Game Mechanisms for Training Moral Sensitivity: A Research Design

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ABSTRACT
The competence of moral sensitivity is increasingly regarded as key for the morality of people's social and professional behavior. However, specialized training strategies have yet to be developed. Training moral sensitivity through video games seems to be a particularly promising approach. This paper presents a research design for a strategic evaluation of numerous game mechanisms concerning their ability to support the development of moral sensitivity. In the first step, the competence of moral sensitivity is broken down into more concrete sub-competences and learning outcomes, which shall be achieved. In the second step, a complementary framework for the strategic selection and implementation of suitable game mechanisms shall be designed. The present paper exemplarily introduces 15 training strategies, which effectively support the development of attitudes and values. Such validated strategies can aid the selection and design of relevant game mechanisms. Based on this framework, game mechanisms can be evaluated against their specific relevance for particular learning outcomes, and their general ability to realize relevant training strategies. Two game mechanisms are exemplarily evaluated in terms of their ability to foster the attitude of universalism, and their general ability to be used for the achievement of attitudinal learning outcomes. The overall framework shall enable a systematic evaluation of game mechanisms for the promotion of cognitive, attitudinal, and behavioral learning outcomes linked to moral sensitivity. The framework will be transferable to the game-based training of other competences, though.

Keywords
Game-based learning, ethical awareness, moral sensitivity, serious moral game, attitudinal learning outcomes, values education

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1. INTRODUCTION

The purpose of this paper is to introduce the design of an evaluative framework, which can support the strategic selection and implementation of suitable game mechanisms for the training of moral sensitivity. We regard *moral sensitivity* as the competence to recognize the ethical dimensions of a particular problem, and afford them appropriate importance for behavior and decision-making (Section 2). Our effort is part of a three-year project funded by the Swiss National Science Foundation, which aims at designing and testing a custom-made Serious Moral Game for the training of moral sensitivity.

Supporting the development of moral sensitivity through video games seems promising for various reasons: First, we expect that a well-designed video game would be a particularly motivating and engaging learning experience, thereby promising deeper and more effective learning (Ezeryel et al. 2014). The meta-analytical findings of Vogel et al. (2006) show that, under circumstances of self-control, game-based learning is viewed as more motivating than traditional teaching methods. In a more recent meta-analysis, Wouters et al. (2013) come to similar results: However, they highlight that the motivation to play serious games may be deteriorated significantly, if the games are imposed on players by instructors, and when players lack real autonomy in playing. Secondly, we assume that such video games may actually be more suitable than many other learning pathways for the acquisition of ethical competences like moral sensitivity, because they allow the experience of one's actions' outcomes in a simulated context, where mistakes and conscious wrongdoing don't have negative repercussions for individuals or their environment. Finally, the latest insights into learning indicate that learning is most effective when it is active, experiential, situated, problem-based and provides immediate feedback (Boyle et al. 2011) – features that can be realized more effectively in video games compared to other learning media. The meta-analysis of DeSmet et al. (2015) supports this notion, indicating that serious games are effective for learning, particularly when they draw upon game-based learning theories.

1.1. Challenge

The featured meta-studies on game-based learning reflect to which extent particular features of games mediate the overall learning achievements – however, they are not necessarily capable of assessing, *which* game mechanisms are actually fit for *which* purpose, i.e. the achievement of the *relevant* learning outcomes (LOs). Concerning the functioning of particular game mechanisms, there are many evaluations of existing video games available. However, video games usually combine several game mechanisms and embed them in a complex gaming environment, which may bear such components as a narrative (storyline), visual and acoustic features etc. (Christen et al. 2013). Therefore, it is difficult to find research on the functioning of single, isolated game mechanisms. In addition, the existing studies don't usually compare different game mechanisms for the achievement of particular LOs – instead, most comparative studies contrast game-based learning with non-game-based learning (e.g. Yang 2012).

Secondly, the existing studies rarely consider the achievement of the exact – or even related – learning outcomes, which we are interested in (those that promote moral sensitivity). Evaluating the potential of video games for the purpose of moral education is a rather recent phenomenon, although several suggestions exist on how to classify games with respect to their use in ethics education (e.g., the Ethics Practice and Implementation Categorization (EPIC) Framework; Schrier 2015). To our knowledge, the development of moral sensitivity hasn't been a subject of empirical game research so far. In fact, there are only very few empirical studies that investigate the training of moral sensitivity in general (Antes et al. 2009, Baykara et al. 2015, Waples et al. 2009).

