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The 'digital curious': first steps towards a new typology for mapping adults' relationships with others when using ICT

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Abstract

The study described in this article used grounded theory methodology to investigate adults' accounts of their relationships with others when using information and communication technologies (ICT). Ten women and ten men were interviewed. All were Italians born between 1952-1961. It was found that the participants shared a common eagerness to learn and use ICT, which led us to coin the term 'digital curious'. They recognised the growing importance of using ICT and realised that they were competent enough to support others in ICT learning or use. Their awareness of their competence and role was linked to their approach to interactions with older and younger people, not all of them easy. The study findings illustrate how the participants' relationships with older and younger people when using ICT are seen as relevant and offer meaningful experiences. The theoretical and practical implications of the results are also discussed.

Keywords: adults; digital natives; analog natives; ICT; usage

Introduction

Personal computers began to invade the market at the beginning of the 1980s, when home computers started to appear with software for personal productivity, programming and games. In September 1981 IBM launched the first personal computer; the Italian company Olivetti presented the first European personal computer (the Olivetti M20) in March 1982; and Commodore International launched the Commodore 64 in August 1982 (March 1983 in Italy). Over the space of a few years, the new technology influenced the lives and working experiences of people who were old enough to start using it (many teenagers started assembling their hardware or learnt basic programming) and young enough to be willing to learn (or considered young enough by their employers to start using computers at work) (Bencivenga, 2014). These people have not been analysed as a group when studying computer use, as the majority comes from the generation normally considered 'pre-digital (analog) users'; a minority belongs to the generation defined as digital migrants.

In order to identify an age range for investigation, we analysed statistics on the use of personal computers and the Internet from ISTAT's Italy-wide annual surveys from 2001 to 2014. This revealed that only one age group significantly shifted in its use of computers and the Internet from non-users to users between 2001 and 2014 in Italy: people born between 1952 and 1961, who were 54-63 years old in 2015. In 2017 the older people from this cohort will turn 65 and join 'the elderly' age group; they will be associated automatically with older groups who use computers and the Internet to a different extent. ISTAT statistics show that elderly people are a significant age group in terms of numbers but are still less digitalized than younger people. In Italy, where the average life expectancy is 87 for men and 91 for women, in 2014 only 21.2 % of people between 65 and 74 and 4.7% of people over 75 say that they use a computer. The percentages of those using the Internet are very similar, respectively 21.1% and 4.3% (Istat, 2014). This confirms, at least for Italy, the widespread idea that the elderly are still far from technology, but the immediately younger cohort may show a different story.

Deeming this population worth investigating, we interviewed 20 individuals born between 1952 and 1961, selecting people who said they used ICT and had a positive attitude to computers and the Internet. The aim of our work was to understand whether these people may be considered to share a common characteristic or experience within a set period of time (in our case an interest in using personal computers originating when the new technology first appeared), by examining the relationships they have with ICT and with others when using ICT. In the following pages we will present a literature review and examine how different researchers have categorised ICT users. We will then describe the research process, including the methodology, the analysis and the results before drawing our conclusions and making suggestions for future research.

Literature review

Research on ICT and Internet use has traditionally been focused on specific age groups. Research examining older adults and ICT has been limited in the past mainly because older people made up the minority of computer users (Farris, Bates, Resnick, & Stabler, 1994; Morris, 1994). However, as early as 1983 it was shown (Weisman, 1983) that elderly people could find the experience of using a computer enjoyable, social and empowering.

In the mid '90s, when the number of computer users aged over 55 also started to rise, research into older adults' use of and attitudes toward computers (Dyck & Smither, 1996) started to increase. Several studies investigated older adults' positive attitudinal shift toward computers (Jay & Willis, 1996; Morris, 1994). Computers were considered to have the potential to aid older adults in enhancing creativity and promoting personal growth during leisure time (McGuire, Boyd, & Tedrick, 1999), have an impact on lifelong learning, access to information, rehabilitation (Ryan, Szechtman & Bodkin, 1992) and even improve productivity (Lawhon, Ennis & Lawhon, 1996).

With the advent of the Internet, research also began to explore online communities of elderly people, a typical strategy to involve this age group in using computers. Researchers (Mossm Wulf & Mullen, 2013; Trocchia & Janda, 2000) identified the positive benefits of technology such as new models of social and intellectual community; pathways to lifelong learning; access to information and resources; means for electronic citizenship and participation; and intergenerational connections. More recent research distinguishes between the young old, people born in the '60s, and the old old, people born in the '30s (Tramma, 2003: Fisk, Rogers, Charness, Czaja, & Sharit, 2004; Facchini &

Rampazi, 2006), mentioning differences in ICT use. Younger generations are the other main target group for research. In terms of technology, younger generations began to be seen in a different way at the beginning of this century. Prensky (2001) introduced the definition 'digital natives' for the first generations to grow up with digital technology, speaking of the discontinuity created by new technology as well as a 'singularity', meaning an 'event which changes things so fundamentally that there is absolutely no going back' (Prensky, 2001, p. 1).

The technological competence of digital natives, considered a generation or subgroup of expert and experienced ICT users, has also been seen as a resource for intergenerational exchanges. Intergenerational learning has been emphasised in Europe since 1990, including through an EU financing program called *Grundtvig*. The program had strands dedicated to promoting intergenerational learning, seen as a positive means of supporting non-formal and informal training for elderly people with benefits in terms of time spent together and reinforcing bonds (Vaičiūnienė, 2012). The rationale of the program was based on concerns over the growing generation gap, the result of rapidly developing new technologies. The disparity between the supposed technological competences and interests of digital natives and the supposed limited and unsophisticated technology used by older people was considered a great cause for concern.

