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# People with Intellectual Disability and ICTs

Las personas con discapacidad intelectual ante las TIC

## ABSTRACT

New technologies have dramatically changed our daily lives and the way we are connected to other people. Television, cellular telephony and the Internet have opened up new opportunities in communication, leisure and training, and yet barriers prevent certain social groups from accessing these new technologies. People with intellectual disability (ID), for instance, are often «invisible» to communication and new technology researchers. An exploratory study was made of 156 adults with ID (workers and users of the Carmen Pardo-Valcarce Foundation sheltered employment programs and workshops in Madrid, Spain) to show their patterns of new technology (cell phones, Internet and television) use. The study confirms that these patterns are similar to those expected of the general public but specific differences were found. Some could be attributed to the direct effects of intellectual disability, but others could result from the hypothetical stigma effect on the attitude of those close to the person with intellectual disability, which might lead to discriminatory behaviors.

## RESUMEN

Las nuevas tecnologías han introducido profundos cambios en nuestro entorno y en los modos de relacionarnos con los demás. La televisión, el teléfono móvil e Internet han abierto nuevas posibilidades de comunicación, ocio y formación para muchas personas. Pero el acceso a las nuevas tecnologías para algunos individuos o grupos sociales puede hallarse condicionado por diferentes barreras. Uno de los grupos que habitualmente resultan «invisibles» en las investigaciones sobre comunicación y nuevas tecnologías es el de las personas con discapacidad intelectual (DI). En la presente investigación han participado 156 personas adultas con DI (trabajadores y usuarios de la Fundación Carmen Pardo-Valcarce en Madrid, Spain). Se ha llevado a cabo un estudio exploratorio con el fin de caracterizar en términos generales los patrones de uso de las nuevas tecnologías de comunicación (Internet y teléfonos móviles) de los participantes, así como sus patrones de consumo de televisión. Como conclusión puede señalarse que las pautas de comportamiento de las personas con DI en relación a las nuevas tecnologías de información y comunicación, en términos generales, se aproximan a las de la población general. Sólo en aspectos puntuales podemos encontrar diferencias llamativas. En algunos casos, tales diferencias pueden atribuirse directamente a la DI. Pero también es necesario tener en cuenta un posible efecto estigma actuando en las personas que rodean al individuo con DI, que puede motivar comportamientos discriminatorios.

## KEYWORDS / PALABRAS CLAVE

Disability, ICT, cellular telephony, Internet, television, reception, discrimination, psychology.  
Discapacidad, TIC, telefonía móvil, Internet, televisión, recepción, discriminación, psicología.

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## 1. Introduction

Information and communication technologies (ICTs) have brought profound changes to our environment and in the ways we relate to each other. Television, cell phones and Internet use have opened up new prospects for communication, leisure activity and education in our increasingly globalized world. Without question, these new technologies have greatly facilitated the exchange of information among individuals and thereby contributed to the eradication of distance and physical barriers. However, as Núñez and Liébana (2004: 40) have recently pointed out, «in this globalized, interconnected world inequalities are still evident, as in the fact that ICTs are not equally accessible to all». Accessibility should not just be understood as a financial issue. Using ICTs normally requires specific knowledge and operating skills that must be learned, and for certain sectors of society that can be complicated. As we all know, the younger generation has a real flair for adapting to technological changes –perhaps because they have been used to using technology since early childhood– while older people have greater difficulties (and are more reluctant) to avail themselves of the opportunities of the digital era. Likewise, for some individuals or groups in society, access to the new technologies may be affected by barriers that are not readily apparent and which have hardly been studied. In this regard, we believe that research must focus more on these groups of individuals who, by virtue of their inherent characteristics, may have an access differential in terms of information and communication technologies. The need for this becomes even more urgent when dealing with individuals who have traditionally been overlooked in research on the use of new technologies.

