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MEDIATING TECHNOLOGY: HOW ICT INFLUENCES THE MORALITY OF THE DIGITAL GENERATION

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ABSTRACT
An increasingly important theme for ICT designers is in what way ICT interferes with moral reasoning. ICT has given us new possibilities and it has simplified our lives. However, it is also influencing our experiences and morality, especially with the young generation. In this article, we present an exploratory empirical study of the relation between morality and ICT among adolescents and young adults. Using focus groups and diary research we studied the perceived impact of ICT on their daily lives and their level of cognitive moral reasoning within ICT related situations.
We observed, conform our theoretical outline, that when ICT is considered impersonal and does not strongly obstruct the own perception of freedom most of our respondents reasoned in a consequentialist and pre-conventional way. Simultaneously, when ICT mediates in personal relations and interferes more with the own perceived freedom, higher moral arguments were demonstrated. This was particularly the case with the older age group. They were better able to identify the impact of ICT on their lives. With these findings, suggestions for a design process that takes this influence on morality into account are offered.

Keywords: ICT, cognitive moral reasoning, theory driven design

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1 INTRODUCTION

Recent progress within Information and Communication technology (ICT) during the first decade of the 21st century has given new direction to very diverse parts of our lives. The world has seen a total increase of 528.1% in Internet usage since 2000 (Internet world stats, 2011). Not only have ICT, and the Internet, in particular taken up a more substantial part in our everyday life, it has also changed our lives dramatically. Internet has transformed many of our daily activities. It has changed the way we find information and has reshaped how we communicate, interact and maintain relations with each other and with institutions. It has changed how we work and relax and has altered virtually every social bond or role between human beings (Vallor, 2011) and has given new opportunities in real-time long distance communication. ICT connects more and more with the fundamentally social nature of life (Postma et al. 2012). Designers continuously attempt to lift ICT to new standards. Examples range from the introduction of smartphone applications and a nonstop augmented reality by using Google glasses. Currently, almost all online services have a mobile application so that, with a smartphone, it becomes possible to access them constantly and everywhere and numerous new apps are created every day. An example of a relatively new ICT application is a smartphone app that can record every phone conversation the owner has, without the other knowing. These examples demonstrate that, apart from the clear beneficial and increasing possibilities of ICT, technological development could also create complete new ways of life. For example, the immense growing possibilities of the smartphone makes it a central device in our interaction with others; its communication functions like WhattsApp and Twitter, as well its capability to film and record everything and its continuous presence and use during a friends' night out. Not only does it make our life easier and provides a better connection to the world, simultaneously it changes our ideological, cultural and ethical framework. A fundamental aspect here is that ICT has the capability, as a lot of technologies, to influence and change human behavior and morality (Verbeek, 2000).

This growing impact of ICT introduces three comprehensive, socially relevant, themes for study. The first theme focusses on the evident impact of ICT on our lives. It's the descriptive study about how ICT changes society and everyday behavior and how ICT could be designed or improved for better implementation. The second theme is the study of ICT risk and digital/internet safety. How should ICT be designed for a practical and yet affordable adequate network and information security? These two themes are already implemented in the scope of designers. Designers are responsible for an optimal alignment between ICT usability and ICT safety and they are responsible for the ICT design which enrich the life of its users. However, when people in a society cannot (or can hardly) avoid the use of a technology, designers of that technology also obtain a societal responsibility (Valkenburg et al. 2008). At that moment designers become accountable for the influence of technology on human behavior and morality, which introduces the third theme. The last theme discusses in what way the current potential of ICT interferes with society, human behavior & moral reasoning. With the recent progress in ICT like social media, smartphones and their numerous apps and the Google glasses this is probably no different. With the increasing technological influence it is becoming inevitable for ICT designers to ask in what way their technology creates a different society and how their technology influences human experiences, human behavior and morality.