While the *Grundtvig program* was still ongoing, 2012 became the European Year for Active Aging and Solidarity between Generations[1]. This produced numerous proposals aimed at adult education and training with intergenerational approaches. In the EU document detailing the 21 projects on ICT for seniors and intergenerational learning financed between 2008 and 2011, the use of ICT is described as 'also a privileged means of learning while creating benefits across different generations, bringing young people and seniors together and tackling the digital divide' (European Commission. The Education, Audiovisual & Culture Executive Agency, 2012, p. 5). The EU funded projects were based on the assumption that intergenerational learning is beneficial and a positive issue, thus reinforcing the idea among the general population and organizations providing ICT training for elderly people that matching young and elderly people (in many cases from the same family) can be a solution. Unfortunately little information remains on these projects apart from their websites (the Commission asks partners to keep websites alive for five years after a project has ended) and reports describing their work.

An analysis of the information available shows that no clear boundaries were drawn for defining elderly people ; projects ranged from those aimed at the over- 45s to those aimed at the over- 65s, with no clear explanations why these age groups were selected. The age range of the young people involved in projects also varied: 10 years in the 'Reading Friends' project, 13- 18 in the iSmart contest; 14- 20 in the mix@ges - Intergenerational Bonding via Creative New Media project, 15- 25 in the 'Providing Chances—Living Chances!' project (ENIL, 2013). Intergenerational learning is still seen as positive. Tatnall (2014) suggests that:

> The best approach to working with older people in engaging with technology,[…] is to work on convincing them of the value of a specific application that may be of interest to them. This can often be facilitated by the actions of their children or grandchildren. (p. 563)

He suggests that this would be a better approach than trying to convince them to use ICT in general. Peer-led ICT education programs (Clark, Fochs Heller, Rafman, & Walker, 1997) have also been an object of study, showing a variety of approaches to encourage elderly people to learn to use computers and the Internet.

In using technologies, the most important factors are the influence of other people; they may be people who are known and have a direct influence, such as mentors, or be unknown and have an indirect influence, such as role models. Academic investigations into mentoring first began in the late '70s (Anderson & Shannon, 1988; Colley, 2002). Mentoring has also been studied through examples of volunteers and charity members offering ICT learning support to middle-aged and elderly women (Lin, Tang, & Kuo, 2012). They suggest that investigating real life experiences may help in understanding the most effective ways to offer ICT education and bridge ICT gaps between younger and older populations, including ICT gender gaps.

Typologies in ICT use

A distinction between non-digital (or analog) natives, digital immigrants and digital natives has been popular for several years:

- Non-digital natives (analog natives): People born before 1960 who have only ever used paper and are not interested in using ICT (Harris, 2014; Prensky, 2001)
- Digital immigrants: People born in the 1960s- 1970s who grew up surrounded by analog technology (television, telephones) but are now used to technological innovations, although they retain some analogical reflexes (Prensky, 2001: 2012).
- Digital natives: People born after 1980. These people have been exposed to ICT since birth. According to Prensky (2012) this is the first generation to switch from the industrial to the digital era. Sometimes they are also referred to as the Internet Generation, iGeneration, native speakers, generation Z (Bennett, Maton, & Kervin, 2008; Jones & Shao, 2011; Oblinger & Oblinger, 2005; Pedró, 2007). Tapscott (1998) coined the term 'Net generation'.

More recently, although complex changes are recognized in ICT use, generation gaps have been criticized (Jones & Shao, 2011). Conventionally defined (Roebuck, 1979) as people over 65, and initially considered a homogeneous group, the elderly are now subdivided into at least two groups, the young old and the old old (Gergen & Gergen, 2000; Tramma, 2003; Facchini & Rampazi, 2006). The two groups have different perceptions of themselves and their role in society, as well as different approaches to technology. Alternative metaphors have now been suggested, such as that proposed by White and Le Cornu (2011). In relation to the Web, they distinguish between Visitors and Residents, choosing the metaphors of 'place' and 'tool' to represent the use of technology in contemporary society. Visitors would 'understand the Web as akin to an untidy garden tool shed. They have defined a goal or task and go into the shed to select an appropriate tool which they use to attain their goal:

> Ehile residents would 'see the Web as a place, perhaps like a park or a building in which there are clusters of friends and colleagues whom they can approach and with whom they can share information about their life and work. (Le Cornu, 2011, p.1).

Research has also started to look at the complexity of young people's computer use and competences. Criticism has been raised about the limited empirical evidence and the use of anecdotes; it appeals to common-sense beliefs found in previous research which emphasise a significant divide between the new generation and all previous generations

(Bennett, Maton & Kervin, 2008). In a survey of 4374 students across 13 institutions in the United States, Kvavik, Caruso & Morgan (2004) showed that a significant proportion of students had more lower-level competences than might be expected of digital natives. Other studies found that emerging technologies were not commonly used, with only 21% of respondents maintaining a blog, 24% using social networking technologies (Kennedy, Judd, Churchward, Gray, & Krause, 2006) and 21.5% downloading podcasts (Oliver & Goerke, 2007). Thus, generalisation about 'digital natives' appears to be based on a limited subgroup of technically adept students.

Moreover, as with the recent subdivision of the elderly into subgroups, in new studies on younger generations cognitive psychologists (Berk, 2006; Carlson & Sohn, 2000) have highlighted differences in technology use throughout the key stages of infancy, early childhood, middle childhood and adolescence.

In previous research we interviewed Italians born between 1949 and 1969 who were between 15 and 35 when the first personal computers appeared in Europe at the beginning of the '80s (Bencivenga, 2014). We supposed that a cohort effect (Glen, 2005) might influence the characteristics of people born in Italy between the 1950s and the 1970s. They were young adults when computers began to be part of their lives and they learned to use and appreciate them. This set of people is unique in respect to any other group: they are more confident than older people born before 1950, but are still capable of understanding the difficulties encountered by people from the analog generation. They are not as confident as digital natives, but are still confident enough to interact with them competently in relation to ICT use. We therefore believe that instead of a clear generational gap between digital natives, immigrants and analog natives, there are blurred paths influenced by age, socioeconomic factors and an interest in exploring and discovering new technologies.