One group that is all too often «invisible» to investigators of new communications technologies consists of people with intellectual disability. Intellectual disability (ID) is a meta-syndrome characterized by significant limitations in intellectual functioning and learning (Salvador-Carulla & Berteli, 2008) that manifests as dysfunction in practical, social and conceptual skills (Schalock, Borthwick-Duffy & al., 2010). The concept of ID is complex, involving various biological, psychological and social factors. In the past, expressions such as «mental retardation» and «mental deficiency» were used in reporting on this phenomenon. Currently, however, there is a broad consensus for using the term «intellectual disability» as it does not have such a pejorative connotation. Traditionally, the intelligence quotient (IQ) is the main tool for quantifying the degree of ID. The International

Classification of Diseases (ICD-10) published by the World Health Organization establishes four levels of ID in terms of its severity: mild (IQ from 50 to 69), moderate (IQ from 35 to 49), severe (IQ from 20 to 34), and profound ID (IQ less than 20) (WHO, 1994). The term «borderline intelligence» has also been introduced to describe those who have intellectual limitations but whose IQ is above 70; so, strictly speaking, they do not have ID.

Research devoted to analyzing use and consumption patterns that could be used to describe the access people with ID have to means of communication and new technologies is scant. Can the cognitive limitations associated to a below-average IQ impose a barrier that makes access difficult? And to what extent? Could the fact that people with ID usually require supervision by a caregiver or guardian limits their free access to means of communication or reduces their autonomy when selecting content? The objective of this study is to stimulate thinking on these issues. For this purpose, a sample of people with ID is analyzed in terms of their behavior in three different situations: using a cell phone, accessing the Internet and watching television.

## 2. Materials and methods

The participants in this study were 156 adults with ID who were workers and clients at the Carmen Pardo-Valcarce Foundation. Headquartered in Madrid, this institution is registered with the Foundations Registry of Spain's Ministry of Education and Science and is recognized as a non-profit educational entity with a public service interest<sup>1</sup>. Its primary objective over the past 20 years has been to offer assistance to people with ID. The participants in this study are workers in the foundation's sheltered employment program as well as clients in its sheltered workshops. In terms of intelligence quotient, they range from limited intelligence to moderate ID.

The primary research objective was to conduct a descriptive study whereby the participants' patterns of using the new communication technologies (Internet and cell phones) and watching television could be characterized in general terms. As a preliminary research phase and to evaluate user habits, the 156 participants were given a questionnaire in which they were asked about 1) cell phone use: whether the participant has his/her own cell phone, the number of calls made and messages sent per day, whether the participant or family member or caregiver recharges the device with money, whether the participant is able to pay for reloading with his/her own income or

whether, on the contrary, this falls to the participant's family members or caregivers; 2) Internet access and use: whether the participant has a connection at home or outside the home, how often the participant connects and whether he/she uses instant messaging programs or «chats»; and 3) watching television: the number of hours watched per day and the type of content the participant watches regularly. The questions presented were closed –that is, they were test-type questions– and each participant had to choose a response from among several options given. The questionnaire was written in easy-reading language using simple terms that the participants understood without difficulty. They also filled out the test with the support of a Special Education teacher who explained each question to them and addressed their concerns.

A second objective was to explore the connection between certain individual characteristics and the patterns of use evaluated in the questionnaire. The following individual characteristics were considered:

1) Gender. Of the 156 study participants, there were 105 men (67.3%) and 51 women (32.7%).

2) Age. The age ranges of the participants in the sample were as follows: up to 30 years old, 73 participants (46.8%); 31-40, 64 participants (41.0%); more than 40 years old, 17 participants (10.9%). Two participants declined to give their ages in the questionnaire.

3) Intelligence quotient (IQ). As a measure of the participants' degree of ID, the most common indicator –the intelligence quotient– was used. We were able to look up this information in the foundation's files for 128 of the participants, whose IQ had previously been determined through application of the Wechsler Scale for adults in the WAIS-III test (Wechsler, 2001). For these 128 participants, the degree of ID, according to the WHO ICD-10 criteria mentioned above, was distributed as follows: moderate disability, 5.5% of cases (7 participants); mild disability, 68.0% (87); borderline intelligence or higher, 26.6% (34). The

participants' average IQ was 62.87 (standard deviation: 10.97).

In analyzing television-watching patterns, we thought it appropriate to distinguish between those participants who chose their own television «diet» (i.e., they chose their favorite programs in the scheduling) and those who complied with the decision of other adults (i.e., the parents or caregivers assumed responsibility for choosing the television content they considered most suitable for the participants).

