoption was an overly simplified model for understanding the role of Internet in everyday life, pointing instead to the need to consider concrete patterns of Internet usage. Goldfarb and Prince (2008) took on board Anderson and Tracey's suggestions and, compiling a sample of 18,439 U.S. citizens in the year 2001, found that, although high-income and educated people were more likely to adopt the Internet, less educated people actually spent more time online. As an explanation for this alternative evidence, the data revealed that less educated Americans spent more time online due essentially to the lower opportunity cost of their spare time. Zillien and Jäckel (2007), who used a different theoretical framework, found different patterns of usage for German Internet users, concluding that, although low-status individuals used the Internet to get information just as high-status individuals did, the former used the Internet less to find information on the economy, health, politics, and the labor market. This conclusion was advanced by the findings of Chatman (1991), who suggested that individuals in the lower working class were not active seekers of information outside their most familiar social context.

What is particularly interesting in the study by Zillien and Jäckel (2007) is how these authors use the concept of Internet-in-practice, borrowed from Orlikowski (2000) and based on Giddens' theory of structuration (1984) and Bourdieu's habitus theory (1984). Zillien and Jäckel (2007) suggest that even if we account for social differences in access to Internet technologies and in the skills necessary to use the Internet, we still find that although low-status groups use the Internet to obtain information about economy, health, politics, and the employment market, they do so on a smaller scale than high-status groups, as had been suggested by the knowledge gap theory (Tichenor, Donohue, & Olien, 1970). In a recent study using different data, Zillien and Hargittai (2009) reached similar conclusions, suggesting that social status plays a determining role in the different Internet-in-practice situations encountered: higher-status Germans made greater use of the Internet for more specific purposes, and their usage tended to be biased toward what is called capital enhancement. These authors suggested that digital inequalities are likely to persist mostly because the ultimate factor determining digital activity is the individual's social standing. Unfortunately, the concept of Internet-in-practice does not explain possible social uses.

A Theoretical Framework to Explain Social Differences in Internet Use

The works of Douglas and Isherwood (1979) and Bourdieu (1984), when combined, provide an alternative, more complete, and appropriate framework for understanding, interpreting, and analyzing Internet use patterns. Although Bourdieu's theory of taste predicts a stratified use of the Internet and provides the analytical methods, Douglas and Isherwood's theory (1979) described the social processes behind the social use of products. Concretely, the concepts of scale of consumption and linkage, in particular, seem to provide the most promising building blocks (Douglas & Isherwood, 1979) in terms of relating Internet-in-practice to the social standing of individuals. Scale of consumption derives from the correlation that Douglas and Isherwood (1979) identified between an individual's social standing and certain consumption patterns and frequencies. These authors suggest that consumption by high-status individuals is high scale so as to ensure access to, and control over, the information necessary to maintain their privileged position; moreover, the technology of these individuals reflects a high-scale pattern of consumption aimed at developing linkage with other individuals possessing relevant information.

Douglas and Isherwood (1979) proposed that objects supply information, and that when this information is used for social purposes, it becomes a brand or label used for social purposes; hence, objects mark and classify the individuals using them. The informational framework suggests that the aim of a pattern of consumption is ultimately to handle a coherent information system using the classification systems supplied by the objects consumed. It be said that the objects we consume communicate who we are, whom we resemble, who we differ from, and how we interpret life.

Drawing an analogy with the material development of nations, Douglas and Isherwood (1979) argued that there are three types of linkages that can be established among consumers: (a) technological linkage, referring to access to the technological artifacts of the material life; (b) social linkage, referring to the consumption of objects and services that connect individuals in one or several social groups; and (c) information linkage, referring to the consumption of objects and services embedding technical or economic information that enables individuals to enhance the possibility of perpetuating, and possibly improving, a privileged social position.

Consumer technological linkage, these authors argued, is a necessary yet insufficient condition for social linkage. Technology enables consumers to make contact with other consumers with similar or inferior, but usually not superior, technology. An example is how teenagers use mobile technology (cellular phones), mainly to call each other, share their preferred music face to face using Bluetooth technology, and make contact with absent peers (through the short message service [SMS], a communication protocol for sending and receiving all types of texts through mobile phone devices). Teenagers without the technology are excluded from the social group, as they cannot receive nor reciprocate in these exchanges. A technologically linked teenager also can be (but not necessarily) a socially linked teenager.

Consumers with similar technology will find it easier to participate in social exchanges, as similar cellular phones, homes, cars, gaming technologies, and habits contribute to establishing and maintaining contact with other social peers. Technological linkage is therefore a necessary, but insufficient, condition for social linkage. The findings reported by Goldthorpe and Lockwood (1963) are a good example of how consumers can be linked technologically but not socially, whereas the classic study by Dennis, Henriques, and Slaughter (1969)—cited by Douglas and Isherwood (1979, p. 123)—of a 1950s mining community in industrial England is an example of consumers linked both technologically and socially: miners had the same technology at home, and any surplus income among better paid miners was invested in strengthening social ties among all the miners.

Consumer information linkages come from social interactions that increase the information needed to improve the capacity of consumers to raise their earnings or improve their general command of their social universe (Douglas & Isherwood, 1979; Bourdieu, 1984). Again, teenagers are a good example: once they are technologically and socially linked, mobile technology allows them to command the necessary information to ensure that the social network works for them, making them more popular, and influencing how peers interpret their social life (what is good or bad, what is cool or not, who is pretty or ugly, etc.). Menger's (1999) description of freelancer behavior in artistic labor markets is another good example of consumer information linkages used to increase earnings. Concretely, he points out that "freelancers who fail to move into the inner circles of successful colleagues, get locked in a precarious situation," and further adds that "[s]uch freelancers do not win creative jobs, with all that this implies: difficulties in improving, in earning a living, in developing a successful career" (Menger, 1999, p. 552). Further evidence has been provided recently by Wolff and Moser (2009), whose research suggests that social networking by academics is used to increase member revenues rather than improve the quality of their work.

Whereas the anthropology of consumption has stressed the aims of consumption (scale and linkage) and its relationship with social ranking, the sociology of consumption has focused on explaining how the social space is related to the consumption space through the habitus; Bourdieu's sociology of consumption (1984, 1986/1983, 1989) and Giddens' social theory (1973, 1984) have provided evidence that consumption patterns are structured by an individual's social standing, which is built up of resources (access to a variety of capitals) and related by the rules of interpretation and action (habitus) that guide consumers when making decisions about what to consume, how to access goods, how to consume them, and how to interpret what others consume. This theory suggests that there must be a homology between the social space (resources related to a social rank) and the consumption space (what is consumed), both related by the habitus.

Combining and applying both the anthropological and sociological frameworks to the interpretation of Internet use patterns, we expect Internet uses to be structured according to an individual's position in the social space, and also expect spaces, Internet uses and social position, to be related through the individual's scale of consumption and linkage needs. We should find that individuals in low compared to intermediate social positions have a lower scale of consumption and fewer linkage needs—most probably, just basic technological linkages and limited social and information ties. In turn, individuals in intermediate social positions will be associated with linkage needs and a scale of consumption below those exhibited by upscale consumers, given that a homology exists between social standing and uses of the Internet, with both spaces related by consumer linkages.

