



Do Ethics Matter in Persuasive Technology?

Raymond Kight and Sandra Burri Gram-Hansen^(✉)

Department of Communication and Psychology, Aalborg University,
Aalborg, Denmark
rkight17@student.aau.dk, burri@hum.aau.dk

Abstract. This paper aims to discuss how ethics has been addressed within the persuasive technology field and to explore whether ethics is generally applied in persuasive technology (PT) or simply recognized by academics as an important perspective. The paper is based on a literature review of the past 13 years of Persuasive Technology conference papers. The themes identified from the literature review are presented along with summaries of defining works within the field which have contributed to the discussion of ethics. This is followed by a discussion and reflection on the findings of the literature review. Finally, we conclude that ethics does matter but we argue that ethics has not been adequately addressed in the field of PT and that ethical considerations regarding the rights of the designers need to be researched.

Keywords: Persuasion · Rights · Ethics · Freedom of speech · Rhetoric

1 Introduction

Based on a thorough review of all papers published within the Persuasive Technology conference series, this paper aims to contribute to the further development of the field by clarifying some of the issues related to the role of ethics in persuasive systems. Persuasion is generally understood as a more ethical approach to behavior change, yet the ethical implications of persuasive technologies remain a scarcely explored subject. The particular interest in exploring the role of ethics in persuasive design is motivated by the emergence of several other approaches to digital behavior design. In continuation it inspires reflections regarding the justification of referring to ethics as a defining feature of the persuasive approach. The aim of the presented study is to explore how ethics has been addressed in relation to persuasive design and persuasive technologies, particularly with regards to whether ethics or the discussion of ethics has moved from the world of academia and into the persuasive design workplace.

Early findings within the study indicate that save for a few researchers [1–3], etc., ethics appears to be an element of persuasive design that academics and designers pay a lot of lip service to without really attacking the problem. Many papers include statements such as “ethical concerns are one of the key challenges”... [4] or “no ethical issues were found” with our... [5], yet there are no other mentions of ethics or further discussions about how such conclusions about ethics were reached. This comprises a challenge as ethics is most often referred to as a defining feature of persuasion, when related to other similar approaches to behavior design. Furthermore, the literature from

the persuasive design conferences is littered with suggestions and commentary on what principles or methods designers of persuasive design technologies should take into consideration with regards to ethics when creating their designs. Suggestions ranging from urging designers to follow Berdichevsky and Neuenschwander’s “golden rule” [6] principle that “creators of a persuasive technology should never seek to persuade anyone of something they themselves would not consent to be persuaded of” from way back in 2006 [7] to challenging designers to step up to a “critical, ethical, and active engagement with the world” [8] or urging users to consider using approaches from Value Sensitive Design (VSD) and Participatory Design (PD) to solve ethical issues in 2009 [3]. However nowhere within the persuasive technology conference literature does there appear to be a paper where a methodological or philosophical discussion on ethics take place outside of academia. The lack of publications discussing how and when ethics has been considered and applied by practitioners, gives reason to worry if ethics in persuasive technologies have become simply an academic phrase, rather than an actual concept of the field – and furthermore if the academic issues and discussions raised within the field of persuasive technologies do in fact reach the design practitioners aiming to intentionally influence the users.

A state of the art was conducted by Kristian Torning and Harri Oinas-Kukkonen and published in 2009. They investigated the research published as full papers in the conference proceedings from the first three Persuasive Technology conferences (2006–2008), in order to generate directions for future research within the field. Amongst the findings of this study it was noted that in spite of potential noble outcomes, it was stressed that ethical considerations need far more attention, both with regards to development of systems and implementation into different contexts [9]. It is with this in mind, that this paper aims to contribute to the discussion of ethics within the persuasive technology design field.