**It is important to add to this information the fact that the percentage that watches cartoons is higher in the group where the caregiver chooses the channel. Consequently, the results of this research appear to indicate a certain trend on the part of some parents to «infantilize» their children with ID, at least with respect to their television-watching patterns. In other words, in their television-watching patterns, adults with ID appear to manifest some features that are typical of children to an extent that would not be expected in adults of the same age with no disability.**

The statistical software SPSS, version 15, was used to analyze the data obtained. Above and beyond a merely descriptive analysis, comparative analyses of medians (Student's t-tests) and non-parametric tests (chi-square) were carried out to determine whether there were statistically significant differences.

### 3. Results

#### 3.1. Cell phone use

The vast majority of participants (89.7%) had a cell phone. In terms of frequency of use, 59.3% reported using it sporadically to make calls that were absolutely necessary, with 22.9% making 1-3 calls per day, 6.4% making 3-5 calls, and 11.4% making more than 5 calls.

As far as recharging the phone with money, the participants divided into two groups: those who paid for it with their own money (53.6%) and those whose family paid for it – 40.0%, with 5.7% reporting that

they split the cost with their parents. The group of prepaid cell phone users within the sample was divided into two subgroups: participants who reloaded it themselves (82) and those who usually turned to a family member for reloads (44). Comparison of the average IQ for these two subgroups revealed significant differences ( $t=2.145$ ,  $p=0.017$ ), with the group of individuals who do their own reloads showing a higher IQ.

### 3.2. Internet access and use

Taking Internet access opportunities into consideration, the majority of participants fell into two groups: the first, comprising 50.0% of participants, reported having an Internet connection at their place of residence, while the second, comprising 41.7%, lacked any type of access. Only 6.4% reported using the Internet by going outside the home for a connection –for example, to public facilities, places where one can pay for access, or the home of a friend or relative– and the remaining 1.9% did not answer the question.

When asked about their utilization, 56.4% stated they did not use the Internet regularly; 7.7% reported less than one hour and 6.4% more than one hour of use, only at weekends; 9.6% reported using it daily for less than one hour; and 16.7% reported connecting daily for more than one hour. The participants were divided into two groups according to whether their IQ was above or below the median for the sample ( $IQ \leq 60$  and  $IQ > 60$ ). In terms of the percentages for frequency of Internet use, no significant difference was found between the two subgroups ( $\chi^2=4.466$ ,  $p=0.347$ ).

Another result pertains to the comparison between availability of Internet access and degree of Internet use on the part of the participants. Participant distribution in relation to these two conditions is shown in Table 1, which shows that the majority of participants who never use the Internet do not have an Internet connection at home, 64 individuals in this instance.

It also demonstrates, however, that 19 participants who have a connection at home do not use it, compared with another 57 who, with variable frequency, do use the Internet connection they have available at home. Stating these results as a percentage, 25.0% of the participants whose families have Internet access never use this service.

Only 22.4% of participants report engaging in «chats» or using instant messaging programs. No significant difference was noted with respect to either gender ( $\chi^2=0.011$ ,  $p=0.917$ ) or IQ; the average IQ of the subgroup that uses these programs was compared with that of the subgroup that does not use them, and no significant difference was found ( $t=1.682$ ,  $p=0.095$ ). There was a significant difference, however, in relation to age ( $\chi^2=7.746$ ,  $p<0.05$ ), with younger participants using these types of services more frequently.

### 3.3. Watching television

Only 7 of the 156 people surveyed (4.5%) stated that they do not watch television on a daily basis. By

	No use	Only weekends (less than 1 hour)	Only weekends (more than 1 hour)	Daily (less than 1 hour)	Daily (more than 1 hour)
No access	64	0	1	0	0
Access outside the home	0	2	1	0	2
Access at home	19	10	8	15	24

Table 1. Distribution of participants according to use of Internet and connection availability.

contrast, the majority of participants spent more than two hours per day in front of a television set (63 participants, 40.4%). While 23.7% (37 participants) reported watching less than one hour per day, 29.5% indicated that they watch about two hours per day.