1.2. Research Approach

Considering this challenge, we believe that a framework for the systematic evaluation of game mechanisms will be helpful. Our goal is to develop an evaluative framework, which we can use in identifying suitable game mechanisms for the training of moral sensitivity, and in deciding about their concrete design, combination and implementation. Due to the nature of both games and training as complex, interactive processes, which are impacted by many factors, we would only expect to draw knowledge in terms of strategic recommendations from working with such a framework; these recommendations should be empirically and theoretically informed, but cannot represent knowledge in terms of validated cause-effect relationships.[1]

From our perspective, the evaluative framework needs to be two-faceted:

1. It should utilize concrete, measurable learning outcomes (LOs) as reference points for the identification of *suitable* game mechanisms. There should be good, theory-based arguments that particular game mechanisms can possibly contribute to the achievement of (at least) one of the LOs, which we consider important for the development of *moral sensitivity.*
2. It should offer the means for an assessment, whether the relevant game mechanisms are promising from both an educative and a motivational perspective. The educative test concerns the potential of a particular game mechanism to realize generic *training strategies*, which have proven to be effective. The motivational assessment concerns the suitability of a particular game mechanism for engaging the relevant target group in immersive play. I.e. the motivational test concerns the ability of a game mechanisms to correspond with possible motives of players.

While the first aspect of the evaluative framework would test, whether a particular game mechanism is relevant for our purposes at all, the second line of evaluation would aim at deriving recommendations for the concrete construction of game mechanisms and their possible combination. We need to consider the option that single game mechanisms could be suitable for the achievement of several relevant LOs. Similarly, we must assume that a combination of several game mechanisms could be stronger (and more enjoyable) than relying on only one game mechanism.

With this in mind, we foresee four major steps in terms of developing our evaluative framework and using it for purposes of game design. The first foundation of our framework must be a firm understanding of the desired LOs that shall be achieved through the learning and teaching activities. Hence, the first step of our investigation will focus on the operationalization of moral sensitivity in terms of LOs (Section 2). In this conceptual paper, we will lay out the scope of possible *types of learning outcomes*, and present a concept for the formulation of measurable LOs, along with an example.

The second foundation of our evaluative framework consists in validated theories concerning the achievement of relevant LOs, or at least learning outcomes of the same type, as well as validated motivational theory. This step of our investigation concerns the identification of relevant evaluation criteria. Section 3 will exemplarily present a checklist, which summarizes evidence on the development of values and attitudes, a

[1] We are interested in validating the effectiveness of particular game mechanisms for the training of moral sensitivity. Relevant considerations are beyond the scope of this paper, though.

particularly important type of learning outcomes underlying moral sensitivity. Future studies will also consider other types of learning outcomes, i.e. competences, skills and knowledge, the examination of which is beyond the scope of this research design.

Once the evaluative framework is in place, it can be used for the assessment of game mechanisms that may potentially serve the training of moral sensitivity, and to derive recommendations on their implementation. In Section 4 of this research design, we present a selection of exemplary mechanisms, which have already been realized in video games, and demonstrate how we would utilize the evaluative framework. In Section 5, we will discuss more generally, how the outcomes of this study can be used for the construction of a Serious Moral Game, i.e. a video game that should allow to measure and improve moral competences (Christen et al. 2013).

2. OPERATIONALIZATION OF MORAL SENSITIVITY

We regard Moral Sensitivity (MS) as the competence to recognize the various ethical dimensions of a particular problem, and afford them am appropriate importance for behavior and decision-making (Tanner & Christen 2013, Jordan 2009). As a central dimension of moral decision-making proposed by James Rest (1986), MS has received growing attention in the past years. Moral blindness, the absence of MS, is increasingly recognized as a driving force of unethical behaviors in diverse contexts, e.g. business and medicine (Clarkeburn 2002, Bazerman & Tenbrunsel 2011). Numerous studies have helped to conceptualize and validate the concept empirically and theoretically (e.g. Bazerman & Tenbrunsel 2011, Blum 1991, Jordan 2009, Moberg & Seabright 2000, Pedersen 2009, Reynolds 2008, Reynolds & Miller 2015, Weaver et al. 2008).

In this section we discuss how MS can be operationalized in terms of ***learning outcomes (LOs)*** for purposes of learning, training and assessment. Following the definition of Adam (2004), which has been adopted by the European Commission, e.g. for the Bologna Process and the European Qualifications Framework for Lifelong Learning (EQF 2008), we understand LOs as written statements of what the successful learner is expected to be able to do at the end of a learning process (ECTS 2015). Measurable LO descriptions aren't only necessary for the evaluation of learning (Bergsmann et al. 2015), but also offer invaluable guidance in the selection of appropriate methods of teaching, learning and assessment. Before we describe the approach, by which we will define measurable LOs for our evaluative framework, we will present the scope of relevant *types of learning outcomes*, which we envision for the training of MS. We will do so, by presenting some exemplary hypotheses about what may be relevant learning objectives for the development of MS. A typology of learning outcomes is particularly important for our efforts, because the generic *learning strategies*, which shall be part of our framework (see Section 3), will usually relate to the development of particular types of learning outcomes, e.g. knowledge, or skills (Kraiger et al. 1993).