Methodology

Sample

The data were taken from the Survey on Equipment and the Use of Information and Communication Technologies in Households (TIC-H-2007) conducted by the Spanish National Statistics Institute (INE). The survey is designed according to a two-level (national and regional) representative cluster, enabling data to be stratified by habitat and background sociodemographic variables. This survey is carried out according to EUROSTAT requirements aimed at providing harmonized data for the entire European Union. Technical details of the survey are available in the methodological report issued by the INE (2007). In the second half of 2007, a total of 22,198 individuals aged 10 years and older were interviewed and provided data of relevance to this research that referred to a period covering the 3 months prior to the interview for most of the variables.

Variables

Internet uses and activities. The study variables correspond to services accessed by individuals over the Internet (from home or elsewhere). They are classified into four categories as follows: (a) information and online services (information searches, leisure and entertainment, media entertainment, and transactions with public authorities); (b) communication and socialization; (c) training and education; and (d) commercial transactions. In each interview, the questions recorded whether the interviewee used the World Wide Web (WWW) for the given service. To economize on space, the categories corresponding to each block of questions and their relative frequencies are listed in the Appendix to this article, together with the findings.

Indicators of social standing. The sample included Internet users and their indicators of socioeconomic and cultural capital (occupational status and education level), making it possible to approximate an individual's position in the social space (see Appendix). Information on economic capital endowment (income level) was not collected; hence, used as a proxy for socioeconomic status was the occupational status of individuals (classified on the basis of manual workers, nonmanual workers, information and communication technology [ICT] employees, students, individuals out of the labor market, individuals performing domestic tasks, and retired people) in the week before the interview. Information on cultural capital endowment was recorded in terms of highest educational attainment (first-level secondary education or lower, second-level secondary education, and university education) at the time of interview.

Completing the description of social status were several additional variables (Table A1), as follows: (a) household size (the number of people aged 10 years and older sharing a household), (b) habitat (reflecting differences in Internet supply and usage due to the size of the city); (c) age as a generational indicator (five brackets); and (d) gender. The questionnaire did not collect information on the marital status of individuals.

Indicators of habits of Internet use. The survey questionnaire recorded information on the temporal dimension of Internet use in two separate modules, each with various categories (Appendix). The first module inquired about most recent Internet use, and the second module referred to frequency of Internet use. As far as the spatial dimension (location) was concerned, Internet use in the last 3 months was assessed for 11 alternatives (Appendix).

Indicators of home Internet connection. Households reporting having Internet access used six different types of connection (Appendix): (a) modem or Red Digital de Servicios Integrados (RDSI) (dial-up access over a standard telephone line); (b) Asymmetric Digital Subscriber Line (ADSL); (c) cable network; (d) broadband mobile phone (Universal Mobile Telecommunications System [UMTS] or 3G); (e) other broadband-type connection (satellite, etc.); and (f) another type of mobile phone connection (Wireless Application Protocol [WAP] or General packet radio service [GPRS]). The devices used to access the Internet also showed great variety (Appendix): personal computer (PC), handheld computer, other types of handheld computer (personal digital assistant [PDA] or pocket PC), digital TV, video console, mobile phone (WAP, GPRS, UMTS, or 3G), or another means. A special block of questions was aimed at collecting information on mobile devices used to access Internet from places other than home or work, such as broadband mobile phone (UMTS or 3G), other mobile phone (GPRS or WAP), handheld computer (PDA, pocket PC, or palmtop), or handheld computer with wireless connection.

Data Analysis

To test our theoretical framework, we needed an instrument capable of analyzing two related spaces: that of individuals and that of Internet use. Like Bourdieu in *La Distinction* (1984), we used the multiple correspondence analysis (MCA) technique (Greenacre, 1993; Greenacre & Blasius, 1994; Lebart, Morineau, & Warwick, 1984); in particular, we used the implementation of MCA by Venables and Ripley (2002, pp. 329–330). The MCA enabled us to build up the Internet use and individual spaces from a set of uses large enough to allow a full multidimensional display of individuals (Rouanet, Ackermann, & Le Roux, 2004). How individuals were related to their Internet use patterns revealed their linkages with other individuals.

A geometric representation of the Internet use space is as simple as diagonalizing an n-by-l matrix G of n individuals (rows) observed for p Internet use (dummy variables) with l ($= p \times 2$) total category levels (columns). A simple geometric display consists of a two-dimensional space where Internet use and use level are plotted according to their association with each of these dimensions. The result is an asymmetric row plot of the matrix of individuals according to Internet use.

To interpret the social space constructed in this way, we used the inertias (total variance) of the principal axes and the contributions of the Internet use categories to the axes (see Ambrogi, Biganzoli, & Boracchi, 2005). MCA enables active variables to be distinguished from supplementary properties, with the latter term used to define variables that have no impact on the geometric orientation of the dimensions but which may help with interpretation (Greenacre, 1993). In our research, we used MCA both as an exploratory and explanatory tool; for the latter, we used the "predict" method for the "MCA" class implemented in the Modern Applied Statistics with S (MASS) package (Venables & Ripley, 2002), using the R language and environment for statistical analysis, version 2.9.0 (R Development Core Team, 2009).

Findings

For statistical interpretation of the MCA results, we applied a strategy in three steps: (a) selecting the number of principal coordinates to retain; (b) interpreting the retained principal components according to the cloud of Internet uses and services (the active variables) and the cloud of individuals; and (c) adding a set of supplementary variables. The Internet uses described in the previous section reflected 20 alternatives that elicited a binary response (yes/no) from individuals resulting in 40 active categories.

Selecting the Number of Retained Coordinates

The variance of the cloud was (40–20)/20 = 1 (see Le Roux & Rouanet, 2004). The number of nontrivial null principal coordinates was (40–20) = 20; hence, the mean of each was 1/20 = 0.05.[1] Accordingly, each principal coordinate retained should explain at least 5% of the inertia. Nevertheless, the amount of inertia explained by the principal coordinates depends on which matrix is decomposed. If the indicator matrix (the n-by-l G matrix) is decomposed, then the inertia explained by the first two principal coordinates is very poor: 2.7% and 1.58% is explained by the first and second axes, respectively, in our case. If the Burt matrix is decomposed (the symmetric matrix B of all two-way cross-tabulations of the l categories of Internet uses, l-by-l), 56.4% and 9.5% of inertia is explained. Finally, if we follow the correction by Greenacre (1994, p. 156), the first two principal coordinates explain 85% of the inertia, the first, and 5% of the inertia, and the second—almost 90% of the off-diagonal inertia of the Burt matrix. The third principal coordinate, meanwhile, only explains 1% of the total variation, which is less than the 5% minimum required for the selection of a nontrivial principal axis (see Greenacre, 1984; 1993 for details about the truly significant axes in MCA).

Interpreting the First Two Principal Coordinates

Here we examine the relationship among the different Internet uses and between uses and the principal axes (see Greenacre, 1984; 1993 for details). Combinations of above-average Internet use are located far from the center of the plot in Figure 1A, whereas those with a similar profile are plotted near each other. The visual representation of the indicators of Internet use in Figure 1A (an asymmetric map) shows that the categories for which individuals gave a positive answer (yes) are distributed around three poles in the right quadrants of the left panel. Thus, the first principal axis separates individuals who use and who do not use the Internet, and the second principal axis separates social users (below) from information and commercial users (above). Social users are individuals who use the Internet mainly for interpersonal communication, that is, to socialize, whereas information and commercial users are individuals who use the Internet to access information resources or for commercial arrangements (traveling, purchases, etc.).