In turn, 38.5% of participants reported that they usually watch television alone, compared with 42.9% who usually watch with a family member. With regard to choosing programs, 41.7% of participants maintained that they themselves choose the televised content they watch. Programs are chosen by negotiating with the family for 32.1% of those reporting, and only 14.7% reported watching content that someone else chose for them.

As far as the audience for specific formats, the number of participants who reported watching each type of television programming and its corresponding percentage of the sample total are shown below (in descending order of popularity): movies, 111 (71.20%); series programs, 109 (69.90%); news programs, 78 (50.0%); sports, 66 (42.30%); game shows, 62 (39.70%); talk shows, 55 (35.30%); soap operas, 37 (23.70%); celebrity gossip shows, 33 (21.20%); cartoons, 31 (19.90%); others, 15 (9.60%).

The percentage of men and women who report watching each television format was compared using a chi-square test. No significant difference was found except in three cases: sports, soap operas and series programs. Male participants showed a significantly

TV format	Percentage of audience in men	Percentage of audience in women	$\chi^2$	Significance
News programs	56.4%	41.2%	3.158	N.S.
Soap operas	19.0%	35.3%	4.847	P<0.05
Series programs	63.4%	88.2%	10.331	P<0.001
Sports	55.4%	19.6%	17.716	P<0.001
Movies	76.2%	66.7%	1.576	N.S.
Talk shows	33.3%	43.1%	1.393	N.S.
Celebrity gossip shows	19.0%	28.6%	1.747	N.S.
Cartoons	22.2%	18.8%	0.234	N.S.
Game shows	39.4%	46.9%	0.766	N.S.

Table 2. Comparison of audience percentages according to gender.

stronger preference than female participants for sports programming. This phenomenon is reversed in the case of soap operas and series programs. Table 2 shows the results.

In addition to gender, the connection between participants' IQ and television preferences was also considered. For each of the television formats listed, the sample was divided into two subgroups: the first comprising those participants who report that a given type of program is a regular part of their television diet, and the second comprising those who do not watch this type of program regularly. For each type of program, the average IQ of the participants in the two subgroups was compared using a Student's *t*-test. There was a significant difference in only one case: news programs ( $t=3.932$ ,  $p<0.05$ ), where the average IQ of the watchers was 64.59 (standard deviation: 11.30) and the average IQ of the non-watchers was 59.87 (standard deviation: 9.00).

Another variable considered was age. Distinction was made between participants up to 30 years old (73 individuals), those between 31 and 40 (64), and those over 40 years old (17). The audience pattern appears to be the same except in four types of television content: news programs, movies, talk shows and celebrity gossip shows. In these cases, there is a significantly higher preference among the older participants. Table 3 shows the results of this comparison.

Another analysis that was carried out consisted of distinguishing between participants who choose for themselves the television content they watch (65 individuals) and those who accept what their parents or family members have chosen (23). There was no significant difference between the two groups except in four cases: talk shows, celebrity gossip shows, cartoons and game shows. Participants tend to watch these programs more when it is other people who choose the television channel. The results of this comparison are shown in Table 4.

#### 4. Discussion

With respect to cell phone use, the results obtained appear to indicate that, generally speaking, people with ID –those included in the sample for our study, at least– have no great difficulty using one. Only those individuals with a lower IQ may encounter some limitation when performing operations that are cognitively more complex, such as managing the money spent on the cell phone and getting it reloaded, for which they may need assistance from family members or caregivers. Apart from that, the data obtained appear to be consistent with the data one would expect from a survey of the general public. Therefore, the results from this study point to the conclusion that cell phones can also be widely used among the ID population.