2 Methodology: Literature Review on Ethics in Persuasive Technology Design

The research presented in this paper is borne out of a semi-structured literature review on ethics in persuasive technology design and based on themes that emerged from the review. The review included the entire body of work from the persuasive design conferences from 2006–2018 (376 papers). The Persuasive Technology conference series is recognized as a well-established scientific forum dedicated to research and practice within the area of designs for behavior change. Although the notion of persuasion, and different perspectives on persuasive design are also presented at other conferences and in academic journals, the Persuasive Technology conference proceedings constitute the most coherent collection of research on the topic [10].

A systematic overview of the papers, their themes, and the theoretical and methodological perspectives, was established by applying NVivo¹ as a tool for

¹ NVivo is software that supports qualitative and mixed methods research. It is designed to assist in organizing, analyzing and finding insights in unstructured, or qualitative data.

categorization, search, and analysis. Furthermore, all papers were organized chronologically by date in an excel codebook. In total 66 papers were coded which discussed ethics with more than 1 sentence. Papers which contained a sentence or less on ethics were not included in the final review, however they are considered as they are an indicator of the issues addressed here regarding the lack of applied ethics discussed in the persuasive technology literature. The papers included in the review are listed in Appendix A.

3 Immediate Findings

The immediate findings are comprised of the themes or patterns that emerged during the open coding of the literature review. Throughout the review, 3 main themes were identified establishing that the discussion on ethics was limited to one or more of the following (Table 1):

Table 1. Themes identified during ethics in persuasive technology design literature review

Theme	Sums	Explanation
Academic input	23	Ethics mentioned and/or discussed in a manner which contributes to the understanding of ethics in persuasive technology
In passing	43	Ethics mentioned in passing with no discussion

The theme descriptions may appear rather subjective in nature and clearly some papers could inhabit more than one theme, however for the purpose of this paper, they are very important as they strongly indicate that most papers only mention ethics in passing and the only people having any kind of philosophical or methodological discussion about ethics within the persuasive design field are the academics. Although it has been argued that the examination of ethics is a “key component” in persuasive technology [1], these early observations give reason to consider if this is merely the case in academics and if ethics is even considered by practitioners.

It was also noted that there does not appear to be one single example of a researcher arguing ethical concerns for the designers of persuasive technology. It appears that our ethical concerns for designers focus only on their responsibility of outcomes. In consideration that design comprises a particular type of computer mediated communication [2], the lack of consideration for the rights of the designers indicates a challenge which has yet to be addressed.

4 Ethics – or Lack of Ethics in Persuasive Technology

On a more detailed level, it was found that there has not been a paper within the persuasive technology design conferences that has addressed ethics on a philosophical or methodological level since 2012, however in 2013 Karppinen and Oinas-Kukkonen [11] did provide a short description of where the ethical discourse stands within the

field of persuasive technology design. In the following, a brief overview is provided of the works that contributed to the discussion of ethics on a philosophical and/or a methodological level from the persuasive design conferences. The included papers distinguish themselves by being the only contributions focusing on philosophical or methodological ethics.

The vast majority of papers cite Berdichevsky and Neuenschwander [6] and/or Fogg [1] as their foundations for arguing ethical theory and application. The conducted review identified Fogg as mentioned 822 times in the 12 years of conference proceedings, however all mentions were not related to ethics. Berdichevsky and Neuenschwander are mentioned another 65 times, all of which are identified as related to ethics. As such while their contributions to the field were not published as part of the persuasive design conferences it would be remiss to ignore them considering they appear to be the foundation for ethics in persuasive technology design.

Atkinson's contribution [2] in her critical review of Fogg's work [1] suggests a higher philosophical debate on ethics while Davis' work [3] proposes methodologies for the analysis of ethics from other fields of technology design. Finally, Smids [12] doesn't discuss the philosophy behind voluntariness, his reflection is included because it offers a theory of ethics that hasn't been discussed within the persuasive technology design field before. Likewise, the reflections of Karppinen and Oinas-kukkonen [11] are included because they instantiate where ethics stands within the field right now.