Tanner & Christen (2013) integrate MS as a competence in their theory of Moral Intelligence, next to the competences of *Moral Commitment*, *Moral Problem-Solving*, and *Moral Resoluteness*. ***Competences*** form the most sophisticated types of LOs, since they relate to the ability to fulfil complex, non-standardizable challenges, which require the activation of diverse psychosocial resources (including skills, attitudes and knowledge) through a reflective process in a particular context (OECD 2003, Katsarov et al. 2016, p. 51). As our definition of MS shows, it is appropriate to be considered a competence, since MS cannot solely rely on automated skills or immediate attitudes, but will generally require a somewhat critical reflection of the concrete situation, even when a person can heavily draw on refined mental schemata.

For the sake of elaborating how MS may be best achieved, we need to operationalize it in terms of more concrete LOs. Thus, we will split up the competence of moral sensitivity into less complex, and more readily measurable sub-competences, as well as LOs in terms of psychosocial resources (skills, attitudes and knowledge), which we view as particularly relevant for the realization of MS.

2.1. Sub-Competences

In our understanding, MS can be broken down into three sub-competences. Together, they compose the competence of Moral Sensitivity. They need to be actualized jointly, in order for a person to act in a morally sensitive way:

- ***Noticing:*** A person's ability to take notice of warning signals and situational cues, which point to the possibility of moral misconduct in a particular situation. For example, does a manager notice the concern of an employee via her verbal and non-verbal communication?
- ***Anticipating:*** A person's ability to anticipate the potential risks of particular situations and behavioral options for different stakeholders. For example, can a manager imagine, how confidential customer information could be abused?
- ***Associating:*** A person's ability to assess the relevance of moral values for the evaluation of a particular situation or behavioral option. For example, to what extent does a manager consider the values of equal opportunity and fairness when selecting an employee for promotion?

2.2. Psychosocial Resources

Furthermore, we assume that other types of psychosocial resources are important. As several researchers argue (e.g. Moberg & Seabright 2000), *empathy* is an important resource for MS.[2] We share this perspective to some extent: Empathy is probably an important socio-cognitive pathway for *Noticing*. It makes sense that a person who (cognitively and affectively) understands, how another person is (or might be) affected by a particular development, will more easily notice diverse moral implications of the situation. Therefore, empathy can be considered a ***skill***, which will promote MS. We view fully developed skills as ***scripts*** (Abelson 1981), through which we can unfold relatively complex processes automatically, e.g. 10-finger typing or the recognition of facially expressed emotions (Kraiger et al. 1993). When particular skills/scripts aren't fully developed, actions necessitate more of a conscious effort, which is more time-consuming and strenuous (Kahnemann 2012).

The assumption that semi-automatic processes like empathy support MS (in addition to conscious thinking) corresponds with a growing body of empirical evidence (e.g. Haidt 2001, Lapsley & Hill 2008, Reynolds 2008). However, as many critics point out, empathy is often distorted: People tend to be empathic for the people close to themselves, and tend to only consider the perspectives (and moral standards) of the groups, to which they want to belong (Opotow 1995, Hürter el al. 2016). Moral blindness often occurs due to absorption with one's in-group's needs, interests and perspectives (Bazerman & Tensbrunsel 2011). Therefore, empathy needs to be moderated and focused by a general concern for a larger number of different stakeholders. Hence, we consider the ethical

[2] There is already some evidence that empathy is an important resource for moral decision-making and actual moral behavior (e.g. Pohling et al. 2015).

value of *universalism*, which describes the appreciation and the concern for the welfare of all people and nature (Schwartz 1994), as another important resource for MS. ***Ethical values***, a particular type of ***attitudes***, play a central role for moral sensitivity. Ethical values such as, e.g. autonomy, responsibility, care, or fairness, represent the main reference framework for MS, or more concretely, the sub-competence of *Associating*. Ultimately, if a person had, for example, a limited understanding of fairness (cognitively), and lacked concern for fairness (motivationally), the recognition of this ethical dimension in a particular situation would become impossible. Even when a person was capable of *Noticing* and *Anticipating*, MS would fail without one being capable of *Associating*. In the Moral Intelligence framework, Tanner and Christen (2013) consequently foresee a *Moral Compass*, which is viewed as an important requirement for moral sensitivity, as well as other moral competences.

Attitudes, and particularly (ethical) values, are often avoided as goals for learning, e.g. because they are viewed as being subjective, i.e. lacking the objectivity, which is associated with competences or knowledge. This notion is probably rooted in the scientific paradigm of *logical positivism* (Ayer 1936), which posits that propositions that cannot be tested by empirical observation and experiment, cannot be true, and therefore cannot represent knowledge (Lovat et al. 2011). However, even the facts and theories of empirical sciences are value-laden and necessarily subjective to some extent, as they have been constructed by human minds in search of meaning (Ferré 1982). Even the skills and knowledge, which positivists uphold to be real knowledge, e.g. mathematics, or an understanding of evolution, can only be seen as valuable for society, and as sensible contents of education, in view of human motivations (e.g. to build bridges or save others from harm). Attitudes and values have proven to be relatively stable tendencies of people to evaluate a particular phenomenon positively or negatively, leading to particular responses in terms of emotions, perceptions and actions (Martens 1998). However, even if most ethical values seem to be grounded biologically (Haidt 2012), values as complex psychosocial constructs are socialized through groups and organizations, and internalized by individuals. Hence, they can be considered part of social reality, in terms of the (moral) expectations, which people hold against themselves and others (Schimank 2007). From our perspective, the norms, ethical standards and values of a particular community can be viewed as legitimate goals for learning – under the condition that they have been agreed upon through legitimate institutions and procedures in a domination-free discourse (Habermas 2004). Since ethical values, as a particular type of attitudes, need to be internalized and support the evaluation of particular phenomena both cognitively and emotionally, for them to be of behavioral relevance, they ought to be conceived as a distinct *type of learning outcome* (see Section 3).