Regarding the Internet, it is noteworthy that the percentage of people with ID in the sample who use the Internet is very close to the norm for the general public in Spain. As an example, we can take the estimate given in the 11th edition of the Internet Users Survey made public by the Media Communications Research Association [Spanish acronym AIMC] in 2009 – the same year the information for our study was gathered (when making comparisons, it is important to use estimates that are not far apart chronologically because it is an established fact that figures related to the use of new technologies can vary considerably within a relatively short period of time, as little as 2-3 years). If the percentage of participants in our study sample who regularly use the Internet is 40.4%, then the figure given in the AIMC survey for the general public over 14 years of age, even though slightly higher, is of the same order: 45%. The data appears to support the hypothesis that there is no reason why borderline intelligence or a mild-to-moderate disability should limit the individual's opportunities to enjoy the advantages of Internet access. This idea is also upheld by the fact that there

TV format	Percentage of audience (younger than 31 years old)	Percentage of audience (31-40 years old)	Percentage of audience (older than 40 years old)	$\chi^2$	Significance
News programs	41.7%	56.3%	75.0%	6.900	P<0.05
Soap operas	26.4%	23.8%	18.8%	0.441	N.S.
Series programs	72.2%	75.0%	56.3%	2.236	N.S.
Sports	37.5%	50.0%	43.8%	2.156	N.S.
Movies	62.5%	79.7%	93.8%	8.980	P<0.05
Talk shows	34.7%	30.6%	68.8%	8.177	P<0.05
Celebrity gossip shows	19.7%	17.7%	50.0%	8.140	P<0.05
Cartoons	26.1%	17.7%	12.5%	2.162	N.S.
Game shows	42.9%	35.5%	62.5%	3.864	N.S.

Table 3. Comparison between audience percentages according to age.

TV format	Percentage of audience (participants choose)	Percentage of audience (others choose)	$\chi^2$	Significance
News programs	43.8%	60.9%	1.986	N.S.
Soap operas	15.9%	26.1%	1.161	N.S.
Series programs	65.6%	82.6%	2.329	N.S.
Sports	45.3%	52.2%	0.320	N.S.
Movies	70.3%	82.6%	1.315	N.S.
Talk shows	23.8%	52.2%	6.294	$P < 0.05$
Celebrity gossip shows	11.3%	39.1%	8.510	$P < 0.01$
Cartoons	18.0%	39.1%	4.098	$P < 0.05$
Game shows	33.9%	60.9%	5.049	$P < 0.05$

Table 4. Comparison between audience percentages according to content choice.

is no significant difference in frequency of use between the group with above-average IQ and the group with below-average IQ. The fact that the use of messaging programs is significantly more frequent in the younger participants also appears to reflect a trend in the general public.

In light of the data analyzed, then, could it be assumed that there are no specific barriers to Internet access for people with ID other than those that also exist for the general public? We believe that the conclusions of this study are not so positive. We need look no further than the data in section 3.2 indicating that 25% of the participants who have an Internet connection at home never use it. We have no information on percentages for the general public but, given that the individuals evaluated in our study are over 18 and not children, we believe there is more than enough reason to think that this figure is significantly higher than the one we would obtain if we were to conduct a survey among older individuals who live with their parents or other family members who do not have any type of disability. This percentage leads to the thought that a significant proportion of parents whose children have ID tend to manifest certain prejudices about their ability to use the Internet— apprehension about their child causing some type of breakdown in the equipment, such as deconfiguring a program or downloading a computer virus; fear that their child might be more seriously affected by harmful Internet content than someone without disability; or a belief that their child will not be interested in using the Internet simply because he/she is a person with a disability. Our research does not allow us to draw more precise conclusions as to whether these prejudices exist and how they may operate, but it does point to a general conclusion: that almost a quarter of parents and caregivers believe it is best to restrict or completely block Internet access because the problems a person with ID may encounter in using the Internet would exceed the prospective

advantages. This sheds light on the first barrier that might impede a person with ID from benefitting from the opportunities for education, leisure activity and communication offered by the Internet – that barrier could be located in his/her immediate environment. There is no cause for alarm, however, because even though a sizeable percentage of parents in our sample do not encourage their children to use the Internet access they have at home, it is still a minor issue: three-quarters of the parents with

Internet connection at home do not hinder their children with ID from using the service.