An alternative to the above interpretation is to look at the two diagonal lines running between the two principal axes. We will follow this approach in the rest of the article, as we believe this latter interpretation is easier than the former. Observe how the indicators for individual interactions with public authorities and financial and commercial transactions are placed along the arrowhead diagonal that rises upward from left to right; these are coded in Figure 1A (top right) as follows: obtaining information from websites (*Ad.Y*), downloading official forms (*F.Y*), sending completed forms (*S.Y*), Internet banking (*Ba.Y*), and purchases (*Bu.Y*) and sales (*S.Y*) of goods and services. Near the origin is information on related uses, such as information searches for goods and services (*S_I.Y*), health issues (*H.Y*), travel and accommodation (*T.Y*), and reading and/or downloading newspaper and magazine articles (*Jo.Y*; see the Appendix for full details of the values of Internet use coordinates and of the quality of their representation). Now, in the arrowhead diagonal running top left to bottom right, we find that training and education uses—searching for general information (*IS.Y*), training information (*I.Y*), and courses (*Lea.Y*)—and communication and socialization uses are located at the bottom right: playing/downloading games/music/films (*Le.Y*), participating in chats (*Cha.Y*), Internet telephoning and videoconferencing (*Vch.Y*), listening/watching web radio/TV (*TVE.Y*), software downloads (*SW.Y*), and searching for employment (*J.Y*). In contrast, the Internet uses for which individuals answered "no" are located in the left quadrants, with a distribution symmetry that is generally inverse to the symmetry observed in the right quadrants.

The fact that Internet uses are located along two diagonals running top left to bottom right and bottom left to top right explains the low contribution of Internet use indicators to the inertia of the principal coordinates (the average is 4.5 per thousand and 1 per thousand for the first and second principal coordinates, respectively; see Appendix), although the quality representation is much better (the average of squared correlations of categories with both axes is 854 per thousand: 808 per thousand for the first and 46 per thousand for the second; see details in the Appendix). Note that the distances between categories can be interpreted as similarities, whereas the independent projection of the categories to the axes can be used to interpret the meaning of the principal coordinates. If we rotate the principal axes clockwise until they match the arrowhead diagonals, we obtain a clearer picture; now, the rotated first principal coordinate is associated with Internet use to construct social linkages, whereas the rotated second principal coordinate is associated with Internet use to construct information linkages directly through economic exchanges. Consequently, individuals placed in the new upper-right quadrant also have a higher level of technological linkage (after rotating both principal axes, technological linkage is still running between the social and information axes).

We can see that most of the area of the elliptically shaped cloud of individuals (number of individuals) is plotted as a concentration of points in the right quadrants, indicating that most individuals in the sample use Internet either for social or commercial purposes. In fact, the cloud of individuals

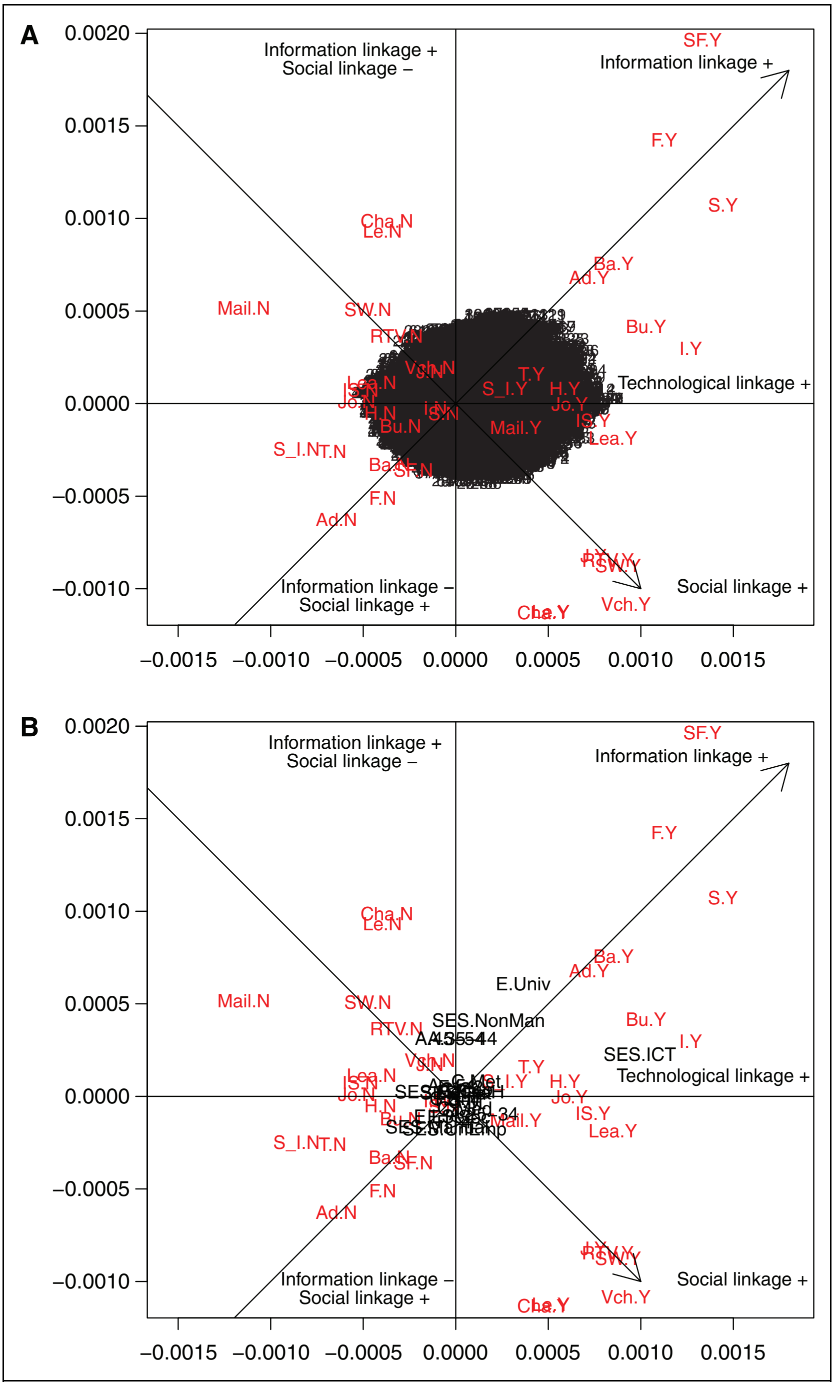

Figure 1. A, Cloud of individuals and Internet uses. B, Internet uses and indicators of social position.

visually depicts the second-level digital divide: to the left are individuals who rarely or never use the Internet to link up with other individuals, whereas to the right are individuals who do so frequently. The supplementary indicators help us further interpret these data.

Supplementary Variables

To help with interpreting the Internet use patterns described in Figure 1A, we studied three groups of additional variables (see Appendix), as follows: (a) indicators of social standing (occupational status, education level, household size, type of habitat, age, and gender); (b) indicators of habits of Internet use (frequency and location of Internet use); and (c) indicators of home Internet connection (the equipment used to connect to and access the digital space). Analysis of these supplementary variables enabled a better interpretation of the principal axes, the cloud of individuals, and their behavior in the digital space. These supplementary indicators were added to the social space (Figures 1B, 2A, and 2B) and analyzed without influencing the social space configuration.

Indicators of Social Standing

These variables and their categories are depicted in Figure 1B. Looking first at their representational quality (correlation with the principal axes), education was the variable that was best displayed in the social space (see quality column in the Appendix); specifically, lower secondary education was correlated with the first axis, whereas university education (*E.Univ*) was correlated with the first axis but mainly with the second axis. Occupation, specifically ICT employment (*SES.ICT*), best correlated with the first axis, whereas nonmanual employment (*SES.NonMan*) and student status tended to correlate with the second axis. As far as position in the social space and distances from the origin of the axes are concerned, the magnitudes of the distances on a given axis are an indicator of similar or different behavior manifested by the individuals in the category.