To implement these issues in the designing process first a better understanding of the relationship between ICT and human experiences, human behavior and morality is needed. In this study we will focus on this last theme: morality. Despite the broadening interest in human-technology interaction, empirical studies into the relation between morality and ICT use are still preliminary. By using two different research methods, focus groups and diary research, we will conduct an explorative study on adolescents and young adults from and including 15 to 24 years of age. The central objective of this article is to provide an insight into the relationship between the ICT-context and moral reasoning. Within contemporary moral psychology the connection between the affective part and the cognitive part of morality is a significant research theme (Sie, 2009). In this article we will focus mainly on the latter, cognitive morality. Subsequently, with this outline we will give suggestions on which aspects of ICT, in relation to cognitive morality, designers should take into account during the design process.

2 THEORY

2.1 Moral reasoning: the study of cognitive moral development

The study of cognitive moral development (CMD) has taken a significant position within the study of moral reasoning and moral psychology and is dominated by Kohlbergs's (e.g. 1984) theory of moral development (Carpendale, 2000). The theory of moral development is a stage theory developed to explain how individuals reason in the selection of an ethical solution within a moral dilemma. Developed by Kohlberg, following on Jean Piagets work, studies have shown that ethical behavior and perceptions are strongly influenced by an individual's moral reasoning and that an individual's CMD is a significant factor in explaining moral development (Colby and Kohlberg, 1987, Boom, Wouters, Keller, 2007). Kohlberg (1984) identifies three levels of moral reasoning, the pre-conventional, conventional and post-conventional level, which have an upward development in an invariant hierarchical order (Boom, Wouters, Keller, 2007). Individuals process information about a situation according to a pre-existing moral schema or reasons. These moral reasons are different at each moral development level. Subsequently, these three levels are divided in two different stages each; six stages in total. Kohlberg argues that the hierarchal transition from stage to stage works as a result of moral conflict and confrontation together with exposure to higher level moral reasoning. Because of the exploratory character of this study we will limit our analysis to the three comprehensive levels.

2.1.1 Pre-conventional, Conventional level and Post-conventional level

In the pre-conventional level the individual is exclusively concerned with the self in an ego-centric manner. The individual assumes that a powerful authority hands down rules that he or she has to obey. Punishment is a central motive for behaving a certain way, which means that individuals see morality as something external to themselves (Crain, 1985). In this level, next to authority, the individual's own interest, possible reciprocity and future gains are the basis for judging moral dilemmas.

In the second level, the conventional level, identification with the values of community and family are essential. Good interpersonal relationships becomes important, and not only because of a possible return of investment. Individuals start to believe that people should live up to social expectations and roles. Good behavior means having good motives and interpersonal feelings such as love and empathy (Crain, 1985). There is an emphasis on conformity and how behavior effects relations between people. In addition, the individual becomes more widely concerned with society as a whole. Social conventions and maintaining law and order is crucial for a functioning society. If all people started to break the law whenever they had a good reason, it would be difficult for a society to function properly. Morality in this level is still based on the domination of an outside force combined with self-interest.

In the post-conventional level, people start to think about society in a very theoretical manner. In the post-conventional level laws are regarded as social contracts rather than decrees. Individuals recognize that different social groups have different social values and believe that all people would agree on (1) the existence of certain rights and (2) democratic processes for changing unfair laws and conditions (Crain, 1985). In most cases different perspectives between people should be respected as unique traits. In this level individuals will follow internalized principles of justice, even if it conflicts with existing laws and rules. It is understand as advanced existential or reflective (Boom, 2011). The post-conventional level complies with a higher existential and personally binding moral reasoning which distances itself from convention, outside force and self-interest. In terms of Piaget's epistemic types of cognitive knowledge it asks for "necessary" cognitive knowledge to analyze a moral situation.