The sample considered in previous research learned to use computers in private and professional contexts through peer learning, short courses organized by public or private initiatives, their employers and courses organized by computer companies. Common features emerging from our interviews were a general interest in new technologies, a desire to keep up-to-date and a desire to share learning and using paths with others (Bencivenga, 2014). Almost none of these people used computers at school. The Italian Ministry for Education did not introduce computer training courses in schools until 1985, under its national plan for informatics (Piano Nazionale Informatica) for the first two years of professional high schools and schools specialising in mathematics and physics. Thanks to the Italian version of the educational programming language LOGO developed by Seymour Papert in 1967, geometry became associated with computers in the minds of the younger generations. Italian school pupils taking experimental computer courses were born after 1971; based on Prensky's classification, at least those of them born between 1971 and 1980 would be considered digital immigrants. This increases our perplexity over the definition of this typology, at least in an Italian context.

Italian research on ICT use and appreciation appears to have been focused mainly on elderly people (Allario, 2003; Porcu, 2006; Facchini & Rampazi, 2006) or the younger generations, (Mantovani, Ferri, 2008; Gui & Argentin, 2011; Ranieri, 2011) often applying the Anglo-Saxon rhetoric on digital natives to Italy's younger generations. Little or no research has been dedicated to the adult group in between the two extremes.

National longitudinal surveys on ICT and computer use in Italy are available through ISTAT [*the Italian National Institute of Statistics*], which has been collecting annual information on the use of computers and the Internet since 2001. Our analyses of ISTAT's raw data for the years 2001 to 2014 (available on the ISTAT website) show that there was a significant shift in the use of computers ($\chi = 14203$, df = 12, $p = .000$) and the Internet

(χ = 11488, df = 11, p = .000) in 2006 for the 45- 54 age group. Up until 2006 this age group used computers and the Internet less than expected compared to the rest of the population, as was the case for people born earlier. The shift in 2006 relates to Italians born between 1952- 1961. The most recent ISTAT data pertains to 2014 for computer use and 2015 for Internet use (ISTAT did not analyse computer use in 2014). In 2014 the population using computers and the Internet remained higher than expected for people aged 54 and younger. However, in 2015 Internet users in the 55- 59 age group were no longer using the Internet less than expected compared to the rest of the population; instead, the number of Internet users matched expectations (χ = 19020, df = 11, p = .000). As data on computer use are not available for 2015, it is not possible to confirm whether the same shift occurred for computer use, but the data collected up to 2014 show a similar trend.

The shift contributes to the hypothesis that this age group has different characteristics compared to older people (whose computer and Internet use remains low) and younger people (whose data show much higher percentages). Since the data available is merely quantitative, it is not possible to know which characteristics, if any, differentiate the three groups beyond their stated use—or non-use—of computers and the Internet. Other ISTAT tables refer to the type of competences included in research on technology use by the general population, such as 'Copy or move a file or a folder', 'Use 'copy and paste' to 'copy or move information inside a document'. This information lacks greater details on the type of relationships these people have with ICT, their perception of their use, and a whole set of information on their experiences.

It is not possible to call this cohort 'digital immigrants' for the reasons explained above. Nor can we use other definitions such as 'digital settlers', meaning people not born in a country, but an early and skilled resident (Palfrey & Gasser, 2008). This definition refers to people with specific knowledge of the ICT field, whereas we refer to people who are not ICT-skilled or working in the field of ICT. In previous research, we explored the attitudes towards ICT of people born between 1949 and 1969. ISTAT data, not available at the time of that research, show that the cohort born between 1952 and 1961 (a subgroup of the cohort analysed in the previous research) made a significant shift in the use of computers and the Internet, as described above. In the present research we decided therefore to investigate the attitudes towards ICT and towards others when using it, shown by people belonging to the cohort born between 1952 and 1961.

Grounded theory

A constructivist approach to grounded theory (GT) (Charmaz, 2006; Mills, Bonner & Francis, 2006) was chosen, not looking for a core category and with a specific request section at the origin of research. While large grounded theory projects aim to generate theory (Strauss & Corbin, 1998a), the procedures and techniques are also a useful framework for smaller studies where theory will not be generated, particularly when the focus is on understanding more about a specific issue as in our research. In this small project, GT was used as an analytical framework incorporating constant comparative analysis as a method of qualitative data analysis (Charmaz, 2006).

In line with this approach, we used semi-structured interviews and textual analysis. When analysing interviews, we did not use researcher-chosen categories (Glaser & Strauss, 1967; Charmaz, 2006). Data were examined and analysis already begun during the data collection process, allowing initial readings to guide further collection. According to the GT methodology, research started out broadly, with the aim of

identifying the phenomenon studied; it then became progressively more focused throughout the research process. Although the main themes of our research were based on discussions with colleagues, on literature review and on the author's previous research on adults' relationships with computers, as suggested by Charmatz (2006), preconceived theoretical concepts provided starting points for examining data, but did not offer automatic codes for analysis. Possible biases could be related to the fact that the researcher's age is close to that of the participants. At the same time, this closeness may have opened up more possibilities in discussing the various themes due to a perceived similarity in life experiences, regardless of whether it existed or not.

Methodology, data collection

Participants

The initial criterion for participation was candidates in the 54- 63 age range (in 2015, this meant those from the 1952- 1961 cohort) who felt they were confident with ICT and computers in particular. Their ICT competences were not verified through practical sessions, but before confirming the interview candidates were asked to describe how they use computers. To be selected, candidates had to spontaneously describe at least seven out of the ten activities and competencies included in ISTAT research on technology use by the general population. The activities are: 'Copy or move a file or a folder', 'Use 'copy and paste' to copy or move information inside a document', 'Use basic arithmetic formulas in Excel or similar software, Compress (or zip) files', 'Connect and install peripherals (i.e. printers)', 'Write a program computer using a programming language', 'Transfer files between computers and/or from other devices (i.e. digital player, mp3 / mp4)', 'Change or verify the parameters to configure software', 'Create presentations with specific software, including graphics, images, sound or videos', 'Install a new operating system or replace an old'.

The geographical distribution of those responding covered five of the twenty Italian regions: Liguria, Veneto, Tuscany, Lazio and Sicily. Twenty participants, 10 women and 10 men, undertook the individual interview. Their age ranged from 54 to 62 years.