4.1 Berdichevsky and Neuenschwander 1999

Berdichevsky and Neuenschwander's framework for ethics in persuasive technologies is a principle-based system with its foundation in Utilitarian ethics philosophy. It is a set of 8 principles that encompass their framework of motivation, methods, unintended outcomes, privacy, disclosure, and accuracy as areas that should be ethically considered in persuasive design. Ethics is scrutinized via the motivations and methods of the designers as the technologies are simply the "executors" of the methods developed by the designer and technology itself is devoid of intent. They stress that "why do we want to persuade" and "why this intended outcome" should be the first questions asked by designers when considering ethics and suggest that the more principles that are ignored the less ethical the design will be [6].

4.2 Fogg 2003

When initially introducing Persuasive Technologies, Fogg emphasized that ethics should potentially be considered a defining feature of persuasion and consequently also of persuasive technologies, Fogg states that a key component of captology is examining ethical issues and states that ethical issues in persuasive technology can be found in the intentions, methods, and intended outcomes. He cites coercion and deception as always unethical, Operant conditioning and surveillance as areas that could be either ethical or unethical (Red Flags) as well as the targeting of vulnerable groups such as children or the mentally challenged. Furthermore, Fogg cites his former students (Berdichevsky and Neuenschwander) in stating that ethics can be "assessed" by investigating intended and unintended outcomes of persuasive technology systems.

Fogg finishes his foray into the ethics of persuasive technology by offering a 7-step stakeholder analysis framework as a methodology for the analysis of ethics in persuasive technology systems [1].

4.3 Atkinson 2006

Atkinson's contribution to ethics in persuasive technology design revolves around her critical review of Fogg's book from 2003 [1] where she posits that a fundamental ethic of persuasion design or captology is that the designer's intent be exposed at the beginning of user engagement with a program and that Fogg's ethical reminders are "not soundly, philosophically and theoretically, incorporated into his discourse". She goes on to state that what is missing is "a rigidly defined context of what constitutes an ethical application of persuasion principles".

Speaking on the differences between macrosuasion and microsuation the author nominates a new term, 'compusuasion' as the ethical term that would describe the unintended, unforeseen, or induced behavioral change phenomena that go along with persuasive technology, thus accepting the responsibility.

On the topic of altering social behavior she states that there are ethical issues and in describing methods for reduction of the unintended and unforeseen consequences of social planning the author also notes that it is possible to gauge the impact "by current established philosophical, ethical, moral and human rights principles". The author defines ethical principles as "right and responsible action" and suggests that a study of moral and ethical principles as well as human rights can take us beyond subjective individualism. She asks is computer mediated persuasion ethical and feels that anything that obstructs an individual's right to freedom (choice) can be considered unethical. However, she goes on to say that it could be argued that persuasion that operates without the user being aware of the programmers' intent could be ethical "if the change in attitude, behavior or belief is motivated from the perspective of wisdom, benevolence and genuine care for others" but then asks if it wouldn't be better if the benevolence was used through advocacy or education where intent is known from the outset. She concludes that devising "appropriate guiding principles" is the true purpose of ethical and philosophical enquiry and that ethical safeguards are required for captology which could be fulfilled if the intent of the persuasion is exposed from the outset of engagement with a program. Finally, Atkinson makes clear the distinction between education and persuasion relating to Fogg's work where she states that "Persuasion is associated with rhetoric [2].

4.4 Davis 2009

Davis starts by giving a short overview of the work done by Berdichevsky and Neuenschwander [6], and Fogg [1] and then argues that these principles or guidelines are not enough and that persuasive designers should look to the human computer interaction community for methods that "help designers uncover and address ethical issues" as she concludes that ethical issues faced by persuasive systems are not unique to the field. Furthermore, Davis states that there are "lessons to be learned from how philosophers and designers have analyzed and accounted for such ethical issues in information systems beyond persuasive technology".