Finally, MS must be considered to be context-sensitive to some extent. Particularly the sub-competence *Anticipating* relates to the awareness (and understanding) of plausible cause-effect relationships. A teacher, who understands which impact the use of punishment may have on children's learning, can't necessarily assess the potential risks and side-effects of speculation with derivatives in the domain of finance. Even when people understand and appreciate ethical values such as autonomy and fairness, they may not be able to assess their relevance in situations, which they don't fully comprehend. Thus, ***domain-specific knowledge*** must also be considered important for MS. ***Knowledge*** represents the type of learning outcome, with which we are probably most familiar. It relates to people's retention of facts, and understanding of cause-effect relationships (among others) (Kraiger et al. 1993).

2.3. Defining Measurable Learning Outcomes

As we have stressed above, learning outcomes are most valuable for purposes of evaluation, and the selection of approaches for teaching, learning and assessment, when they are measurable. Learning outcomes can be formulated at diverse levels of precision. The central criterion for deciding about the desired level of precision should be the informational needs of the particular target group(s), e.g. learners, teachers, game designers, quality managers of educational institutions etc. (Utility Standard of the JCSEE, 2011). For the general purpose of selecting relevant game mechanisms for the development of moral sensitivity (MS), we will only require relatively general LOs.[3]

Following Gosling & Moon (2002, p. 19), a well-written LO should contain

- "A verb that indicates what the learner is expected to be able to do at the end of the period of learning.
- Word(s) that indicate on what or with what the learner is acting. If the outcome is about skills, then the word(s) may describe the way the skill is performed […].
- Word(s) that indicate the nature (in context or in terms of standard) of the performance required as evidence that the learning was achieved."

To illustrate what kinds of LOs we want to use in evaluating the relevance of game mechanisms for the training of MS, we will work with one exemplary LO in this paper: the ethical value of *universalism* (see above). We suggest that the attitudinal LO, which conveys the value of universalism, could be to "feel concern for the general public, including diverse groups of stakeholders, when considering the morality of one's actions". Such a (pluralistic) concern for the general public would necessitate overcoming attitudes, whereby one doesn't consider the needs and interests of people, who don't belong to one's own in-group (e.g. race, religious community, enterprise) in decision-making. This corresponds with the fact that people usually already hold more or less strong attitudes, e.g. for/against tax evasion, migrants, or plastic surgery. Therefore, attitudinal LOs mostly correspond with the strengthening or replacement of pre-existing attitudes (Martens 1998).

3. UTILIZATION OF GENERIC TRAINING STRATEGIES

The second foundation of our evaluative framework will be generic training strategies, which have proven to be effective in the development of the relevant LOs, or at least for similar types of LOs. There is a rich body of knowledge concerning the achievement of different types of LOs, pertaining to the most effective educational interventions. This sort of knowledge can support the systematic evaluation of game mechanisms, which belong to the relevant type of LO. In the following, we provide an exemplary overview of some existing evidence relevant for the development of attitudes (and values), a particular important type of learning outcomes underlying MS (see Section 2). Future studies will also consider other types of LOs, i.e. competences, skills and knowledge, the examination of which is beyond the scope of this presentation of our research design. Furthermore, general evidence on the motivational mechanisms of video games will be considered (e.g. Weiser et al. 2015).

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[3] For purposes of concrete game design, we propose more granular LOs, which are highly specific, e.g. in terms of the concrete cause-effect-relationships or problems, which learners should be able to comprehend and deal with, once they have completed the game.

Evidence on the Achievement of Attitudinal Learning Outcomes

Following Martens' synthesis of empirical studies on the achievement of attitudinal LOs, the following 15 training strategies are particularly powerful, especially when they are combined, and implemented repeatedly over a longer period of time (1998, p. 169). We have organized them in three sections:

A. Beliefs, which people have about a particular subject, often serve to maintain a particular attitude. Prejudice, for instance, is often based on flawed beliefs. Therefore, the ***sharing of information*** is an important instrument for attitudinal change. The following mechanisms are particularly important:

1-3 The source of the information, which shall transform attitudes, is ideally viewed as (1) *similar to oneself*, (2) *sympathetic*, and (3) *prestigious*. This enables a positive identification with the bearer of the information.