Procedure
Recruitment

Participants were recruited by emailing databases of NGO members, companies and public organizations (with a total of approximately 300 addresses). In the e-mail we asked candidates if they were willing to take part in research, provided they met the criteria for interview, and/or would be willing to forward the email to others who might be interested. We compiled a list of 73 volunteers (42 men and 31 women) for interview, although not all of them met the criteria or confirmed their availability after the initial contacts. After verifying the inclusion and exclusion criteria, we drew up two lists (one for men, the other for women) with names listed in order of their response to our e-mail. The first ten names were interviewed from both lists. Two men dropped out of the list and contact was therefore made with the 11th and 12th candidates. The number of interviews was not decided at the beginning of the research. Table 1 (p. 9), shows participants' data.

Women: names	Women: profession	Men: names	Men: profession
Anna, 57	Teacher	Carlo, 61	Teacher
Claudia, 55	Employee (private sector)	Mario, 54	Employee (private sector)
Laura, 58	Small entrepreneur	Giulio, 59	Employee (private sector)
Raffaella, 57	Small entrepreneur	Matteo, 57	Small entrepreneur
Antonella, 61	Teacher	Ugo, 58	Employee (private sector)
Alessandra, 54	Employee (private sector)	Marco, 59	Consultant
Olga, 54	Teacher	Massimo, 54	Employee (public sector)
Luciana, 62	Unemployed	Ottavio, 55	Unemployed
Paola, 54	Unemployed	Alessio, 55	Consultant
Silvia, 56	Employee (private sector)	Tullio, 59	Small entrepreneur

Table 1: Name (fictitious, to preserve anonymity), sex, age and professional status of participants.

Interview format

The settings varied: in offices if the participants were working, in coffee shops, via Skype (video sessions). Before each interview began, the purpose of the study was explained and informed consent was obtained. Interviews were recorded using a digital audio-recorder. All interviews began by asking the participants for personal data: date of birth, education, professional or employment status. Each participant was then asked about his/her personal history of computer and Internet use as well as current interests. This opened up the interview to the area of research; the rest of the interview consisted of open-ended questions aimed at eliciting individual experiences and beliefs focused on:

1. Experiences in daily activities in computer and Internet use;
2. Relationships with others when using ICTs together (e.g. training/learning new competences, using specific software or strategies in using ICTs).

The style of the interview encouraged detailed description of events and the exploration of their meaning to the individual (Charmaz, 2006; Rubin & Rubin, 1995). The first four interviews were very open. Thereafter interviews became more focused on the themes that had emerged and participants were informed when some of the questions were derived from previous interviews. The interviews lasted 35 minutes on average.

Analysis process

During analysis we applied the iterative classic grounded theory process of coding, memoing, sorting, conceptualization and constant comparison (Glaser, 1965) and, as far as possible, suspended preconception (Simmons, 2011). The first four interviews were transcribed fully before further interviews were conducted. Before coding, we made several readings of the entire texts and noted ideas of interest. Open coding allowed us to identify sub-themes, topics, and issues in a systematic manner. Code words were then applied to sections of the text following Glaser and Strauss' (1967) description of open coding. A list of the code words for each transcript was then compiled and checked with

the transcripts to ensure that codes were used consistently throughout the transcript.

After following this process with the first four transcripts, the interview schedule was modified to take into account some of the patterns emerging from the data. The remaining sixteen interviews were conducted using a continual process of interview, transcription and initial analysis. Further changes were made in relation to validation (see further on for details).

On completing this stage, we reread the uncoded copies of the transcripts after an interruption of one month to refocus on the participants' views as a whole and check that the initial codes were appropriate. During the entire process, as recommended by Berg (2001) a general question was kept in mind, which was the original objective of the research. Berg's recommendations were considered throughout the process: data must not be moulded to the study and as a result, the 'original purpose of a study may not be accomplished and an alternative or unanticipated goal may be identified in the data' (Berg, 2001, p. 251).

As the interviews progressed, and in keeping with grounded theory procedure, some topics were altered and others added. For example, due to the presence of participants not belonging to a traditional, heterosexual nuclear family, care was taken not to mention grandchildren or grandparents, but to focus on age groups and letting interviewees explain the type of relationship they had with the people they mentioned. This had a positive effect on all the interviews, as the participants felt free to explore their relationships with others at a wider level. In all interviews, the questions and answers were negotiated through restating and reformulating. Comments and questions helped the participants articulate their meanings. Clarifying details were asked for when more accurate information was required, and the conversational prerogatives of the participants were respected, in particular to give their stories 'a coherent frame', 'be experts', 'choose what to tell and how to tell it' (Charmaz, 2006).

Validation and saturation

Supervision and feedback methods ensured that categories were identified and developed in adherence with proposed Grounded Theory evaluation criteria (Strauss & Corbin, 1998b). Supervision was offered by three experts in technology related issues (one ICT expert, a sociologist and a trainer in adult education courses for the elderly) who were consulted in the pre-check for participants' admission to the research and while collecting the interviews. Validation was obtained through feedback methods, cross checking interim research findings with eight of the participants. We are aware that the appropriateness of these techniques has been questioned (Barbour, 2001; Mays & Pope, 2000; Onwuegbuzie & Leech, 2007) but they were considered appropriate in this research given its size and scope. Although some validation was achieved (all participants provided information on the main themes in the analysis, offering a range of responses and adding dimensions to the themes), it cannot be claimed that saturation of the themes occurred due to the limited sample size.