With regard to watching television, we can report that the results obtained are consistent with those that would be expected in the non-ID population, generally speaking. For example, the division by gender (Table 2) shows that the preference for series programs and soap operas is significantly higher among women, while the preference for sports is significantly higher among men. Although this points to a gender-related difference in patterns of TV watching, it has important implications that may extend to other realms associated with the world of ID. For example, although some studies – research by McDermott, Martin, and Butkus (1999) on workplace integration, for instance – extend gender differences for the general public to people with ID, others suggest that people with ID tend to be treated as «gender-neutral individuals» rather than as individuals who have their own gender-related needs and preferences (Umb-Carlsson & Sonnander, 2006). In this regard, the results of our research would support the idea that the term «intellectual disability» cannot become a mere label that overshadows other individual characteristics such as gender-related differences. Also, the results found in relation to age (Table 3) appear to be consistent with those that would be expected in the general public: news programs, movies, talk shows and celebrity gossip shows are the preferred viewing of older people.

There is no significant difference in terms of IQ –or in the degree of ID, which is the same thing– that distinguishes the group of participants who say they watch a particular program from the group who say they do not watch it. The only exception is in the case of news programs—and that should come as no surprise. Naturally, the lower-IQ participants would have greater difficulty understanding the content presented in news programs. In terms of preventing possible discrimination against people with ID who wish to keep themselves informed, one solution would

be to develop programs that present the news in accessible language.

Another meaningful piece of information pertains to the differences associated with the person who controls the choice of channel. First of all, it is worth noting that there are significant differences within the percentage that watches celebrity gossip shows. A person with ID is much more likely to watch such programs, of course, when he/she is not the one who chooses the program. The fact that it is the parents' television preferences that may impose on their children's preferences when the children are older could be deemed unusual in light of the trend established among the general public, at least if we take into account the research studies—certainly not numerous—that have been published on the subject. For example, echoing the research conducted by Piñón, Huston, and Wright (1989), the authors of the Pigmalión report (Del Río, Álvarez & Del Río, 2004) point out: «When parents watch TV with their children, parents usually choose what to watch, especially the father (according to an opinion shared by mothers and children); when children watch adult contents on TV, they are usually accompanied by their parents. However, when children become adolescents, it is their preferences that determine what the family watches». It is important to add to this information the fact that the percentage that watches cartoons is higher in the group where the caregiver chooses the channel. Consequently, the results of this research appear to indicate a certain trend on the part of some parents to «infantilize» their children with ID, at least with respect to their television-watching patterns. In other words, in their television-watching patterns, adults with ID appear to manifest some features that are typical of children to an extent that would not be expected in adults of the same age with no disability. This «infantilizing» could transfer to the person more likely to watch programs that he/she does not wish to watch because the parents have imposed their own tastes (celebrity gossip shows, for instance) or their own standards of television content appropriate for their children (cartoons, for instance). More precise research is needed to obtain definitive conclusions on the subject.

Among the limitations of this study, it is worth mentioning that the participants have borderline intelligence or mild-to-moderate ID only, so our results cannot be generalized to more severe degrees of disability. Furthermore, the fact that the sample was taken entirely from one setting—clients and workers at the C. Pardo-Valcarce Foundation in Madrid—would necessarily restrict generalization of the data. The Foundation promotes access to the new technologies for its clients through classes and activities, so the results obtained could vary if the study were repeated in an environment with different characteristics. Also, as already mentioned, all the data analyzed was obtained from questionnaires the participants filled

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out, and the information was not verified by questioning family members or through direct observation methods. In that regard, a certain risk of desirability bias could be involved: it is possible, for example, that some participants deliberately reduced the hours of television watching or the amount of money spent on their cell phone, believing that excessively high values would be «inappropriate».

In short, we may conclude by stating that, with respect to the new information and communication technologies, the behavior patterns of people with ID approximate to those of the general public, on the whole.

We find noticeable differences only in particular aspects. In some cases, these differences can be directly attributed to the disability: for example, we can assume that the complexity of television news program content makes comprehension difficult for people with low IQ. A possible stigma effect on the part of people around the individual with disability must also be taken into account, as this can motivate behaviors that are, to a certain extent, discriminatory.

We might think that a person with ID would not be interested in certain television programming, simply for having this disability – so, in the end, we might take it upon ourselves to choose for him/her. Likewise, we might think that this person is not able to handle the Internet properly – so we might deny him/her the opportunity to use our computer or Internet access. Society as a whole is responsible for eradicating the discrimination that may arise from this stigma effect and for ensuring that people with ID are able to benefit fully from all the advantages afforded by the new information and communication technologies.

### Notes

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