4 The bearer of the information is best represented *live* or through *multimedia*, which catch more attention (e.g. film).

5-6 The information is best presented in such a way that the learners (5) can *contrast several positions*, and (6) *shape their own opinion*. Telling people, which attitudes to have, is counterproductive.

7 The information should be presented in such a way that the learners find it *personally relevant*, e.g. by giving them the opportunity to personally respond to it, or by portraying a person who is similar to the learners, and how this person experiences the particular problem.

B. The adoption of new attitudes (replacing prior attitudes) and the intensification of existing attitudes strongly benefit, when learners are convinced of the usefulness and ***personal meaningfulness*** of the attitudes:

8 Existing self-concepts and attitudes of learners ought to be *embraced* as far as possible, as long as they don't contradict the attitudinal LO.

9-10 Learners should learn to understand, (9) how they will *benefit* from a new attitude, and (10) how some of their prior attitudes may *inhibit* them from reaching their goals.

11 The meaningfulness of attitudinal change is best reinforced by engaging the learners emotionally, i.e. *exciting* them. However, when negative feelings, e.g. fear, are too intensive, they become counterproductive.

C. ***Appraisal through oneself and others*** is a driving force of attitudinal change and maintenance:

12 Learners more eagerly adopt attitudes, when they are convinced that the *majority* of the (informed) members of their group have adopted (or would adopt) these attitudes.

13 *Discussions* support the formation of relevant attitudes, but only when a majority of group members favor the attitudinal LOs, and when there are no group members who hold extreme oppositional positions.

14 Behaviors, which endorse the attitudinal LO, should be *rewarded*.

15 When learners *publically endorse* a particular attitude (e.g. in a group), they tend to hold onto it more strongly in the future.

4. EVALUATION OF RELEVANT GAME MECHANISMS

For the construction and identification of video games, which can promote the development of MS, we want to evaluate diverse game mechanisms, which have already been realized in computer-based games, simulations and software applications (Apps) for self-driven learning. Our goal is to evaluate a large number of game mechanisms, including those already proposed for the development of morality, particularly by Christen et al. (2013) and Schrier (2015; Schrier & Gibson 2010). The main criteria for the evaluation of relevant game mechanisms will be:

1. Logical, theory-based arguments for their possible contribution to the achievement of one of the LOs, which we consider important for the development of *moral sensitivity* (Section 2), and
2. Their ability to realize as many of the relevant training strategies for the particular type of LO as possible (as illustrated in Section 3 for attitudinal learning outcomes), as well as suitable motivational mechanisms.

In this presentation of our research design, we will restrict ourselves to evaluating two game mechanisms, so to illustrate the principles of our evaluation, and the corresponding procedure of analysis. We will omit an evaluation of the motivational power of these game mechanisms for the time being, as well.

Exposure to Others' Perspectives

Video games can expose players to the perspectives of others in two general ways:

a) By playing someone in another role than one's own, for instance a person of another gender, or of another profession, e.g. playing an investigative journalist dealing with one's own area of work. Playing an Avatar is already known to enable psychological effects of some duration (Ganesh et al. 2011, Rosenberg et al. 2013).

b) By making it a necessary mean for the player's advancement in a game to understand the perspectives of different groups of stakeholders, e.g. through dialogues with non-player characters (NPCs), who represent these groups.

1. Relevance for the Development of Universalism

Both of these game mechanisms seem particularly relevant for the achievement of the attitudinal LO of *universalism*, which we have defined as a person's ability to "feel concern for the general public, including diverse groups of stakeholders, when considering the morality of one's actions" (Section 2). Batson et al. (1997) have found that asking people to take the perspectives of three stigmatized groups (convicted murderers, homeless, and people with AIDS), significantly improved their attitudes towards these groups. Moberg & Seabright (2000) also posit that exposure to the perspectives of people from groups other than one's own will support the development of *empathy*, a skill which we find important for the sub-competence of *Noticing* (see Section 2). Therefore, the two game mechanisms fulfil our first criterion: It seems plausible that exposure could support the development of universalism (and empathy).

2. Ability to Realize Effective Strategies of Attitudinal Learning

Universalism is clearly an ethical value, and therefore falls into the LO-category of attitudes. To see, whether the two game mechanisms are suitable to evoke attitudinal learning, we will assess whether they can realize the 15 training strategies, which we have identified in Section 3.

Training Strategy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Avatar-Exposure	(-)	(+)	(+)	+	(-)	(+)	(+)	(+)	(+)		(+)			(+)	(+)
NPC-Exposure	(-)	(+)	(+)	+	(+)	(+)	(+)	-		(+)	(+)		(+)	+	

Table 1: Exemplary evaluation of two game mechanisms. When the game mechanism obviously endorses a training strategy (see Section 2), this is marked through a "+". Where the endorsement depends on *how* a game mechanism is realized, this is marked through "(+)". In cases, where a game mechanism obviously conflicts with a training strategy, this is marked through a "-". Where a negative impact can be avoided, this is marked through a "(-)".