A common critique to Kohlberg's theory of moral development is that it predicts a greater consistency in moral reasoning than often observed (Carpendale, 2000). Kohlberg theorized that a person reasons predominantly at one of the three levels which automatically implies a strong consistency of reasoning in different situations. However, different studies show that moral reasoning is case-sensitive to the type of dilemma and the presented situation and culture-sensitive (Gibbs et al. 2007). Instead, moral reasoning should be seen, as is consistent with Piagets work, as a process of coordinating perspectives (Carpendale, 2000). Still, the theoretical basis of Kohlbergs levels of moral development is that it understands morality as "entailing judgments, based on the proposition that children construct ways of thinking about welfare, justice and rights through a variety of social experiences" (Bradley, 2005). Moral development does not imply that you are stuck in a process to follow the social system. It means

that people are capable of learning to analyze their culture, distance themselves from it and judge it. And an important aspect of this culture is the technological condition and its influence.

2.2 Moral development and human technology interaction

Within contemporary philosophy of technology the emphasis on how technology influences human behavior has increased. Whereas the classical technology philosophy of the first half of the 20st century mainly focused on risk and the absence of human control over the practical effects of technology (Verbeek, 2000), the current philosophy of technology is also interested in outcomes of technology which are more difficult to determine. Within the influence of technology Swierstra (2011) distinguishes hard impacts and soft impacts of technology. Hard impacts are expressions of its power over us; e.g. health risks. Soft impacts are changes in behavior, needs and expectations. Technology gives the possibility for new perceptions, observations and actions. Swierstra identifies techno-moral transformations when new technology alters the consequences of our actions and/or changes the involved stakeholders. Technology changes the framework of action which changes moral reasoning. The capability of technologies to shape contexts is caused by the intermediary and mediating position it takes in how we experience phenomena and what Ihde calls post-phenomenology (Ihde, 1990). Verbeek (2000) distinguish the hermeneutic mediation, in which technological artifacts mediate how reality is experienced, and the existential mediation about how technological artifacts mediate in the existence of people. Technologies contain scripts which do not only change the way people see reality, but also gives direction to actions and behavior (Latour 1992). Dorrestijn (2012) argues that it becomes essential to care for the quality of the technological interaction and to devise technologies that allow for a 'symbiotic' interaction, which ensures a user's perceived freedom. However, in our contact with technology, even in a symbiotic interaction, it may be challenging to act morally responsible. With the ever-growing possibilities, our ICT mediated actions are clearly increasing, and so are the consequences of these actions. The specific environment and the ICT-context could enable new and unethical behavior (Roberts and Wasieleski, 2012) partly because it is becoming increasingly difficult to predict the results of our actions (van der Wal, 2011). Furthermore, a technology-mediated context may feel less personal and in an impersonal situation utilitarian rational may be more easily demonstrated because an action is not directed to a specific person or is merely the (unforeseen) side effect of another action (Greene et al., 2001). Because of the mediation of ICT that creates an abstract context for users, these users may lose grip with the behavioral subjectivity and validity of their acts. Therefore, with the increasing mediating influence of ICT, the consequences of acts may become the main indicator, which could provoke a shift in moral reasoning from deontological ethics to consequentialism. Or to speak in terms of Kohlberg, from post-conventional to conventional level.

2.3 ICT, adolescents and Young Adults

ICT could be seen as a relative prominent environment, which could influence morality. The social context of ICT frees people from strict control and forces them into decisions, engagements and conflict as they interact with abstract situations and others online (Bradley, 2005) in a relative distant and anonymous setting. Especially among young people this seems relevant because of their easy and vast adoption of ICT (Prensky, 2001). Malikhao and Servaes (2011) show that American especially youth culture is fueled by advanced ICT. American youth on average spends a few hours a day in front of a computer screen or interacting with their smartphone. Gaming, social networking, the search of specific information for a school task and ordering new sneakers is just a small selection of their typical everyday internet use. (Livingstone, 2003; Valcke et al., 2011). A Dutch survey showed that 53% of the children between age 8 and 18 agreed with the statement that they could not live without their phone (Duimel, et al. 2012). Still, even with the drastic increase and transformation of how adolescents and young adults spend their time on web 2.0, most central aspects of the development to adulthood have remained unchanged. Creating identity, forming a position within a peer group and experimenting with different behavior are key elements in the process of adolescence. Nevertheless, ICT has become an important aspect in these elements and could play an important role in moral development of young adults. This study will focus on adolescents (in this study under 20 years of age) and young adults (in this study 20 years of age and older).