A visual inspection of the quadrants of Figure 1B reveals the existence of differences between the extreme occupational categories: housekeepers (*SES.HouseH*), manual workers (*SES.Man*), and the unemployed (*SES.UnEmp*) appeared as low-frequency Internet users in the bottom-left quadrant, whereas individuals employed in nonmanual (*SES.NonMan*) and ICT jobs (*SES.ICT*) appeared in the top-right quadrant (see the Appendix for specific values). The occupational indicators thus suggest that the cloud of individuals is divided along the information linkage diagonal, with individuals in nonmanual and ICT jobs, in particular, more likely to use Internet for information and commercial purposes. Similarly, the university graduate segment (*E.Univ*) proves the discriminatory power of a higher level of cultural capital in favor of Internet uses, as defined by the information linkage axis. The same holds for individuals living in large urbanized areas (capitals of provinces and cities) and in household units of one or two members, with the distances between the extremes for these variables—even if not very large—also partitioning individuals.

Gender reveals rather small differences in favor of men, who use Internet slightly more than women. However, age has greater discriminatory power, with significant differences between the extreme age brackets (younger than 25 years and older than 54 years). These brackets also appear to be in opposition to the 35- to 44-year-old group with regard to the second axis (information linkage diagonal), suggesting a difference in Internet use patterns between age groups. Thus, individuals younger than 25 years and those aged 35–44 years are more likely to use the Internet, for socialization and communication linkages with their counterparts and for information purposes, respectively. Individuals older than 44 years either do not use the Internet or use it much less.

Indicators of Habits of Internet Use

Note that in Figure 2A, the supplementary indicators are again placed along the arrowhead diagonals, whereas indicators more associated with technological linkage are placed along the first axis or between the two arrowhead diagonals (not-at-home PDA, *NHpda.Y*; laptop, *NMLap.Y*; Internet access in public areas, *NHPub.Y*). Placed along the arrowhead social linkage diagonal are home

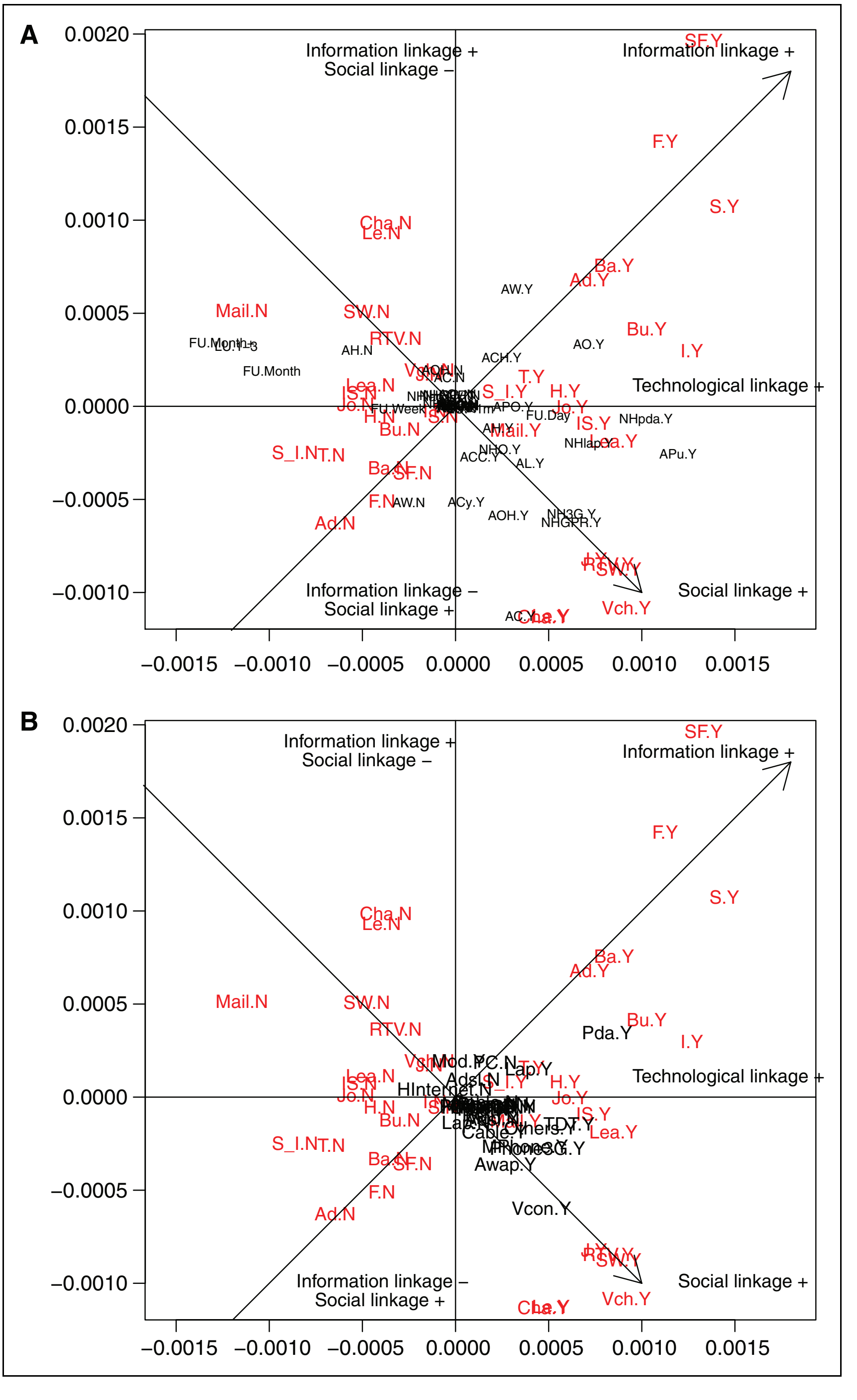

Figure 2. A, Internet uses and habits of Internet use. B, Internet uses and home Internet connection.

devices (Internet at home, *AH.Y),* devices used in other locations (not-at-home-other, *NHO.Y*; not-at-home-laptop, *NHLap.Y*; not-at-home-PDA, *NHpda.Y*), and public devices used for social linkage (Internet café, *ACy.Y*; civic center, *ACC.Y*; not-at-home/other mobile devices, *NHGPR.Y*;

not-at-home-broadband, *NH3G.Y*; Internet at the library, *AL.Y*). However, indicators that release individuals from technological constraints (not-at-home-PDA, not-at-home-laptop, etc.) are placed between both linkage diagonals. Placed along the information linkage diagonal are the modes of access related to commercial activity (Internet at the workplace, *AW.Y*); frequency of use is placed along the technological linkage axis, with the right positions indicating daily use (*FU.Day*) and the left positions indicating less frequent use (*FU.Week*, *FU.Month*, and *FU.Month+*).