In Table 1, both game mechanisms (a = Avatar Exposure, b = NPC-Exposure) are rated against each of the 15 training strategies, which are known to support attitudinal learning. For example, both Avatar Exposure and NPC-Exposure are rated negatively in consideration of training mechanism no. 1, which relates to the similarity of an informational source to the learner (player). Since the game mechanisms expose players to dissimilar people, a positive realization of this training strategy is implausible – at least on first sight. However, when exposure is used to show players that – albeit existing differences – they also share similarities with people from other groups, the possible negative effect (not believing information) can be reconciled. In the best case, the combination of similarities and dissimilarities will actually help players to overcome beliefs, through which they exclude others from their own group (e.g. "foreigners") and come to see others as members of a joint group (e.g. as "humans" or "fellow citizens").

Numerous examples for the realization of these two game mechanisms in an actual video game are offered by *Life Is Strange* (Dontnod 2015). Here, one plays 18-year old Maxine "Max" Caulfield, a first-year student of photography. Throughout the game, Max exhibits her own personality, strengths and limitations, offering some degree of exposure to others, especially for male players, and people with extroverted personalities. Female, white players with more of an introverted personality will more readily identify themselves with Max, of course. Most importantly though, *Life Is Strange* confronts players with very diverse characters, including a rich, aggressive boy, a punk-girl, who has dropped out of school, and a drug dealer. The game play involves getting to understand the perspectives of these – and many other – characters, including the circumstances, which have influenced their development in the past, their hopes and weaknesses. This creates sympathy for many of the figures (strategy no. 2), and probably helps many players to reassess their initial attitudes towards the groups, which the various characters represent. *Life is Strange* is also exemplary in contrasting positive and negative attributes of NPC-characters, and possible perspectives on them (strategy no. 5).

As Table 1 shows, both of the two game mechanisms under discussion seem highly promising in terms of achieving attitudinal learning outcomes, for example the ethical value of *universalism*. The detail however, that many of the endorsements are tentative, stresses that their potential strongly depends on the way in which they are realized. This points to the second function of our evaluative framework: In addition to an initial evaluation of the general suitability of a particular game mechanism, it shall guide the strategic construction and combination of game mechanisms for them to realize their full training potential.

5. OUTLOOK

The final aim of these investigations is to create a video game that can supplement ethics education. Our approach is to design a game that includes mechanisms that show measurable effects with respect to the LOs we have in mind. This means that such a Serious Moral Games should integrate two different components:

- Some sort of a test that measures the "baseline" and the "improvement" of the player with respect to – in our case – moral sensitivity, such that a valuable feedback can be given to the player, and the games effectiveness can be evaluated.
- A gameplay that integrates the mechanisms in a way that the genuine (playful) motivation of the game is sustained, whereas the training effects of the single mechanisms is sustained.

Our research design focuses on the second component, whereas the first component is object of previous and ongoing research (Christen et al. 2014, Ineichen et al., under revision). For the first component, we will rely on an existing explicit test for measuring MS. Briefly, using a vignette-based approach, the measurement instrument has been designed to confront people with morally ambiguous situational descriptions and to subsequently investigate (1) which values they are more or less likely to identify and (2) which values they consider important within the presented scenario. For creating the instrument, several steps were necessary to ensure that the vignettes included the relevant values, that they were not too easy to be recognized, that the vignettes fulfilled several quality criteria (clarity, moral ambiguity, realistic problems etc.) and that the problem space is sufficiently covered in order to deal with individual variability not directly related to the competence of MS (e.g., familiarity with the presented problems).

An important task is now to transfer these existing tools into a game environment in such a way that the validity of the instrument is preserved, while the testing character is sufficiently hidden in order not to interfere with the gameplay. Our current reasoning is to transfer the test into some kind of tutorial of the game, such that the problems introduce the player into the general appearance of the game (graphics, sound, content, user interface), providing in this way some kind of "baseline measurement". We hope to be able to present a prototype at the "Morality Play" workshop.

Through the integration of such baseline measurements into serious games, it should be possible to (1) adapt the game to the player's predispositions to some extent, so to create a more meaningful learning experience, and to (2) measure the effectiveness of the games in terms of players' learning achievements.

REFERENCES

Abelson, R. P. (1981): Psychological Status of the Script Concept. *American Psychologist,* 36, pp. 715-729.

Adam, S. (2004): Using Learning Outcomes. A consideration of the nature, role, application and implications for European education of employing 'learning outcomes' at the local, national and international levels. *UK Bologna Seminar*, July 1-2, 2004. Westminster: University of Westminster. Available at: http://www.ehea.info/event-details.aspx?evId=184

Antes, A. L., S. T. Murphy, E. P. Waples, M. D. Mumford, R. P. Brown, S. Connelly, and L. D. Devenport (2009): A Meta-Analysis of Ethics Instruction Effectiveness in the Sciences. *Ethics & Behavior,* 19(5), pp. 379-402.