Davis suggests that methods are needed to structure the efforts of designers to enact ethical principles since designers cannot possibly predict all outcomes, cannot guarantee privacy or how privacy is even defined nor, can they guarantee the persuaders' intent. She argues that methods will help designers know what to do when principles are "inadequate" and to "structure their efforts to enact ethical principles". She cites Atkinson [2] in support of methods for ethical design via "public consultation", "social learning", and "multi-stakeholder negotiation" as a way of reducing "unintended and unforeseen" consequences as well as persona's and scenarios. She argues that work in persuasive technology has recently taken a user centered approach but from a persuasive effectiveness approach rather than an ethical one and since the persuasive technology ethical issues are not unique one can draw from the information technology field which does in fact engage with ethics. According to Davis, Value Sensitive Design (VSD) comes from the perspective of "human values" such as "privacy", "autonomy", and "moral beliefs of the technology" rather than the usability and that Participatory Design allows the users to be part of the design process and "is very much concerned with social learning and multi-stakeholder negotiation". She goes on... "VSD emphasizes values of moral import—values such as fairness, autonomy, privacy, and human welfare—and thus speaks to ethical concerns in technology design" and thinks that VSD could contribute to the design of ethical persuasive computing in many meaningful ways. She goes on to basically say that that the VSD method is better than the stakeholder's analysis at being able to uncover the ethical implications of a system in that it is more concerned with the "welfare of the indirect stakeholders, provides additional guidance in identifying values at stake, and reveals situations in which designers must make tradeoffs between conflicting value concerns."

Davis concludes that she believes that VSD and PD offer frameworks that "support the designer in engaging stakeholders and uncovering and addressing ethical issues" and that she urges other designers and researchers to consider VSD and PD approaches to solving ethical problems [3].

4.5 Smids 2012

Smids states that voluntariness is the most important ethical question regarding persuasive technology and then he goes on to cite Oinas-Kukkonen 2010, that in persuasive technology research "ethical considerations have been largely unaddressed". He then cites Berdichevsky and Neuenschwander [6] and Fogg [1] in stating that "the intentions of the persuaders, behavioral and attitudinal aims of the persuasive technologies and methods of persuasion" should be considered. Speaking of persuasive profiling the author feels that there is a need for more "ethical reflection" than can be done in his paper. Later, on the topic of subliminal feedback the author makes the claim that "ethical design cannot change subliminal feedback into persuasion" and while there might be situations where subliminal feedback is ethical it should not be called persuasion. Smids goes on to reassert his claim "that the most important ethical question regarding persuasive technologies is the voluntariness of changes they bring about" and recommends that an assessment of voluntariness is performed by all persuasive technology designers on the persuasive technologies they create.

4.6 Karppinen and Oinas-Kukkonen 2013

Karppinen and Oinas-Kukkonen state that when developing persuasive systems there are oftentimes ethical questions that arise and that there is no easy way to address ethical issues in all cases. They state that it is the purpose of their paper to analyze and define possible ways of addressing ethical questions in persuasive design and suggest that there are in fact 3 possible approaches to doing this which are by “guidelines, stakeholders’ analysis, and involving users”. The authors cite Davis [3], stating that it is something of an ethical minefield trying to change users’ behaviors and attitudes through these types of systems. They cite Berdichevsky/Neuenschwander and Fogg [1, 6] as those responsible for the first academic work on ethics in persuasive technology design and then go on to give honorable mentions to a host of other academics for their “growing” interest in persuasive ethics but while claiming that these academics have contributed “convincing pieces of work” they state that they all differ in their suggestions for resolving ethical issues.