Indicators of Home Internet Connection

These variables, which are important because they may indirectly reveal information about the quality of a user's equipment, technological linkages, and purchasing power, are represented in Figure 2B, with the exception of specific mobile access devices not used at home, which are depicted in Figure 2A instead so as to ensure better visibility and a straightforward interpretation in relation to Internet use location. These variables—at home-video console (*Vcon.Y*), other mobile phone, GPRS/ WAP (*Awap.Y*), broadband mobile phone (*Phone3G*), cable network (*Cable.Y*), and others, like sattelite (*Aothers.Y*)—are ordered along the social linkage diagonal, indicating more intense use by individuals who socialize over the Internet from basically anywhere at home. In Figure 2B, both the graph and the coordinates show that social linkages order both Internet connection type and access device, placing households with these devices in the right quadrants, in opposition to households without such devices, which are placed in the left quadrants. Therefore, having a home Internet connection is associated with Internet use for social and information linkages. The second axis (information linkage) reveals the use of devices like laptops (*Lap.Y*) and PDAs (Pda.Y) more for commercial (business) purposes, and personal computers (*PC.Y*) more for information and transactional uses.

Discussion

Findings Supporting a Theory of Internet Social Usage

The evidence on Internet use in the Spanish social space supports our theoretical framework and makes it possible to build a theory of social uses of the Internet. The Spanish social space of individuals and Internet uses are both structured according to technological linkage and the relative use of information versus social linkage. These two dimensions relating the Spanish social space with Internet use are comparable to Bourdieu's theory of taste: technological linkage stands for the Bourdieu's volume of capital, and the relative use of information versus social linkage stands for the composition of capital, financial rather the cultural as in Bourdieu's theory (see also Blasius and Friedrichs 2008). Nevertheless, the connection found between Internet uses and the axes seems to suggest that the two diagonals—running top left to bottom right and bottom left to top right—better explain the relationship among the Internet use indicators and the three types of linkages and their relationship with the social standing of individuals. In Figure 3, we illustrate the predictive capacity of our theory, showing how individual Internet use differs according to social standing because of differences in linkage needs. In other words, different social standings will indicate dissimilar linkage needs and, consequently, that dissimilar individuals occupy those social positions.

We selected four individuals, labelled *v*, *x*, *y*, and *z*, to illustrate linkage needs according to age and position in the social hierarchy. Projecting *x* onto the dotted diagonals for information and social linkages, we find that his or her needs for social linkage are greater than his or her needs for information linkage, and both are greater than their average social and information linkage needs. This is clearly reflected in Figure 3: the projection of *x* on the composition of information versus social linkage cuts below the average compositional profile; this means that social linkage is higher than information linkage, whereas technological linkage is above average. Note, however, that the

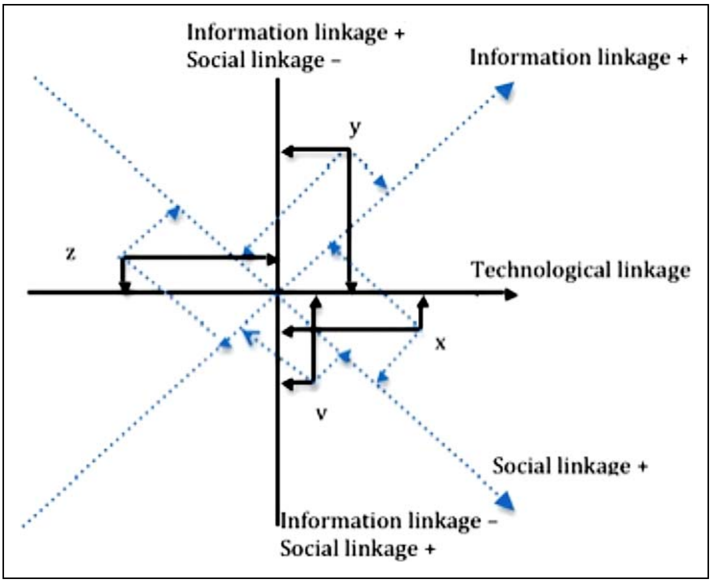

Figure 3. Modeling the relationship between social position and linkage needs.

compositional axis makes it difficult to interpret individual linkage needs, although rotating the map clarifies the interpretation.

Social linkage needs are similar for individuals *x* and *v*; however, *v* has fewer information linkage needs than *x* (see the projection for *v* on the diagonals). If we project *v* on the vertical compositional axis, we find that it cuts the axis by a point below *x,* because information needs are much less than social linkage needs and technological linkage needs are also less. According to our theory, both individuals are young (high social linkage needs), but *x* is likely to have a better social standing than *v* (because he/she has higher information linkage needs).

In analyzing the situation of the other two individuals, *y* and *z*, the projection of *y* on the information and social linkage diagonals suggests that this individual has high information but low social linkage needs (relative to the average social profile depicted along the diagonals). Projecting this position on the relative linkage axis, we find that the score for information linkage relative to social linkage is high. Projection on the technological axis also suggests relatively high technological linkage needs.

As for *z*, his or her score, when projected on the diagonals, is below average for both information and social linkage needs, although his or her information linkage needs are greater than his social linkage needs. Consequently, in this individual's compositional scale of needs, scores are above average but below average for technological linkage. According to our theory, this suggests that, comparing *y* and *z* (who appear to be adults), the former has a higher social standing than the latter and so exhibits different linkage needs.

Note that, although not calculated, the rotated axes—the information and social linkages running along the arrowhead diagonals—have a clearer correlation structure with the set of indicators than the initial axes found when building the Spaniards' social space of Internet uses (the closer the categories are to the diagonals and the farther they are from the mean profile (origin of the axes), the stronger the correlation with the diagonals). The rotated axes thus are a powerful instrument for graphically visualizing the theory, interpreting empirical findings, and relating them to the social theory of Internet use. First, the two diagonals split the content of the second principal axis and make it easier to understand an individual's linkage needs. Second, social position indicators are

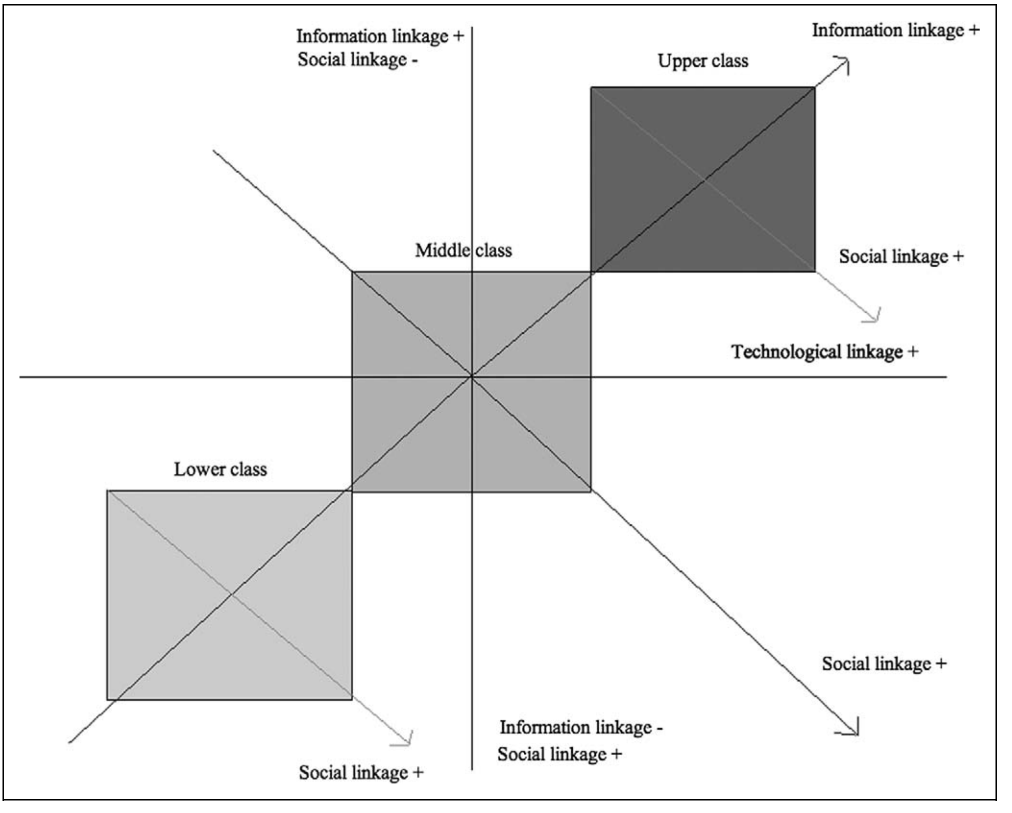

Figure 4. Social class,mobility, and linkage types.

positioned along the information linkage diagonals (see Figure 1, right panel), suggesting that information linkage needs grow as social standing improves. Third, generational indicators are positioned alongside social linkage needs, suggesting that the latter change with age and social standing. Thus, the older one is, the lower one's social linkage needs; furthermore, this reduction in social linkage needs is greater for individuals lower down the social ranking.