Data analysis

Five main macro themes emerged from the initial analysis of four interviews, the first two related to the use of ICT, the other three to relationships with others:

1. ICT was connected with personal interests and hobbies, but also with professional activities and administrative/bureaucratic chores, thus integrating all aspects of the participants.
2. Negative experiences or difficulties were never seen as unsolvable problems but rather as challenges to be overcome, alone or through others, with no sense of embarrassment or inferiority when in need of help. Curiosity in finding solutions to problems or difficulties was considered a driving force which made up for frustration and difficulties.
3. Learning to use a computer alone or through exchanges with other people was considered more valuable than learning through courses. Interactions with others were seen as part of the ICT experience.
4. No sense of subjection in relation to younger people (identified as 'digital natives') emerged; instead the participants considered themselves capable of recognizing an in-depth competence from a superficial one. Feelings of being discriminated on the grounds of age alone were debated.
5. When speaking of older people, the participants recognized a gap in competences, interest and approach, but felt confident they could find strategies or methods to convince them to use ICT or overcome daily difficulties in using it.

The above themes were used to identify broad categories for the remaining interviews. The following categories of importance emerged throughout the analysis process. One is the growing importance of ICT in all aspects of daily life, 'ICT pervasiveness', leading to an awareness that everyone should be competent enough in using ICT, 'ICT competence'. A sense of closeness with older people's needs in relation to ICT encourages participants to offer their support while stimulating insights about intellectual and physical decline, 'Relationship with elders-analog natives'. Finally, a sense of complementary competences with younger people, 'Relationship with youngsters-digital natives', encourages contacts to offer/gain support, although this is marred by a 'perception of ageism'.

Central to the representation is the awareness of 'Personal competence' in using ICT, due to long experience and a never-diminishing interest and curiosity towards new technologies, software, social networks. This competence is seen as interdependent with the interviewees' relationships with others. It is central, not only figuratively as shown in Figure 1, in that all other categories are directly or indirectly connected with it.
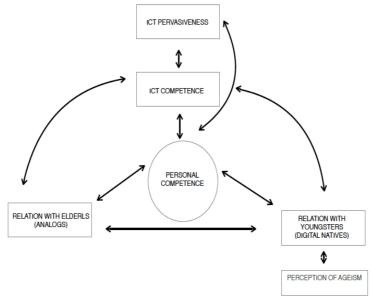
FIG. 1   PROCESS MODEL OF DIGITAL CURIOUS' RELATION WITH ICT AND WITH OTHERS IN USING IT

Extracts from the interviews illustrate the components of the diagram in the following paragraphs.

The entry point, the category called 'ICT pervasiveness', emerged from the participants' consensual view that using ICT is indispensable in contemporary societies. In the first extract, Anna illustrates the awareness that ICT competence is essential for citizens:

> In just a month my apartment was burgled and I lost my identity card. In both cases, when I called the police they told me to file an online complaint. And [I was asked] if I had photos of the stolen jewellery, proof of purchase of other items taken away ... everything was to be sent as attachments. They do not even come to see the state the apartment is in. They take it for granted that you know how to use computers, the Internet, that you have e-mail, a scanner […] otherwise you spend hours in a queue at their offices. (Anna)

Awareness of the importance of ICT knowledge is one aspect of the category of 'ICT pervasiveness'. Another aspect is being able to use ICT was viewed as essential to initiating and reinforcing interactions with others through social media, as Carlo shows in the next extract:

> I held back from using Facebook because I felt ridiculous, it seemed a kids' thing. But you can't do without it, and it's the same for Whatsapp, even my friends don't use e-mails anymore, or only for work, not in their private life. Facebook helps you understand a lot about someone you do not know. I do what employers do [laughs], I check the Facebook page of new acquaintances. You can find any information on the Internet before deciding whether or not to continue seeing someone you just met. (Carlo)

As the diagram indicates, the perception of ICT pervasiveness led to the recognition that it should be used adequately, at least to some extent, and an awareness of the importance for everyone to be competent in using ICT *('ICT competence')*. The two aspects have a reciprocal influence: being aware of ICT pervasiveness encourages one to become more competent in ICT use and being competent in ICT use makes the participants more aware of ICT pervasiveness. The risks of having negative attitudes toward technology were felt

to be a lack of recognition of ICT's potential and also a lack of opportunities to become more integrated in society.

Alessandra offers an example of the type of comments made about the psychological attitudes favouring a competent approach to ICT, even when the actual competence is lacking.

> We found a solution: [her uncle, 82 years old] agrees to learn the 'theory', meaning simply what it is feasible to do nowadays with a computer or a smartphone. Without using them, actually. He simply gets the information I give him. Last year the heating system broke after a sudden frost. The company he called to fix the problem told him to record the noise the heater was making and email it to them so the technician could understand the problem. My uncle listened, did not blink, said 'ok', phoned me—on the landline!—immediately and asked me 'could you come here with your mobile phone, record the noise and send it to the technician?'(Alessandra)

The recognition of the importance of gaining *'ICT competence'* follows from the participants' awareness of *'ICT pervasiveness'* in contemporary societies. It refers both to the participants' recognition of how technology is changing continuously (although this is not always necessary in their opinion), and the growing value of technology as a tool; it interacts with activities that were not linked to ICT in the past and can even shape them, as Ugo and Fulvio's comments show:

> One thing is technical innovation. I mean, Whatsapp did not exist before; now it exists, and I've learned how to use it. That's ok. But I do not understand why the homepage of the website I use to check my email has to change every few months. I waste time learning to find my way about the homepage… my feeling is those [changes] are made just to justify the work of someone who has nothing better to do. (Ugo)

Through his awareness of how superfluous some changes are to website layouts, Ugo affirms his perceived competence when distinguishing useful from non-useful evolutions. Following the evolution in online experiences, Fulvio is changing his approach to experiencing art:

> I started [using the Internet in relation to his interest in art] looking online at the timetables of museums, then I started buying tickets online. That was ok, it was more practical than making telephone calls or waiting in endless queues. But now things have quickly changed. I can visit online exhibitions; I can use information resources that those who simply pay a visit to a museum cannot use. I have the impression that I can do things online that I cannot do otherwise. It is not a different way of doing the same things anymore, it is doing different things. (Fulvio)

Both Ugo and Fulvio made further comments about their never-ending interest in learning and exploring ICT, one which helps them stay up-to-date with new applications, software, devices. This type of comment is common to the interviews, as will be shown when analysing the interviewees' relationships with others. This feature, the eagerness to know and learn, is considered specific by the participants in contrast with the other age groups, as anticipated by this comment from Olga, the youngest participant:

> My friends and I felt like pioneers. We could not speak with older people about what we were discovering, they knew nothing. And there were no younger people, I mean, unless you spoke with toddlers. It was like discovering a new world, even better, another universe. A continuous thirst for knowledge, never satisfied. We sometimes spoke about the future, asking ourselves when all this would end. Now I know that all this [she makes a gesture

towards the smartphone and laptop on the desk] was not even imagined in science fiction books or movies. (Olga)

For the participants, recognising the need for *'ICT competence'* was closely linked with their worries and interests about older people' difficulties and their mixed feelings toward younger people. In the next extract, Raffaella's thoughts about the importance of reaching at least a minimal competence made her aware of the difficulties that her parents may experience, and led her to teach them to use ICT.