We are interested in the relation between the respondents daily ICT-context and moral reasoning. Within the theoretical framework this leads to two research questions:

RQ1: In terms of moral reasoning, which relation exists between morality and ICT among adolescents and young adults?

RQ2: In what way does ICT influences moral reasoning among adolescents and young adults?

3 EMPIRICAL RESEARCH

In this study we will use qualitative and quantitative empirical research. The data were elicited using two semi structured focus groups and the completion of diaries by 67 respondents. Using two focus groups, in total 11 respondents were interviewed. The participants were asked to join this study by an institute specialized in market research. These 11 respondents got paid for their participation. The first focus group consisted of 5 (3 male and 2 female) respondents of higher general secondary education and pre-university level education from and including 15 to 19 years of age. The second focus group comprised six college and university level students (as many male as female) from and including 20 to 24 years of age. The respondents of both focus groups did not know each other beforehand, came from different cities in the west of the Netherlands and all attended different educational institutions. Other selection criteria of these respondents were the extensive and long term use (daily and longer than 2 years) of social media (and Facebook in particular) and the possession of a mobile phone (ten of them owned a smartphone, one owned a 'regular' mobile phone). Next to attending the focus groups these 11 participants were asked to fill in a diary beforehand. The diary was also completed by 56 additional respondents which makes the total number of diary respondents 67. These additional respondents were collected from two educational institutions both located in the west of the Netherlands; a secondary school and a university of applied science (bachelor level students). For these respondents the same selection criteria applied. Specific characteristics of the diary respondents are presented in table 1.

Table 1. Characteristics of the diary respondents

	Age (Mean, SD,)	**Percentage Male/female**	**Self-reported frequency internet use 1=infrequent, 7=frequent) (Mean, SD)**	**Self-reported importance internet 1=unimportant, 7=important (Mean, SD)**
Adolescents (n=32)	15.4; 1.4	55% / 45%	4.5; 1.6	4.5; 1.8
Young Adults (n=35)	21.7; 2.1	59% / 41%	5.8; 1.0	5.9; 0.9
Total (n=67)	18.6; 3.6	57% / 43%	5.2; 1.5	5.2; 1.6

The two focus groups were held in June 2012 at The Hague University of Applied Sciences and took a little over 2.5 hours each. The semi-structured interviews were led by one researcher. A note taker and a second researcher were positioned in the corner of the room. The respondents were assured that this interview was purely meant for scientific purposes only and that they were free to speak their mind. During the focus groups the discussion leader introduced several predetermined topics. These topics were: technology in general, internet, mobile phone, social media, internet freedom & copyright and 'daily ICT situations'. All topics were discussed with the possible influence of technology on morality as a central emphasis. The focus groups were led by using a semi-structured interview guide and analyzed by using the transcripts. Recurring issues were identified and discussed between the researchers. In the diary a number of assignments had to be completed and were analyzed using SPSS. The respondents moral opinion about 15 ICT related daily situations were compared using Analysis of Variance (ANOVA) and factors were identified using Principal Component Analysis (PCA).