The Theory and Social Mobility

The theoretical framework suggests that there is a homology between Internet use and an individual's social standing: the relative importance of a consumer's information linkage needs grows as the individual improves his or her standing in the social hierarchy. Furthermore, consumer social linkage needs are greater among young consumers. This became clearer when we split the sample according to lower, middle, and upper social classes and then used socioeconomic status as an indicator of class fraction (see Figure 4), as Blasius and Friedrichs (2008) did when testing Bourdieu's theory of taste in a poor neighborhood.

The theory suggests that the social space and the Internet use space are interrelated. As different social spaces have different needs for linkage and scale of consumption, differences will be reflected in different patterns of Internet use. In consequence, mobility from a lower to an intermediate social class (see the bottom-left and middle boxes, respectively, in Figure 4) implies moving from a social space with few needs for linkage to another social space with greater linkage needs and scale of consumption. Greater technological linkage is needed because it will allow individuals to increase their social and information linkage and so improve their social standing. In Figure 4, the technological linkage runs from left to right, and the dotted lines, which stand for social and information linkages, indicate that technological linkage must increase to allow social and information linkages to grow. Crossing an information linkage threshold marked by the lower class space vertex intersecting with the middle class box vertex, we move from the lower to the intermediate social class; and likewise from the intermediate to the upper social class when the vertexes of the middle and upper social classes intersect as a threshold. Note that not only technological linkage but also social and information linkage requirements need to grow. That is, improving one's social standing implies moving along the diagonal from bottom left to top right, gradually increasing one's technological, social, and information linkage needs. Moreover, whether information linkage needs are greater than social linkage needs depends on social class and age. Thus, social linkage needs are greater for younger people, but especially for younger people with high social standing, whereas information linkage needs grow only if social standing improves.

The Explanatory and Predictive Capacity of the Social Theory of Internet Use

Our social theory of Internet use helps disentangle notions surrounding two opposing propositions, namely, one that predicts the disappearance of the digital divide and the other that foresees the emergence of digital differentiation. The former posits that once access to digital technologies is generalized, individuals will exhibit homogeneous Internet use patterns; the latter suggests that differences in Internet use patterns will remain, given that they are socially produced. In other words, Internet uses are socially constructed and structured. Nevertheless, the theory that we have delineated above suggests that the scale of technological consumption is related to an individual's social standing: if there are social class differences, there will be different scales of technological linkage needs, and the latter are related to the social and information linkages that the individual can put to work to become connected with other socially active individuals. This means that even if all individuals had access to the same Internet technology, they would exhibit different patterns of Internet use according to their social standing (age and status).

Most government policies in regard to the ICT are aimed at eliminating the gap between the haves and have-nots regarding Internet access (Selwyn, 2004). This approach is based on the assumption that Internet use patterns would be similar once the technological gap was removed. Nevertheless, recent empirical findings (DiMaggio et al., 2004; Mossberger, Tolbert, & Stansbury, 2003; van Dijk, 2005; Warschauer, 2003) have found that high-status compared to low-status individuals not only use the Internet more and have better quality equipment but also have better digital skills. Peter and Valkenburg (2006) and Robinson (2009) have found that unequal access to socioeconomic and cognitive resources by adolescents has shaped use of the Internet, either as an information and entertainment device (high-status adolescents) or as an instrument for getting tasks done (low-status adolescents). Moreover, findings by Robinson (2009) suggest that if low-status adolescents had the same level of Internet technology as high-status adolescents, they would have an easier life in terms of doing homework but would still exhibit a "taste of necessity" because of their disadvantaged social position and hence would exhibit a different pattern of Internet use.

As van Dijk and Hacker (2003, p. 315) have suggested, the important question is not whether there is a digital divide, but whether it will close or widen in the future. Our theory of Internet social use explains previous findings and also provides an answer to van Dijk and Hacker's question, predicting that, as long as there are differences in social position, Internet use will remain—as posited by other authors (DiMaggio et al., 2004; Mossberger, Tolbert, & Stansbury, 2003; Peter & Valkenburg, 2006; van Dijk, 2005; Warschauer, 2003)—socially structured and that the first-level digital gap will indeed close but only to a certain point. Nevertheless, the second-level digital divide, referring to Internet use, will remain. An individual's need for technological linkage to other individuals is a necessary but insufficient condition to achieve better social and information linkage. Since the latter needs depend on social standing, digital gaps will remain, and, although they may be reduced, they will not be completely removed (especially the second-level digital divide).

Other findings also support this theory. Koku et al. (2001) have found that Internet use for communication purposes complemented face-to-face communications. In other words, individuals with greater information and social linkage needs will also make greater use of the Internet for social and information linkages, suggesting that an individual's linkage needs—as inferred from his or her Internet use—reflect the linkage needs of his or her social standing (Hampton, 2001).

Zillien and Jäckel (2007) recently concluded that although both low- and high-status individuals use the Internet to obtain information, the two social classes differ in that low-status individuals use the Internet to a relatively lower degree for information on the economy, health, politics, and the labor market. The same authors also concluded that even if social differences in access to Internet technologies and in the skills necessary to use these technologies were removed, we would still find social differences in Internet use. A similar prediction was made by Tichenor, Donohue, and Olien (1970) in relation to their knowledge gap theory; these authors suggested that individuals with a higher social standing tend to acquire mass media information at a faster rate than individuals in a disadvantaged social position.

Franzen (2003), Aslanidou and Menexes (2008), Notten, Peter, Kraaykamp, and Valkenburg, (2009), and Zillien and Hargittai (2009) have reached similar conclusions, suggesting that social status plays a determining role in the different Internet-in-practice situations encountered. Higher-status Internet users make a greater use of the Internet (scale of use) and their uses are biased toward what Zillien and Hargittai (2009) called "capital enhancement," necessary to maintain their privileged position. These authors suggest that digital inequalities are likely to persist because an individual's social standing is the ultimate factor affecting his or her Internet usage. Unfortunately, their concept of Internet-in-practice does not explain what social uses are made of the Internet as it merely indicates that there are differences in Internet-in-practice situations according to social class. Our theory, in contrast, explains both Internet use and the underlying reasons.