> My sister- in-law has always turned the use of technology completely over to her husband, even when their children were needed help [at school]. Now she has a smartphone, but she has to make an enormous effort, and she is ten years younger than me [Raffaella is 57]. She keeps wasting time on chores she could easily do through the smartphone. I wonder how the elderly do, having difficulties in learning new things, difficulties in moving around in town, or queuing for a long time. When I go to the post office, nearly all the people I see are the same age as my parents. And immigrants sending parcels to their countries. That's why I insisted that my parents had to learn at least something [about using a computer]. (Raffaella)

As shown in Figure. 1 (p. 65), this awareness leads in turn to a sense of competence in perceiving the personal role she can have 'Personal competence', a recognition of the importance of interacting with the elderly in order to support them. The past learning process that led to their present ICT competence was of course crucial to the participants' positive perception of their potential to interact with others. Initial experience was gained almost thirty years ago through self-learning, informal learning paths and very occasionally through courses, paid for in general by employers. All the participants recall the sense of wonder they felt towards new technology. For some of them (those already in employment when the first computers appeared), this was part of a continuum that over the space of a few years went from the telex to the fax and to electronic typewriters; the younger participants gained a sense of empowerment from their first programming experiences with their first home computer. All the participants have since then continued using ICT and followed its evolution.

'Personal competence' in using ICT was also strongly connected to the participants' view of younger people's competence. The participants show awareness of general age-related discrimination (ageism) and how it influences younger people's perceptions of everyone who appears 'older' to them, with a flattening effect that does not distinguish between different age groups. In Massimo's case, the perceived discrimination is double:

> [Speaking about his children, 15, 22 and 23 years old, when interacting with ICT] They [only] pay you attention when they want to; they grumble if you ask them to repeat something, they tell me 'you are like Grandma!' as the worst curse. Double discrimination, by age and gender [he laughs]. **(**Massimo)

In Figure. 1 (p. 65), the central feature is the awareness of 'personal competence' in using ICT. It is central in that all other stages are directly or indirectly connected with it. In addition, this awareness is central to the way the participants interact with others when using technology. The participants were overwhelmingly positive in their expressions of competence regarding using technology and interacting with others. Nonverbal communication was also coherent: they laughed frequently, smiled when describing interactions and shrugged when describing potentially annoying situations. Silvia, Luciana and Fulvio express this awareness of personal competence regarding interaction with youngsters and the elderly:

[Speaking about the children of her life companion, 17 and 19 years old]. Sometimes they have that gaze, as if they were pitying you, as if they were safe on the mainland and you were drowning in two centimetres of water… However, when they have to write their homework, they do not know how to use Word properly, they have no clue how to create a table of contents with Word, to format a file. Then their gaze changes and they ask for help. But they need to have a dig at me, always 'as you have been using the computer for centuries, could you please help me?' (Silvia)

I programmed a software in DOS to manage the bibliography for my thesis. The professors asked me for a copy of it as at the time not even my university library had it. And, needless to say, I programmed it using the keyboard. Once I heard my son, at the time 20 years old, whispering to a friend: 'Mom believes you can use a computer without a mouse'. I went outside to do some gardening to avoid killing them both. They think they know everything, that ICT is their domain. (Luciana)

[Speaking about her aunt, 90 years old]. She still enjoys reading, she does not care much about anything else. So I gave her a gift—a Kindle, and now everything is fine. She says she gets less tired, that she can read in bed, on the couch, at home, in the garden, if she falls asleep she does not lose track of where she is in the text, she does not have to keep the light on in the bedroom. I had to modify the font size, she needs a very big one. Conclusion: a 100% positive choice. (Fulvio)
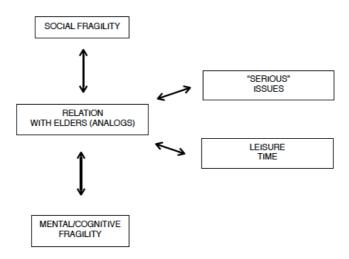
The model captures the strong connection between the awareness of personal competence and the general usefulness of technology in activities that were part of this age group's daily lives even before the advent of computers: helping the elderly in living their lives better, helping the younger in school-related activities. Technology may give a different perspective to these activities, but in the end the descriptions do not differ much from the non-technology mediated relationships among generations. The participants give several examples of how their use of ICT corresponds to what today's society expects from citizens. As Claudia's comment below indicates, this usage is both recreational and practical.

I can do everything I like to do in life with a computer, online. Reading, improving my swimming style by watching training movies on YouTube, keeping in contact with others: friends, relatives, acquaintances but also clerks working for public organizations, like the municipality, or companies, because at our age beyond what we like to do there is also what we have to do [she laughs]. Even medical certificates for absences at work have to be done online nowadays! (Claudia)

To summarize, the core component of Figure 1 (p. 65), is the awareness of personal competence. This sense of competence leads to an understanding of the individual's potential in interactions with society as a whole: ICT is needed in every aspect of daily life, but citizens must be capable of detecting the role of technology in various settings. Linked to this understanding is the interaction with their elders and younger people, which reinforces – although in different ways - personal awareness of ICT competence.