- Berdichevsky/Neuenschwander: Eight moral principles for designers to follow [6]
- Davis and Yetim: Designers and stakeholders should find consensus on ethical issues [3, 13]
- Smids: Voluntariness [12]
- Spahn: validity claims of speech acts [14]
- Fogg: Stakeholder analysis for examining ethics in complicated situations [1]
- Gram-Hansen: ethics as an intuitive result of human nature, rather than reason-based rule [15]

The authors suggest that designers can learn from these studies but argue that how to best systematically approach ethics is left open. Later the authors argue that it is possible for indirect persuasion to be ethical by stating that being unaware does not necessarily make persuasive technology manipulative. The authors continue showing contradictions and paradoxes between the differing arguments of what is ethical in persuasive design for a while before finally claiming “that all persuasive acts during the change process do not need to be voluntary or fully transparent”. The authors then argue that a system isn’t automatically on “solid ethical ground” just because of its transparency or voluntariness based on their belief that behavior change requires commitment and compliance from the user. The paper continues with the outline for their ethical framework which include the guidelines and analysis concepts from various academics before finally stating that guideline-based approaches are subjective. A designer and user may have two differing views on what is ethical. They go on say that the stakeholder analysis approach is used in business ethics and that values vary from one situation to the other and there are no easy answers with this approach. Furthermore, they make clear that a stakeholder analysis does not mean “that suggested ethical guidelines have no meaning”. They then argue that there are too FEW published studies on ethical issues and that they believe as new ethical approaches are published that they will be able to be mapped to the authors presented framework. In Chap. 5 the authors continue by stating they presented a framework from which a designer can choose a suitable ethical approach to their designs and then go on to state that that stakeholder’s analysis only works when the design is targeted at a specific and

predefined group and argue that user consensus does not automatically make a system ethical. They then argue while “moral values should be emphasized” it should not be at the neglect of other values. They go on to state that ethical considerations should be made along the way with any design as they all have a target group in mind. They argue that guidelines can be thought of as checklists and that there are no experimental approaches that have the “ability to solve all questions of morality and ethics”. They go on with stating that the framework of 3 categories (guideline-based, stakeholder analysis, and user involvement) is “unique to persuasive design” and rather than coming from the philosophical traditions it is built from the design perspective and that persuasive design still requires ethical design study [11].

5 Reflection – Discussion

Although acknowledging the quality of the work already published, there are several issues with the way ethics has been addressed over the last 12 years. Firstly, there have been no studies investigating how designers in the workplace address ethics. The identified contributions constitute academic theories and methodologies and a hope that they transition to the workplace. We have yet to explore if the stakeholder analysis proposed by Fogg [1] works in practice or not, and if Berdichevsky and Neuenchwander principles are followed. We don’t know if the designers have any input where ethics are concerned, or if the role and standards of ethics is merely determined by management. Secondly, ethics has not been a distinct topic of discussion within the persuasive technology conference series since 2013. Based on the conducted review, it is as if the field has gotten complacent with regards to ethics in persuasive technology design. As to why this is, one can only speculate, but it could be that the field hasn’t tried hard enough to move out of the utilitarian approach to ethics. As Atkinson stated in 2006, devising “appropriate guiding principles” is the true purpose of ethical and philosophical enquiry [2]. Maybe it is time to look at other theories of ethics in order to move towards a practical application of the research conducted so far. Davis [3] proposed user involvement methodologies based in value theory from the fields of Value Sensitive Design and Participatory Design and Gram-Hansen [15] suggested that ethical reflections might be considered as intuitive and personal. Consequently we should create technologies that we as designers find ethically acceptable e.g. based in Aristotle’s virtue principles, particularly in the areas of practical wisdom (phronesis) and intuitive understanding or intellect (nous) [16]. In continuation, we have voluntariness as proposed by Smids [12] which has its foundations in Contractarianism, yet it would appear no one has decided to address these theories. As far as the literature review goes there does not appear to be an agreed upon approach to ethics within the field. It may be that the field is happy with the way ethics has been addressed as it is. However, it could also be that no one really cares about ethics?

6 Conclusion

Do ethics matter in persuasive technology? We would argue that it does.