Ayer, A. J. (1936): Language, truth and logic. London: Victor Gollancz.

Batson, C. D., M. P. Polycarpou, E. Harmon-Jones, H. J. Imhoff, E. C. Mitchener, L. L. Bednar, T. R. Klein, and L. Highberger (1997): Empathy and Attitudes: Can Feeling for a Member of a Stigmatized Group Improve Feelings Toward the Group? *Journal of Personality and Social Psychology,* 72, pp. 495-509.

Baykara, Z. G., S. G. Demir, and S. Yaman (2015): The effect of ethics training on students recognizing ethical violations and developing moral sensitivity. *Nursing Ethics,* 22(6), pp. 661-675.

Bazerman, M. H., and A. E. Tenbrunsel (2011): *Blind spots: Why we fail to do what's right and what to do about it*. Princeton, NJ: University Press.

Bergsmann, E., M.-T. Schultes, P. Winter, B. Schober, and C. Spiel (2015): Evaluation of competence-based teaching in higher education: From theory to practice. *Evaluation and Program Planning,* 52, pp. 1-9.

Blum, L. (1991): Moral Perception and Particularity. *Ethics,* 101, pp. 701-725.

Boyle, E. A., T. M. Connolly, and T. Hainey (2011): The role of psychology in understanding the impact of computer games. *Entertainment Computing,* 2(2), pp. 69-74.

Christen, M., F. Faller, U. Götz, and C. Müller (2013): *Serious Moral Games. Analyzing and Engaging Moral Values Through Video Games*. Institute for Design Research, Zurich University of Arts: Zurich. Available at: https://www.zhdk.ch/fileadmin/_migrated/content_uploads/SeriousMoralGames_Christen_Faller_Goetz_Mueller_2013_en.pdf

Christen, M., C. Ineichen, and C. Tanner (2014): How "moral" are the principles of biomedical ethics? A cross-domain evaluation of the common morality hypothesis. *BMC Medical Ethics,* 15(1), pp. 1-12.

Clarkburn, H. (2002): A test for ethical sensitivity in science. *Journal of Moral Education,* 31(4), pp. 439-453.

DeSmet, A., D. van Ryckeghem, S. Compernolle, T. Baranowski, D. Thompson, and G. Crombez (2014): A meta-analysis of serious digital games for healthy lifestyle promotion. *Preventive Medicine* 69, pp. 95–107.

Dontnod (2015): Life Is Strange [PC Computer & PlayStation Game]. Paris: Dontnod Entertainment; played 15 March 2016.

ECTS (2015): *ECTS Users' Guide*. Luxembourg: Publications Office of the European Union. Available at: http://ec.europa.eu/education/library/publications/2015/ects-users-guide_en.pdf

Ezeryel, D., V. Law, D. Ifenthaler, X. Ge, and R. Miller (2014): An Investigation of the Interrelationships between Motivation, Engagement, and Complex Problem Solving in Game-based learning. *Educational Technology & Society,* 17(1), pp. 42-53.

Ferré, F. (1982): *Language, logic and god*. New York: Harper & Row.

Ganesh, S., H. T. van Schie, F. P. de Lange, E. Thompson, and D. H. Wigboldus (2011): How the Human Brain Goes Virtual: Distinct Cortical Regions of the Person-Processing

Network Are Involved in Self-Identification with Virtual Agents. *Cerebral Cortex,* 22(7), pp. 1577-1585.

Gosling, D., and J. Moon (2002): *How to Use Learning Outcomes and Assessment Criteria*. London: Southern England Consortium for Credit Accumulation and Transfer, SEEC. Available at: http://www.seec.org.uk/wp-content/uploads/2013/seec-files/Learning%20Outcomes%20&%20Assessment%20Criteria.pdf

Habermas, J. (2004): *Wahrheit und Rechtfertigung*. Philosophische Aufsätze. Erweiterte Ausgabe. Frankfurt/M.: Suhrkamp.

Haidt, J. (2001): The emotional dog and its rational tail: a social intuitionist approach to moral judgment. *Psychological Review,* 108(4), pp. 814-834.

Haidt, J. (2012): *The Righteous Mind. Why Good People are Divided by Politics and Religion*. London: Penguin.

Hürter, T., G. Lührs, T. Vašek (2016): Empathie. Die Gefühle der Anderen. *Hohe Luft,* 03/2016, pp. 21-27.

Ineichen, C., M. Christen, and C. Tanner (in press): Measuring Moral Sensitivity in Medicine – Means and Justification. Submitted to: *BMC Medical Ethics*.

JCSEE (2011): *The Program Evaluation Standards*, 3rd Edition. Joint Committee on Standards for Educational Evaluation. Thousand Oaks, CA: Sage.

Jordan, J. (2009): A social cognition framework for examining moral awareness in managers and academics. *Journal of Business Ethics,* 84/2, pp. 237-258.

Kahnemann, D. (2012): *Thinking, Fast and Slow*. London: Penguin.