Conclusions

We contribute to the scholarship on digital inequality and Internet use by examining the understudied relationship between social class and Internet-in-practice, specifically explaining why differences in use exist and will continue to exist because of differences in the social standings of individuals. We advance a social theory of Internet use that integrates the concepts of scale of consumption and linkage needs with Bourdieu's theory of taste and with interdependence methods of analysis. The explanation of the different patterns of Internet use observed points to structural reasons based on the technological, social, and informational linkage needs related to the social standing of individuals. In other words, having Internet access and technological skills is not enough. As long as differences in social and informational linkage needs persist because of differences in social standing, the digital divide will remain. Finally, the social theory of Internet use outlined here is capable of explaining recent empirical findings and also suggests answers to critical contemporary social questions, such as whether the digital divide gap will become smaller or wider in the future.

Appendix

Table A1. Multiple Correspondence Analysis Statistics[a]

Description	%	Quality	$k=1$	Cor	Ctr	$k=2$	Cor	Ctr
Internet uses: Information searches and services								
1. Goods and services, No (*S_I.N*)	22	895	−0.877	891	5	−0.256	4	0
2. Goods and services, Yes (*S_I.Y*)	78	895	0.249	891	2	0.073	4	0
3. Employment, No (*J.N*)	83	897	−0.150	837	1	0.168	60	0
4. Employment, Yes (*J.Y*)	17	897	0.735	837	3	−0.826	60	1
5. Health, No (*H.N*)	58	913	−0.419	912	3	−0.057	1	0
6. Health, Yes (*H.Y*)	42	913	0.578	912	4	0.077	1	0
7. Travel and accommodation, No (*T.N*)	37	894	−0.676	887	5	−0.264	8	0
8. Travel and accommodation, Yes (*T.Y*)	63	894	0.399	887	3	0.156	8	0
9. Play/download, No (*Le.N*)	55	808	−0.411	626	3	0.928	182	4
10. Play/download, Yes (*Le.Y*)	45	808	0.499	626	4	−1.129	182	4
11. Web RTV, No (*RTV.N*)	30	904	−0.340	849	3	0.361	54	1
12. Web RTV, Yes (*RTV.Y*)	70	904	0.802	849	6	−0.851	54	2
13. Read journals, No (*Jo.N*)	48	915	−0.549	915	5	0.006	0	0
14. Read journals, Yes (*Jo.Y*)	52	915	0.602	915	5	−0.007	0	0
15. Download software, No (*SW.N*)	64	855	−0.493	807	5	0.504	48	1
16. Download software, Yes (*SW.Y*)	36	855	0.860	807	9	−0.879	48	2
17. Obtain information, No (*Ad.N*)	48	854	−0.660	812	7	−0.631	42	2
18. Obtain information, Yes (*Ad.Y*)	52	854	0.706	812	8	0.675	42	2
19. Download official forms, No (*F.N*)	27	792	−0.405	726	4	−0.514	66	1
20. Download official forms, Yes (*F.Y*)	73	792	1.117	726	11	1.419	66	4
21. Send forms, No (*SF.N*)	16	795	−0.244	707	2	−0.363	88	1
22. Send forms, Yes (*SF.Y*)	84	795	1.319	707	9	1.961	88	5
Internet uses: Communication and socialization								
23. Send/receive emails, No (*Mail.N*)	21	904	−1.165	894	9	0.510	10	0
24. Send/receive emails, Yes (*Mail.Y*)	79	904	0.306	894	2	−0.134	10	0
25. Videoconference, No (*Vch.N*)	85	904	−0.158	836	1	0.191	69	0
26. Videoconference, Yes (*Vch.Y*)	15	904	0.901	836	4	−1.087	69	1
27. Chats/Messenger, No (*Cha.N*)	54	807	−0.392	596	3	0.981	212	4
28. Chats/Messenger, Yes (*Cha.Y*)	46	807	0.453	596	3	−1.135	212	5
Internet uses: Commercial transactions								
29. Internet banking, No (*Ba.N*)	69	848	−0.374	812	3	−0.336	37	1
30. Internet banking, Yes (*Ba.Y*)	31	848	0.838	812	7	0.752	37	1
31. Purchase goods, No (*Bu.N*)	76	836	−0.313	828	2	−0.127	8	0
32. Purchase goods, Yes (*Bu.Y*)	24	836	1.013	828	8	0.411	8	0
33. Sell goods, No (*S.N*)	95	795	−0.077	771	0	−0.057	25	0
34. Sell goods, (*S.Y*)	5	795	1.433	771	3	1.069	25	0
Internet uses: Training and education								
35. Information search, No (*IS.N*)	58	805	−0.528	804	5	0.069	1	0
36. Information search, Yes (*IS.Y*)	43	805	0.729	804	7	−0.095	1	0
37. Training information, No (*I.N*)	64	850	−0.120	847	0	−0.028	3	0
38. Training information, No (*I.Y*)	36	850	1.261	847	4	0.294	3	0
39. Training courses, No (*Lea.N*)	91	815	−0.473	813	5	0.109	2	0
40. Training courses, Yes (*Lea.Y*)	9	815	0.831	813	8	−0.191	2	0
Supplementary variables: Indicators of social standing								
41. Household size, 1-2 (*F.1-2*)	47	12	0.009	2		0.047	10	
42. Household size, 3-4 (*F.3-4*)	44	1	−0.005	0		−0.021	1	
43. Household size, more than 4 (*F.>4*)	9	9	−0.021	1		−0.143	8	
44. Gender, Female (*G.F*)	45	22	−0.030	20		0.024	2	

(continued)

Table A1 (continued)