4 RESULTS

4.1 Results Focus Groups: The role of ICT in their lives

Both focus groups thought of ICT as the most prominent technology in their lives. Especially, the smartphone provides meaning in their life, both socially as existentially. A male respondent (group 20-24) mentioned the importance of his phone by saying: *"I prefer to have everything in my pocket. I fell in love with my telephone and can't live without it."* Although the smartphone was generally seen as

one of the most important aspects of their lives, some respondents identified some drawbacks. They mentioned addiction and recognized its ability as a social role changer. Mainly respondents in group 20-24 were able to see the strong impact it has on their life. A young woman (group 20-24) stated: *"You grab your phone every free moment, it's such a strong reaction."* The respondents believe that the norm that technology should not control you or your life is essential but found it difficult to comply to this norm. Unlike group 15-19, group 20-24 stated more openly that in certain situations the telephone controls them instead of vice versa and that it sometimes feels like an unpleasant addiction. Two young women (group 20-24) said that sometimes their phone unpleasantly controls them: *"The telephone controls me. Although I know I have to put it down, I still secretly watch it."* And *"A lot of friends say: put it down. But, shortly after, I forget their comments and check it again. When friends say something about it, I find it very embarrassing."* The respondents from group 15-19 were less explicit about the concept that the smartphone can control norms and behavior. Two young men mentioned: *" It's a tool I can easily live without. You should not compare it with, for example, food."* and *"Of course I have control over it. That's a strange question."* Nevertheless, respondents in group 15-19 also stated (although less obvious) that the smartphone is a central aspect in their lives and that they do not always like that. A young woman said: *"At some point you are playing with it for over an hour and you think: 'lame'! Then you put it away."* Group 20-24 is very clear about the position technology has in norms and values. Not everything that is possible is desired, and there are different opinions about what moral behavior is, but technology definitely increases the action radius. Young adults in group 20-24 notices that their own norms sometimes change or that they don't always follow them, both in a positive way and negative way. A young woman (group 20-24) told us*: (Making a phone call) when I pay at a cash register. I find that very inconsiderate, but I'll do it anyway. (Group 20-24)* . A young man from group 20-24 noticed this increasing norm changing behavior in his everyday life. *It provokes certain behavior. Thresholds are reduced, because of the provoking ability of that device (in this case: phone).* A notable difference in the interviews between group 15-19 en group 20-24 was that the former group foremost approve norms which have to do with their own inner social circle. The latter extend the social rules they follow to a broader aspect of society. A young man from group 15-1 said: "*I don't think it's appropriate to play with your phone when you are with friends. But at school, I don't think it's a problem. When class is dull you check your phone."*

Sharing everyday life in the form of pictures and stories is a central aspect for all respondents ICT use. The role of the inner social circle is, again, more important for group 15-19. Group 20-24 explained that they changed their behavior when they got older. A young man from group 20-24: *"When I was younger I added people on my Facebook I did not know. This has changed. I grew up. Maybe it was more important back then to have a lot of friends. It gives prestige.* Both groups stated that respectful use of language, respect for other (unknown) people and privacy settings were well overthought.

The difference between group 15-19 and group 20-24 about the importance of 'general' norms and values instead of the essence of self-interest is less reflected in the discussion about copyright and downloading from the Internet. Group 20-24 struggles just a bit more with their moral reasoning but in the end the same moral rules apply with this group as with group 15-19. The prevailing norm in both groups is to act in your own best interest. A young man from group 15-19: *"Nice game; free download. I don't think the game is worth 50 euro's. So I download it for free".* And a young man from group 20-24: "*If it's possible, and you don't get caught. I truly think: why not?"* Downloading content without paying is easy and the only reason not to do it is because of the fear of viruses. All respondents knew it's *"more or less"* not the right thing to do but nobody associated it with stealing. They often just don't think the price of the article is fair. However, when asked the question: "what do you think is a fair price for a game?" all respondents admitted they would always attempt to download it for free. Especially when the products are expensive or really important for school or work. A young man from group 15-19 stated: *"Software for schoolwork is less dishonest to download because you really need it."* Another young man (group 15-19) disclosed that it all depends on the opportunity of copying software without being caught and not because he thinks it's wrong: *"I am capable of hacking a game so that my friend can play it for free. They never find out."*