Even though social media might not be designed as persuasive in intent they are in fact used for persuasive purposes as are all technologies [17]. It is with this in mind that we use Facebook as an example of how society at large does care about ethics even if we as designers have not given it sufficient attention. As has been seen in recent news accounts Facebook was brought before the US Senate as well as international councils to answer questions about their handling of user data [18]. Since then Facebook has been in the news and under scrutiny from the American judiciary for a range of ethical violations (e.g. violations of child privacy laws [19], violations of election laws [20], and censorship [21]). These ethical breaches affect everyone, designers and users alike and illustrate what happens when ethics are not considered. They also illustrate what happens when consequences are not considered. Furthermore, they exemplify the change in how technologies are applied over the past decade and the user mentality. Technologies are now far from simple tools that facilitate users during their daily tasks, they have become a pervasive and personal force in the lives of many. Moreover, users have a greater understanding of technologies and are increasingly becoming able to consider technologies both critically and constructively. Therefore, it is most important to find out what ethical conversations practitioners are having in the workplace and outside of academics. Particularly as it would appear that ethical considerations is becoming a specification considered by users when they decide which technologies to apply and which to disregard.

Recognizing the new tendencies in both the role of technologies and of the users, gives reason to also consider a second concern. Future research within the persuasive technology field should potentially strive to ensure that ethics is applicable not only for academic researchers, but also the design practitioners. With the rapid development in persuasive technologies, research should look further into the rights of designers rather than focusing simply the user. All ethical discussions thus far focus on securing the rights of the users and placing responsibility on the designers. If as Atkinson claims that freedom is a fundamental inalienable right [2] why is it only afforded to the users and not the designers? If design as suggested is a particular type of communication, shouldn't there be an ethical discussion on a designers right to free speech which would include the right to persuade?

Appendix A

See Tables 2 and 3.

Table 2. Reviewed papers providing academic contribution to ethics in persuasive technology

Authors (Date)	Contribution
IJsselsteijn et al. (2006)	Ethical guidelines in the field will encourage “morally responsible” design of persuasive technology
Khaled et al. (2006)	Ethics is a challenge of designing persuasive technologies for well being
Lucero et al. (2006)	Improving the motivation for children to read and write is ethical using captology
Atkinson (2006)	Designers intent is exposed at the beginning of user engagement with persuasive technologies
Jespersen et al. (2007)	From a historical and cultural context, a discussion on the ethical perspectives of surveillance and persuasive technology
Daniel Fallman (2007)	Ethics is one of the many challenges facing the HCI field
K. Torning and H. Oinas-Kukkonen (2009)	Illustrates the shortcomings of ethics within the persuasive design field
Davis (2009)	Discussion of the value of using methodologies from Value Sensitive Design and Participatory Design to address ethics in Persuasive Design
A. M. Ranfelt et al. (2009)	Discussion on ethics as it applies to persuasive design within the development of Autism Spectrum Disorder Technology
J. Davis (2010)	Autonomy and consent are just as important as ethical implications of the designs themselves
M. Kaptein and D. Eckles (2010)	Discussion of the ethical considerations with regards to adaptive persuasive technologies
J. Z. Daae and C. Boks (2011)	Discussion of the ethical implications of coercion from the product design perspective
S. B. Gram-Hansen et al. (2012)	The required action in the notion of Kairos is ethical
Jiles Smids (2012)	Voluntariness as the biggest ethical question facing persuasive technology design
P. Karppinen and H. Oinas-Kukkonen (2013)	A presentation of a design framework for ethics based on guidelines, stakeholder analysis, and user involvement
O. Barral et al. (2014)	Discussion of voluntariness as the ethical standard in covert persuasion systems
F. Basten et al. (2015)	Discussion of the ethicality of subliminal triggers
J. Timmer et al. (2015)	Discussion on ethics with integration of persuasive technologies in “smart environments”

(continued)

Table 2. (continued)