Description	%	Quality	$k = 1$	Cor	Ctr	$k = 2$	Cor	Ctr
45. Gender, Male (*G.M*)	55	22	0.038	20		–0.030	2	
46. Age, less than 25 (*A.<25*)	9	408	0.055	4		–1.355	404	
47. Age, 25–34 (*A.25–34*)	15	52	0.124	0		–0.099	77	
48. Age, 35–44 (*A.35–44*)	20	78	0.009	0		0.309	77	
49. Age, 45–54 (*A.45–54*)	15	89	–0.057	15		0.309	74	
50. Age, more than 54 (*A.>54*)	41	118	–0.039	90		0.054	28	
51. Education, lower secondary (*E.LSec*)	60	449	–0.087	352		–0.112	97	
52. Education, upper secondary (*E.HSec*)	25	11	–0.008	0		–0.114	11	
53. Education, university (*E.Univ*)	15	473	0.344	312		0.604	161	
54. Occupational status, manual (*SES.Man*)	20	168	–0.139	134		–0.170	34	
55. Occupational status, ICT (*SES.ICT*)	1	166	0.968	165		0.223	1	
56. Occupational status, nonmanual (*SES.NonMan*)	26	213	0.135	84		0.406	129	
57. Occupational status, unemployed (*SES.UnEmP*)	5	12	–0.046	3		–0.188	9	
58. Occupational status, student (*SES.Stud*)	4	262	0.080	4		–1.585	259	
59. Occupational status, housekeeper (*SES.HouseH*)	17	74	–0.075	73		0.019	1	
60. Occupational status, retired (*SES.Ret*)	27	50	–0.027	47		0.014	2	
61. Habitat, small (<100,000) (*C.Sm*)	61	27	–0.033	26		–0.014	1	
62. Habitat, medium (<500,000) (*C.Med*)	7	4	0.028	2		–0.069	2	
63. Habitat, provincial capital (*C.Cap*)	21	10	0.038	9		0.026	1	
64. Habitat, metropolis (*C.Met*)	11	28	0.091	25		0.077	3	
Supplementary variables: Habits of Internet use								
41. Use Internet, No (*UI.N*)	56	0	0.000	0		0.000	0	
42. Use Internet, Yes (*UI.Y*)	44	0	0.000	0		0.000	0	
43. Last use, within last month (*LU.<1m*)	85	21	0.063	21		–0.017	0	
44. Last use, between 1 and 3 months ago (*LU.1-3*)	5	320	–1.195	316		0.319	4	
45. Last use, more than 3 months ago (*LU.3+*)	6	0	0.000	0		0.000	0	
46. Last use, more than 1 year ago (*LU.>1y*)	4	0	0.000	0		0.000	0	
47. Frequency of use, daily (*FU.Day*)	55	730	0.480	728		–0.056	2	
48. Frequency of use, weekly (*FU.Week*)	29	164	–0.330	164		–0.016	0	
49. Frequency of use, monthly (*FU.Month*)	12	550	–1.009	546		0.186	3	
50. Frequency of use, less than monthly (*FU.Month+*)	4	298	–1.280	294		0.339	4	
51. Internet at home, No (*AH.N*)	29	451	–0.540	188		0.299	10	
52. Internet at home, Yes (*AH.Y*)	71	197	0.216	188		–0.119	10	
53. Internet at workplace, No (*AW.N*)	55	336	–0.263	203		–0.521	133	
54. Internet at workplace, Yes (*AW.Y*)	45	430	0.318	260		0.628	170	
55. Internet at college, No (*AC.N*)	88	28	–0.045	10		0.151	19	
56. Internet at college, Yes (*AC.Y*)	12	211	0.336	72		–1.131	139	
57. Internet at friend's home, No (*AOH.N*)	75	57	–0.087	31		0.191	25	
58. Internet at friend's home, Yes (*AOH.Y*)	25	181	0.268	100		–0.588	81	
59. Internet at library, No (*AL.N*)	91	5	–0.028	4		0.023	0	
60. Internet at library, Yes (*AL.Y*)	9	65	0.389	59		–0.308	6	
61. Internet at post office, No (*APO.N*)	99	0	–0.001	0		0.000	0	
62. Internet at post office, Yes (*APO.Y*)	1	1	0.293	1		–0.006	0	
63. Internet at City Hall, No (*ACH.N*)	96	1	–0.010	1		–0.011	0	
64. Internet at City Hall, Yes (*ACH.Y*)	4	15	0.231	12		0.258	3	
65. Internet at civic center, No (*ACC.N*)	98	0	–0.003	0		0.006	0	
66. Internet at civic center, Yes (*ACC.Y*)	2	3	0.115	2		–0.274	2	
67. Internet at Internet café, No (*ACy.N*)	90	3	–0.004	0		0.055	3	
68. Internet at Internet café, Yes (*ACy.Y*)	10	26	0.043	1		–0.524	25	
69. Internet in public area, No (*APu.N*)	98	3	–0.021	3		0.005	0	

(continued)

Table A1 (continued)

Description	%	Quality	$k = 1$	Cor	Ctr	$k = 2$	Cor	Ctr
70. Internet in public area, Yes (*APu.Y*)	2	3	1.180	3		–0.259	0	
71. Internet in other location, No (*AO.N*)	97	3	–0.022	3		–0.010	0	
72. Internet in other location, Yes (*AO.Y*)	3	89	0.703	86		0.331	3	
73. Not-at-home-broad band, No (*NH3G.N*)	91	21	–0.059	18		0.057	3	
74. Not-at-home-broadband, Yes (*NH3G.Y*)	9	220	0.604	190		–0.582	30	
75. Not-at-home-other mobile, No (*NHGPR.N*)	92	18	–0.054	15		0.057	3	
76. Not-at-home-other mobile, Yes (*NHGPR.Y*)	8	204	0.598	172		–0.626	32	
77. Not at home-PDA, No (*NHpda.N*)	95	14	–0.051	14		0.004	0	
78. Not at home-PDA, Yes (*NHpda.Y*)	5	280	1.001	280		–0.077	0	
79. Not at home-laptop, No (*NHlap.N*)	82	100	–0.148	99		0.044	1	
80. Not at home-laptop, Yes (*NHlap.Y*)	18	495	0.696	488		–0.207	7	
81. Not at home-other, No (*NHO.N*)	92	0	–0.004	0		0.005	0	
82. Not at home-other, Yes (*NHO.Y*)	2	6	0.221	5		–0.235	1	
Supplementary variables: Indicators of Internet connection at home								
41. Home Internet connection, No (*HInternet.N*)	61	0	–0.091	0		0.037	0	
42. Home Internet connection, Yes (*HInternet.Y*)	39	0	0.145	0		–0.059	0	
43. At home-PC, No (*PC.N*)	15	20	0.197	4		0.183	15	
44. At home-PC, Yes (*PC.Y*)	85	3	0.136	1		–0.101	3	
45. At home-laptop, No (*Lap.N*)	69	79	0.040	70		–0.150	9	
46. At home-laptop, Yes (*Lap.Y*)	31	158	0.377	139		0.139	19	
47. At home-PDA, No (*Pda.N*)	98	2	0.130	2		–0.069	0	
48. At home-PDA, Yes (*Pda.Y*)	2	70	0.796	65		0.342	6	
49. At home-TDT, No (*TDT.N*)	99	0	0.140	0		–0.058	0	
50. At home-TDT, Yes (*TDT.Y*)	1	25	0.592	25		–0.148	0	
51. At home-video console, No (*Vcon.N*)	98	1	0.140	0		–0.046	0	
52. At home-video console, Yes (*Vcon.Y*)	2	23	0.441	13		–0.601	9	
53. At home-mobile phone, No (*MPhone.N*)	93	2	0.131	2		–0.042	0	
54. At home-mobile phone, Yes (*MPhone.Y*)	7	32	0.344	27		–0.268	5	
55. Modem/RDSI, No (*Mod.N*)	82	11	0.179	7		–0.115	4	
56. Modem/RDSI, Yes (*Mod.Y*)	18	54	–0.002	35		0.190	19	
57. ADSL, No (*Adsl.N*)	30	21	0.075	11		0.090	10	
58. ADSL, Yes (*Adsl.Y*)	70	9	0.176	5		–0.121	4	
59. Cable network, No (*Cable.N*)	82	2	0.137	1		–0.031	1	
60. Cable network, Yes (*Cable.Y*)	18	8	0.186	3		–0.190	5	
61. Broadband mobile phone, No (*Phone3G.N*)	97	1	0.139	1		–0.051	0	
62. Broadband mobile phone, Yes (*Phone3G.Y*)	3	20	0.407	18		–0.279	2	
63. Satellite, No (*Aothers.N*)	99	0	0.143	0		–0.057	0	
64. Satellite, Yes (*Aothers.Y*)	1	9	0.431	9		–0.171	0	
65. Other mobile phone, No (*Awap.N*)	98	0	0.145	0		–0.050	0	
66. Other mobile phone, Yes (*Awap.Y*)	2	6	0.246	3		–0.374	4	

[a] Column scores, contribution to (ctr) and quality (cor) axes, all values multiplied by 1000.

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Notes

1. A number of statistical criteria were used to determine the significant axes: the broken stick method used in principal component analysis (Jolliffe, 2002), tests for statistical significance of the axes (Nishisato, 1980, 1994), and methods for computing confidence intervals around the principal inertias applying the Delta method or bootstrap resampling schemes (Gifi, 1981), to name but a few (see Jackson, 1991 for a comprehensive review). Nevertheless, in our case, the two first principal components were the only two nontrivial solutions, according to their contribution to the total variance of the sample; more importantly, they both fit our theoretical framework.

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