4.2 Results diaries

In addition to the focus groups, a total of 67 respondents kept a diary about their ICT use. To identify their moral threshold, in this diary the respondents were asked to score 15 ICT related situations on a continuous scale: whether they thought an activity was wrong behavior. In general, the actions: 1) *Downloading music without paying* and 2) *Downloading movies and series without paying* were considered least wrong. Subsequently considered not wrong were the actions: 3) *Writing negative comments about a famous person* and 4) *checking email during class or meeting.* These results did not differ between the two age groups. Both groups agreed on the 'least wrong' of illegally downloading and their scores were not significantly different. Considered most wrong were: 12) *posting a film of an angry teacher*, 13) *Writing a post under someone else's name.* 14) *posting: I'll have my teacher beaten up…Just joking* and 15) *After a conflict with a friend: Posting a picture of him/her in swim suit.* These results did vary between the two different age groups. On the issues that, in general, were thought most wrong the opinions between group 15-19 and group 20-24 diverged significant. Group 15-19 found these actions considerably less wrong compared to group 20-24. The average scores per age group are presented in Table 2.

Table 2: 'least wrong-wrong' scores for 8 ICT related situations between group 15-19 and group 20-24

	Least wrong (On a scale from 0 – 10)							**Wrong**
Situation	Download music without paying	Download movies and series without paying	Writing negative comments about a famous person	Checking email during meeting or class	..	Posting a film of an angry teacher	Writing a post under someone else's name	Posting: I'll have my teacher beaten up. Just Joking	After a conflict with a friend: Posting a picture of him/her in swim suit
Group 15-19	3,91	3,91	4,68	4,80		5,02	5,88	6,89	6,61
Group 20-24	3,89	4,19	4,36	4,61		7,76	7,40	7,90	8,35
Total	3,90	4,06	4,51	4,70		6,55	6,71	7,44	7,55
Average Rank	**1**	**2**	**3**	**4**		**12****	**13***	**14**	**15****

*Significant difference ($p < 0,05$), **significant difference ($p < 0,01$)

To verify possible factors from above listed results, a principal component analysis (PCA) was conducted with orthogonal rotation (varimax). After iterations, 3 items were excluded because of low cummunalities (< 0.5). The Kaiser-Meyer-Olkin verified the sampling adequacy for this analysis, KMO = .662 which is mediocre but acceptable (Field, 2009). Bartlett's test indicated (139.471, $p < .001$) that correlations between these situations were sufficient for PCA. The scree plot showed a point of inflection retaining 3 components. However, because of the low number of diaries, we only extracted 2 components and chose a factor loading of minimum 0.7. These two components in combination explained 44.2 percent of the variances and correspond with the results from Table 2. Component 1 represents the rather impersonal and hedonistic use of technology for the gain of entertainment of which the respondents found the act least wrong: *Downloading movies and series without paying (factor loading .919)* and *Downloading music without paying - (factor loading .862)*. Component 2 represents the use of technology in social related situations which the respondents in general did find wrong. This component includes the factors *After a conflict with a friend: Posting a picture of him/her in swim suit (factor loading .774), Posting: I'll have my teacher beaten up. Just joking (factor loading .705)* and *writing negative comments about a classmate on Facebook (factor loading .702)*. To conclude, the PCA revealed the same structure of variables as the Analysis of Variance and the Focus Groups.