A category of Figure 1 (p. 65), showing a variety of issues discussed by the participants was ''Interactions with elders/analog natives.'' All the participants explored these interactions more than those with digital natives. Figure 2 (p. 69) is a diagram of this part of Figure 1 (p. 69). It illustrates the ways the participants interact with older people and gives an indication of their values.

FIG. 2   FACETS OF RELATION DIGITAL CURIOUS HAVE WITH ELDERS (ANALOGS)

A core feature of the participants' reflections on using computers was indeed the importance they give to interaction with their elders, be they relatives, friends or even neighbours. Often during the interviews, when asked how they feel about technology, participants would explain how rewarding and useful it was to be able to help others.

As Figure 2 (p. 16) indicates, these relationships are different in nature. As Antonella and Raffaella mention in the next two extracts, practical support can be extensive and complex, ranging from important issues such as medical issues to leisure time:

> My parents have an extra pension allowance, as my father was a manager. In the last five years they have been able to deal with his company online, to send certificates, invoices etc. Since January 1st [2015] the company can only be contacted through their website. I've helped my father to use the system; I could not do it at their place, as they go so often to the doctor! I feel relieved and also for them being autonomous is important. (Antonella9

For Raffaella, the main reason for interacting with older people is her pleasure in helping them to spend their leisure time more pleasantly:

> My parents-in-law are not interested at all [in using a computer or a smartphone], but their friends are, you bet! They have children and grandchildren living abroad, and I helped them install and use Skype so they can stay in contact. Then they asked for Whatsapp on their smartphones, they are going wild! [she laughs]. (Raffaella)

So, whether out of necessity or for leisure, these two participants believe that they are helping improve the quality of life of the elderly people they interact with. Although sometimes the relationships were complicated due to memory problems on the part of the elderly person or an unwillingness to accept help, a general sense of empathy emerged. It was nurtured by the awareness that similar problems, all be they less serious, were being shared. Another important factor that emerged was the role of interaction in allowing for personal reflection on the social and mental frailty linked with getting older, as shown in the two following extracts.

> I can see that for them [his parents aged 80 and 84] it is difficult [learning to use a computer]. They have no patience, and they forget everything from one time to the next.

But they must learn at least a little: we live too far away for me to go there and do things for them. Then they try to explain [their difficulties] to me over the phone and I can't understand what they mean because they use their own terminology. I do not know whether to laugh or cry, because then they get cross and say that I must be patient and I'll see what it's like when I'm old. I won't understand anything anymore [he starts imitating his father's voice] 'on the spaceship where you'll be living,' says my father as a conclusion. (Matteo)

[He speaks of his father aged 88] He writes everything in that flowing, beautiful handwriting of the past; he writes each step he has to follow, a sort of algorithm, but it only takes a change on the screen or a pop-up and he gets lost. Sometimes he tries to cope by writing strange things, such as: 'click on the blue box in the top left corner under the photo of the cat food'. I try to make him understand that these are advertisements and [that they] change from time to time! Sometimes I wonder how soon my children will begin to see me as I see him. (Ugo)

Results

The results of this study, grounded in the participants' experiences and opinions, support and extend the findings of previous research. The participants are interested in and positive towards ICT, aware of their own role in interacting with others using ICT and keen to offer advice and help. They share a common perception of how they see and are seen, not always positively, by younger people (digital natives) and how they interact with older people (analog natives). Curiosity is what pushes the participants to interact with others, mainly relatives and friends, suggesting the possibility of a typology which we propose to call 'digital curious'. Previous typologies do not appear ideal for this group. The opposition of Digital Natives versus Digital Immigrants proposed by Prensky (2001) appears too rigid and unable to take account of behavioural nuances; the continuum of 'Visitors' and 'Residents' proposed by White and Le Cornu (2011) is mainly related to individuals' engagement with the Web, using the metaphors of 'place' and 'tool' as the most appropriate descriptions of technology use in contemporary society, particularly social media. White and Le Cornu do not categorise their typology according to age or background. In our view, the life experience of people who share a common set of events from the 1980s, at least in Italy, has the potential to influence their behaviour in relation to technology. The initial curiosity that drove them to use new technology might be a key factor in influencing their current behaviours, from the acquisition of ICT competence and an understanding of the importance of ICT in our society and the risk of exclusion for those who have not mastered it, to their willingness and interest in interacting with others by offering support and help.

Intergenerational ICT learning has been considered to benefit older people through the actions of their children or grandchildren (Tatnall, 2014), but no clear distinction has been made between the status of children and grandchildren. The findings of this study show how the elderly's adult children do not feel less competent than their own children; in some cases they feel more competent. This reinforces their perception that there are things they can teach younger people as well: if not technical competences, at least how to fit ICT in with school-related needs or how to use social networks wisely. At the same time they adapt well to teaching older people since they share similar problems, albeit to a lesser extent. These findings make us see the relationships between these three groups from a different perspective: the exchange of knowledge and competence may go in different directions, not only from younger to elder. Bailey and Ngwenyama (2010) affirm that intergenerational interactions are influenced by the particular competences

and knowledge of each generation. Based on the results of our research, however, we may claim that the idea of generations could be misleading. Greater emphasis should be placed on understanding sub-groups or typologies who may have different skills and knowledge than their own generation because of their past experiences and attitudes towards technologies. In other words, a more nuanced approach to classifying participants in adult learning activities or intergenerational exchanges should be sought to favour people's compliance with the activities proposed. Strengthening knowledge sharing, as suggested by Bailey and Ngwenyama (2010), as a result of intergenerational ICT collaboration is certainly important, but perhaps it is no longer true that ICT knowledge flows from the younger to the older generation. Age has the potential to make a significant difference to competences in technologies.

The younger generations are often viewed as the ICT experts. This is positive in some aspects, but it might also create conflicts regarding intergenerational interactions over perceived online dangers, as reported by Mesch (2006). Our study shows that participants feel confident enough with the Internet and social media to understand the risks faced by younger people; it opens up new research paths on interactions between the younger generations and a group of adults who are now more competent in using social media than people of the same age ten years ago, and who might be better interlocutors than in the past.