Authors (Date)	Contribution
S. B. Gram-Hansen (2016)	Discussion of constructive ethics as a focus during each step of the presented Explore, Design, Implement, Evaluate (EDIE) method
A. Krischkowsky et al. (2016)	Discussion on ethics in the framework of persuasive design as it relates to appropriation of the technology
A. Stibe and B. Cugelman (2016)	Discussions on dark patterns, unethical applications, backfiring, etc.
E. Twersky and J. Davis (2017)	The benefits of using methods from Value Sensitive Design to resolve ethical issues most specifically a look at human values with regards to language
S. B. Gram-Hansen et al. (2018)	Discusses persuasive technology design from the perspective of classical rhetoric and less ethical approaches to influencing the receiver (peithenanke)

Table 3. Reviewed papers mentioning ethics in passing

1. Gasser et al. (2006)	23. Lockton et al. (2009)
2. B. J. Fogg (2006)	24. Jaap Ham and Cees Midden (2010)
3. Redström (2006)	25. Harri Oinas-Kukkonen (2010)
4. G. Cornelissen et al. (2006)	26. Yamabe et al. (2010)
5. Redström et al. (2006)	27. Martha G. Russell (2011)
6. A. Meijnders et al. (2006)	28. Ruijten et al. (2011)
7. Goessens et al. (2006)	29. Appel et al. (2011)
8. van Bronswijk (2006)	30. Morten Aagaard and Peter Øhrstrøm (2012)
9. P. Barr et al. (2006)	31. Burleson et al. (2012)
10. Zhu (2007)	32. Muller et al. (2012)
11. R. Khaled et al. (2007)	33. Tim Marsh and Brigid Costello (2013)
12. Teddy McCalley and Alain Mertens (2007)	34. J. Masthoff et al. (2013)
13. Gable (2007)	35. A. Schmeil and L. Suzanne Suggs (2014)
14. O'Brian et al. (2007)	36. S. Langrial et al. (2014)
15. Duane Varan and Steve Bellman (2007)	37. K. Torning (2014)
16. Cugelman et al. (2008)	38. S. Burri Gram-Hansen and T. Ryberg (2015)
17. Harri Oinas-Kukkonen and Marja Harjumaa (2008)	39. M. M. Mustaqim and T. Nyström (2015)
18. Brenda Laurel (2009)	40. A. Algashami et al. (2017)
19. Nikki Serapio and B. J. Fogg (2009)	41. A. Caraban et al. (2017)
20. Ham et al. (2009)	42. Sandra Burri Gram-Hansen (2018)
21. Lasse Burri Gram-Hansen (2009)	43. K. Rogers and M. Weber (2018)
22. B. J. Fogg (2009)	