5 CONCLUSION

The purpose of this study was to provide an exploration on how young adults incorporate ICT in their lives and how it influence cognitive moral reasoning. We introduced two research questions:

RQ1: In terms of moral reasoning, which relation exists between morality and ICT among adolescents and young adults?
RQ2: In what way does ICT influences moral reasoning among adolescents and young adults?
The focus groups and diaries clearly showed that adolescents and young adults spend a lot of time and effort to position ICT in their lives in a satisfying way. The norm that technology should not control their life is essential in this effort. However, especially group 20-24 acknowledged that this norm was often difficult to comply, with group 20-24 stating that they did not always have control over their ICT use and that technology can 'take over'. Respondents from group 20-24 were able to reason on a higher moral level, according to Kohlberg's model. They clearly provided examples out of their own lives about how ICT could provoke certain behavior which they did not like. They were better able to judge the implications of technology like certain behavior of which they thought it was important to minimalize because of the personal and societal implications. They mentioned the loss of control to ICT and its impersonality. Respondents from group 15-19 did not share the experienced loss of control. They did recognize the impersonality aspect of ICT but only thought it was relevant when it affected their inner circle of family and friends and therefore its reciprocity. Group 20-24 was better in analyzing and explaining the influence of technology on their lives and showed a higher moral reasoning in the analysis of the different ICT related situations. In this study, in general, the group 20-24 revealed reasoning on a conventional level compared to group 15-19 who foremost reasoned pre-conventional. For both groups, however, this moral reasoning was not as consistent applied as Kohlberg would predict. It depends on the given situation. For ICT-situations that entailed the minimization of personal financial loss and the rather hedonistic gain of products (like downloading illegally), the impersonal and unclear consequences for society seems to generated self-interest as the prevailing moral reasoning. The diaries clearly revealed that respondents found these actions the least wrong and most arguments that were given during the focus groups represented pre-conventional level. The diaries showed no significant difference between group 15-19 and group 20-24 in whether they thought downloading without paying was wrong behavior.
The more social and personal ICT related situations did show a significant difference between both groups. Where respondents from group 15-19 mainly use moral rules about ICT to incorporate the technology successfully in their lives and inner circle, respondents from group 20-24 extend their social rules about ICT to a wider aspect of society with higher moral reasoning. The diaries showed significant differences between group 15-19 and group 20-24 in whether they thought several social related ICT situations were morally wrong. In addition, the focus groups revealed a higher moral reasoning for the young adults. Group 20-24 predominantly reasoned in a conventional way where group 15-19 reasoned on pre-conventional level. These conclusions seem partially in line with Kohlberg's hierarchal model of moral development. However, if we make the assumption that age relate to higher moral reasoning, in this study, moral reasoning was more or less the same between both groups in ICT situations like illegally downloading, placing bad comments about a famous person and using a smartphone during class. Activities which are rather impersonal and has unclear consequences for society. Although from this cross-section study no conclusions about causality can be made, the indication that unclear consequences for society and impersonality relates to lower moral reasoning seems consistent with the idea that when the consequences of our ICT activities are more difficult to overlook it could lead to a decreasing moral. The theoretical aspect of technology mediation could be used to clarify this explanation. As Swierstra (2011) specified: technology changes the framework of action. The respondents indicated that sometimes it feels as ICT provoked certain behavior which has influence on, for example, interpersonal relationships. For group 15-19 this was foremost important if it concerns behavior, which influenced the own social circle, while for group 20-24 this was also important, if it undermined general values. In both cases, not the possibilities of technology are experienced but, ironically, a reduced freedom because of this technology. Dorrestijn (2012) explains that this freedom from technology should not be seen as a state of independence, but as a situation in which the user has control of the situation and its consequences. The focus groups and the diaries showed that this loss of control was mostly perceived when technology was capable of directly affecting personal relations. As mentioned, conform Kohlberg's model, especially group 20-24 was better able to identify this loss of control. Related to ICT, group 20-24 was, in general, more capable in analyzing how this specific technology shaped their existence and perceived freedom.

When impersonal ICT situations were discussed this perceived loss of freedom was considered less relevant by the respondents, like downloading content, only minor differences between the groups were found. In this case both groups showed predominantly consequential moral reasoning. Only the outcome of free content mattered, and the easy access and opportunity justified the action.