The model presented provides further support for the benefits of mentoring shown in previous studies, such as the examples of volunteers and charity members offering ICT learning support to middle-aged and elderly women (Lin et al., 2012). The participants claim that their real life experiences, closer to those of elderly people, may help find the most effective ways to offer ICT education and bridge ICT gaps between the younger and older population. Peer-led ICT education programs (Clark et al., 1997) could also benefit by including people whose age and competence enable them to teach and guide slightly older people with less ICT competence because of their age.

Previous attitudinal research has indicated a positive change in attitudes in older adults who use ICT (Jay & Willis, 1996; Morris, 1994). This is also corroborated by the findings of this study, through the participants' descriptions of the positive feedback from the elderly they helped. Parenting and pedagogical spaces have been investigated in the past (Aarsand, 2014), as have the positions of being responsible, involved and attentive in relation to children, and our study suggests that similar positions can also be experienced towards elderly parents or friends.

Biology and psychology have been at the basis of studies about ageing. A general decline is recognised to occur as part of the ageing process (Schneider, Pichora-Fuller, Craik & Salthouse, 2000). This decline is consistent across developed countries, and difficulties in the memory, agility and sight of elderly people today are very similar to those of the elderly 20 or 30 years ago. However, better lifestyles, nutrition and exercise are improving the physical and cognitive conditions of today's adults and the elderly of tomorrow. Social aspects are also important in promoting a healthier ageing process (Carr & Pudrovska, 1996). When studying how ICT influences the lives and relationships of adults and the elderly, however, we must include other factors related to the structure of the societies in which we live. Technologies that did not previously exist have rapidly become part of people's lives, allowing some of them (and greater percentages of the population over the years) to learn, live and interact in ways not experienced before. From a certain moment in time, technology changed people's lives in unprecedented ways; people themselves have helped modify technologies and the way we use them. Many stereotypes about technology and the way people experience it are linked to a time when competences were clearly distinguished across the generations. For the first time in

history, those reaching retirement age and becoming 'elderly' will have ICT competences not seen in the past.

Conclusions and implications for further research

Firstly, we would like to address three implications of this study. The 'digital curious' might be a resource for promoting ICT use among elderly people. The digital curious are competent in using technology; they are aware of its importance in being active citizens in contemporary societies, and perceive their own value as persons competent in the field.

Moreover, they do not feel subjugated by digital natives, but instead feel that discriminating attitudes are linked to their age more than their supposed lack of competence. The traditional gap between those with digital expertise and those who lack it, often a source of embarrassment (Ribak 2001; Kvasny, 2006), was not reported by participants belonging to this age group. At the same time, the 'digital curious' feel closer to older users because of their age, lifestyles and ability to understand the frailty of older people. These findings do not support the image of a generational gap between these age groups. On the contrary they provide grounds for supporting interaction between the 'digital curious' and older people to promote ICT use, seeing as the former have similar interests, empathy and patience to older people. Educators and trainers in adult education belong to a variety of age groups. They do not necessarily realise that their adult or elderly students may belong to groups with different perceptions of ICT and the relationships with others connected with using ICT. The generation gap in the use of information and communication technologies (ICTs) has been analysed for its negative and positive aspects (Roman & Colle, 2002; Valentine, Holloway, & Bingham, 2002; Ferlander & Timms, 2006;). One implication of this study is to make educators and trainers in adult education aware of a variety of ways of at least partially closing the generation gap, including sub-groups whose competencies may provide a bridge between other groups.

A second implication of this research is that it has given a voice to people often assimilated with elderly groups in their use and appreciation of ICT. People who do not recognise themselves in the mainstream view of 'the elderly using ICT', but identify themselves as 'digital curious' may find experiences closer to their own in this study. They may feel free to reflect on their relationships with other age groups, unrestricted by stereotypical concepts opposing those who know (digital natives) with those who either do not know or have difficulties with ICT.

A third implication, as evident from the interviews, is that although technological competence is undoubtedly important, it is only part of a wider set of competencies and attitudes. The digital curious also have non-digital related competencies and attitudes overlapping at least partially those of the elderly and younger people. For example, they are still active citizens but are close enough to retirement age to understand the needs and perspectives of other age groups.

Now we come to the limitations of our study. A first limitation is the small sample size, which meant that the saturation of themes was beyond the possibility of our research. If the research had been continued with more participants, the themes presented could have be given more support, or alternatively different themes might have emerged. For example, it might have been possible to find digital curious people who were not interested in interacting with and helping others but made a solipsistic use of technology. It is thus possible that additional interviews would produce different results; this is an overarching limitation of conducting qualitative research with a small sample. The focus on a limited subgroup of adults cannot lead to a generalisation about the 'digital curious'. Therefore, the findings presented in this study only reflect the responses of the people

interviewed. Another limitation relates to the generalisability of findings from qualitative research. In this study, the findings would be most generalisable with a similar population of the digital curious from other Italian regions or other countries, adapting their age to general statistics such as those provided in Italy by ISTAT. Therefore, our findings must be considered an explorative hypothesis that can be used to for further research or to inform social and/or educational practice.

Bearing in mind the limitations of our study, there are still further areas for research. To complement the work of this study, it would be interesting to explore further interactions between the 'digital curious' and 'digital natives', particularly how ageism interferes with these interactions. Ageism should be considered in both directions, as the stereotypes and prejudices of the younger generations towards adults and the elderly appear in this study to be counterbalanced by the stereotypes and prejudices of the 'digital curious'.

Finally, we hope that by providing an initial understanding of how the 'digital curious' perceive and interact with ICT and with others using ICT, this study will contribute to an updated overview of adult education approaches and strategies: one capable of valorising subgroups previously considered part of a much wider population, irrespective of characteristics, interests and availability linked to social as well as personal factors. These factors may create a shared set of characteristics which might be useful resources in adult and intergenerational education.

Acknowledgements

Notes
 1 http://europa.eu/ey2012/.

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