References

1. Fogg, B.J.: *Persuasive Technology: Using Computers to Change What We Think and Do*. Morgan Kaufmann Publishers, San Francisco (2003)
2. Atkinson, B.M.C.: Captology: a critical review. In: IJsselsteijn, W.A., de Kort, Y.A.W., Midden, C., Eggen, B., van den Hoven, E. (eds.) *PERSUASIVE 2006*. LNCS, vol. 3962, pp. 171–182. Springer, Heidelberg (2006). https://doi.org/10.1007/11755494_25
3. Davis, J.: Design methods for ethical persuasive computing. In: *Persuasive 2009*, 4th International Conference on Persuasive Technology, Paper 6, New York, NY, USA. ACM (2009)
4. IJsselsteijn, W., de Kort, Y., Midden, C., Eggen, B., van den Hoven, E.: Persuasive technology for human well-being: setting the scene. In: IJsselsteijn, W.A., de Kort, Y.A.W., Midden, C., Eggen, B., van den Hoven, E. (eds.) *PERSUASIVE 2006*. LNCS, vol. 3962, pp. 1–5. Springer, Heidelberg (2006). https://doi.org/10.1007/11755494_1
5. Gasser, R., Brodbeck, D., Degen, M., Luthiger, J., Wyss, R., Reichlin, S.: Persuasiveness of a mobile lifestyle coaching application using social facilitation. In: IJsselsteijn, W.A., de Kort, Y.A.W., Midden, C., Eggen, B., van den Hoven, E. (eds.) *PERSUASIVE 2006*. LNCS, vol. 3962, pp. 27–38. Springer, Heidelberg (2006). https://doi.org/10.1007/11755494_5
6. Berdichevsky, D., Neuenschwander, E.: Toward an ethics of persuasive technology. *Commun. ACM* **42**, 51–58 (1999)
7. Khaled, R., Barr, P., Noble, J., Fischer, R., Biddle, R.: Our place or mine? Exploration into collectivism-focused persuasive technology design. In: IJsselsteijn, W.A., de Kort, Y.A.W., Midden, C., Eggen, B., van den Hoven, E. (eds.) *PERSUASIVE 2006*. LNCS, vol. 3962, pp. 72–83. Springer, Heidelberg (2006). https://doi.org/10.1007/11755494_11
8. Laurel, B.: Meeting people where they are. In: *Persuasive 2009*, 4th International Conference on Persuasive Technology, New York, NY, USA, pp. 1–2. ACM (2009)
9. Torning, K., Oinas-kukkonen, H.: Persuasive system design : state of the art and future directions. In: *Persuasive 2009*, 4th International Conference on Persuasive Technology, Cordura Hall, New York, NY, USA. ACM (2009)
10. Gram-hansen, S.B.: *Persuasive designs for learning - learning in persuasive design: exploring the potential of persuasive designs in complex environments*, p. 181. Aalborg Universitetsforlag (2016)
11. Karppinen, P., Oinas-Kukkonen, H.: Three approaches to ethical considerations in the design of behavior change support systems. In: Berkovsky, S., Freyne, J. (eds.) *PERSUASIVE 2013*. LNCS, vol. 7822, pp. 87–98. Springer, Heidelberg (2013). https://doi.org/10.1007/978-3-642-37157-8_12
12. Smids, J.: The voluntariness of persuasive technology. In: Bang, M., Ragnemalm, E.L. (eds.) *PERSUASIVE 2012*. LNCS, vol. 7284, pp. 123–132. Springer, Heidelberg (2012). https://doi.org/10.1007/978-3-642-31037-9_11
13. Yetim, F.: A set of critical heuristics for value sensitive designers and users of persuasive systems. In: *ECIS 2011 Proceedings*, Helsinki (2011)
14. Spahn, A.: And lead us (not) into persuasion...? Persuasive technology and the ethics of communication. *Sci. Eng. Ethics* **18**, 1–18 (2011)
15. Gram-Hansen, S.B.: Towards an approach to ethics and HCI development based on Løgstrup's ideas. In: Gross, T., et al. (eds.) *INTERACT 2009*. LNCS, vol. 5726, pp. 200–203. Springer, Heidelberg (2009). https://doi.org/10.1007/978-3-642-03655-2_24
16. Kraut, R.: Aristotle's Ethics. *The Stanford Encyclopedia of Philosophy* (2018)

17. Redström, J.: Persuasive design: fringes and foundations. In: IJsselsteijn, W.A., de Kort, Y.A.W., Midden, C., Eggen, B., van den Hoven, E. (eds.) PERSUASIVE 2006. LNCS, vol. 3962, pp. 112–122. Springer, Heidelberg (2006). https://doi.org/10.1007/11755494_17
18. Yurieff, K.: Your Facebook data scandal questions answered. CNN Business (2018)
19. n/a. Facebook’s Messenger Kids app accused of violating children’s privacy law. Business Standard (2018)
20. Associated Press: Facebook is accused of violating election law in Seattle. The Telegraph (2018)
21. Tynan, D.: Facebook accused of censorship after hundreds of US political pages purged. The Guardian (2018)