6 DISCUSSION AND FURTHER RESEARCH

In this study we observed, conform our theoretical outline, that when ICT is considered impersonal and does not strongly obstruct the own perception of freedom most of our respondents reasoned in a consequentialist and pre-conventional way. This is especially the case when they can use ICT for hedonistic gain. Simultaneously, when ICT mediates in personal relations and interferes more with the own perceived freedom, higher moral arguments were demonstrated. However, this was particular the case with the older age group, the young adults. An explanation can be found in the way Kohlberg describes the transition to a higher moral level. According to Kohlberg, this transition is evoked by moral conflicts, or confrontations. More specifically, moral confrontation may, in general, lead to a higher cognitive reasoning. In personal ICT situations a person might be more confronted with their behavior, resulting in progression to a higher moral level. Within an impersonal setting, users perceive no confrontation with specific individuals and consequently a consistent lower moral is shown.

To validate these conclusions further research is needed. This study is the beginning of a longitudinal research project. In this cross-sectional study we used a simplified model on perceptions of ICT related situations based on age and therefore no definite empirical conclusions about causality can be made. Does the ICT-context influence moral reasoning or does a 'pre-existing' moral reasoning influence our decisions within the ICT-context? Our research might suggest that both could be true; higher moral reasoning ensures a different view on technology but, simultaneously, different ICT-contexts influence moral reasoning in specific ways. The difficulty to identify a specific causal relations lies partially in the aspect that many factors influence morality. For example, an important element could be the influence of education. Although in our study we questioned students from different educational backgrounds, the low number of respondents produces an uneven distribution in terms of educational background. Another aspect is that the adolescents perceived their use of ICT to be lower and of less importance than young adults (table 1). It is possible that lesser use forms a different moral reasoning, but it can also be assumed that adolescents underestimate the impact of ICT on their lives. In our further research we will extend our model to create a better understanding of the variables that influence the relation between morality and ICT and its causality. In this further research the affective component of morality will also be taken into account.

Nevertheless, with the conclusions of this study the responsibility of the designers within the ICT sector can be investigated. Because of the societal responsibility of designers, the increasing influence of ICT on our lives requires them to pay extra consideration to how their technology influences human experiences, human behavior and cognitive moral. (New) technologies could be evaluated in this sense. Within the design process, it is recommended designers identify in what way an ICT-context is impersonal, interferes with a user's perceived freedom and to what extent a user may perceive a loss of control. The mediating ability of ICT is closely related to these aspects. ICT mediates personal and impersonal situations and not every user (especially the younger group) is aware of this ability (the effects that ICT have on their moral reasoning). The mediating ability of ICT is clearly not wrong in itself. However, especially in impersonal mediated situations in ICT contexts our study shows that the respondents show a lower moral reasoning. When designers are capable of pre-identifying these effects, it becomes possible to implement these findings in the design process. In personal ICT mediated situations, a designer could make this mediating ability extra clear to the concerning parties and consequently intervene with the perceived loss of control. For example, for the phone record app, this means that when the recording starts a request is sent to the other caller which he has to approve (and therefore this intervention may only work if both callers have a smartphone). No approval means no recording. This creates control and understanding to both callers in this ICT mediated situation and it also gives awareness to the mediating aspect of the technology. In impersonal situations a designer could create insight into how technology mediates the user's everyday life and perception by showing, in a simple way, which processes take place in the interaction between user and technology. This

awareness of behavioral subjectivity and, to use Kohlberg's terms, confrontation with the processes of the act and its autonomy may lead to an increased moral reasoning in impersonal situations.
In our opinion, a societal restriction of technology is never a good way to create a more desired society. However, designers should be aware of the impact that new technologies have on users and society, consider the ethical issues implied and incorporate this responsibility in their design. Designers are responsible for the wellbeing of the users of their designs and this study shows that even relatively small technology like a smartphone app can have a large impact on lives and morality.

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