Katsarov, J., J. Lerkkanen, J. Pouyaud, and K. Pukelis (2016): European Competence Standards, in NICE: *European Competence Standards for the Academic Training of Career Practitioners*. Opladen, London, Toronto: Barbara Budrich Publishers, pp. 49-62.

Kraiger, K., J. K. Ford, and E. Salas (1993): Application of Cognitive, Skill-based, and Affective Theories of Learning Outcomes to New Methods of Training Evaluation. *Journal of Applied Psychology,* 78(2), pp. 311-328.

Lapsley, D. K., and P. L. Hill (2008): On dual processing and heuristic approaches to moral cognition. *Journal of Moral Education,* 37(3), pp. 313-332.

Lovat, T., K. Dally, N. Clement, and R. Toomey (2011): *Values Pedagogy and Student Achievement. Contemporary Research Evidence*. Dordrecht et al.: Springer.

Martens, J. U. (1998): *Verhalten und Einstellungen ändern*, 4th Edition. Hamburg: Windmühle.

Moberg, D. J., and M. A. Seabright (2000): The Development of Moral Imagination. *Business Ethics Quarterly,* 10/4, pp. 845-884.

OECD (2003): *Defining and Selecting Key Competencies*. Executive Summary of the DeSeCo Project. Paris: Organization for Economic Co-operation and Development. Available at: https://www.oecd.org/pisa/35070367.pdf

Opotow, S. (1995): Drawing the Line: Social Categorization, Moral Exclusion, and the Scope of Justice, in: B. B. Bunker, and J. Z. Rubin (Eds.): *Conflict, Cooperation, and Justice: Essays Inspired by the Work of Morton Deutsch*. San Francisco: Jossey Bass, pp. 347-369.

Pedersen, L. J. T. (2009). See no evil: Moral sensitivity in the formulation of business problems. *Business Ethics: A European Review,* 18(4), pp. 335-348.

Pohling, R., D. Bzdok, M. Eigenstetter, S. Stumpf, and A. Strobel (2015): What is Ethical Competence? The Role of Empathy, Personal Values, and the Five-Factor Model of Personality in Ethical Decision-Making. *Journal of Business Ethics.* DOI 10.1007/s10551-015-2569-5.

Rest, J. R. (1986): *Moral Development: Advances in research and theory*. New York: Praeger.

Reynolds, S. J. (2008): Moral attentiveness: Who pays attention to the moral aspects of life? *Journal of Applied Psychology,* 93/5, pp. 1027-1041.

Reynolds, S. J., and J. A. Miller (2015): The recognition of moral issues: moral awareness, moral sensitivity and moral attentiveness. *Current Opinion in Psychology,* 6, pp. 114-117.

Rosenberg, R. S., S. L. Baughman, J. N. Bailenson (2013): Virtual Superheroes: Using Superpowers in Virtual Reality to Encourage Prosocial Behavior. *PLoS ONE* 8(1). doi: 10.1371/journal.pone.0055003.

Schimank, U. (2007): *Handeln und Strukturen. Einführung in die akteurstheoretische Soziologie*, 3rd Edition. Weinheim/Munich: Juventa.

Schrier, K. and D. Gibson (Eds. 2010): *Ethics and Game Design: Teaching Values through Play*. Hershey: Information Science Reference.

Schrier, K. (2015): EPIC: A Framework for Using Video Games in Ethics Education. *Journal for Moral Education,* 44(4), pp. 393-424.

Schwartz, S. H. (1994): Are there universal aspects in the structure and contents of human-values? *Journal of Social Issues,* 50(4), pp. 19-45.

Tanner, C., and M. Christen (2013): Moral Intelligence – A Framework for Understanding Moral Competences. In: M. Christen, J. Fischer, M. Huppenbauer, C. Tanner, and C. van Schaik (Eds.): *Empirically Informed Ethics. Morality between Facts and Norms.* Library of Ethics and Applied Philosophy. Berlin: Springer, pp. 119-136.

Vogel, J., D. S. Vogel, J. Cannon-Bowers, C. A. Bowers, K. Muse, and M. Wright (2006): Computer Gaming and Interactive Simulations for Learning: A Meta-Analysis. *Journal of Educational Computing Research*, 34(3), pp. 229-243.

Waples, E. P., A. L. Antes, S. T. Murphy, S. Connelly, and M. D. Mumford (2009): A Meta-Analytic Investigation of Business Ethics Instruction. *Journal of Business Ethics,* 87, pp. 133-151.

Weaver, K., J. Morse, and C. Mitcham (2008): Ethical sensitivity in professional practice: concept analysis. *Journal of Advanced Nursing,* 62(5), pp. 607-718.

Weiser, P., D. Bucher, F. Cellina, and V. De Luca (2015): A Taxonomy of Motivational Affordances for Meaningful Gamified and Persuasive Technologies. *29th International Conference on Informatics for Environmental Protection. EnviroInfo 2015*, pp. 271-280.

Wouters, P., C. van Nimwegen, H. van Oostendorp, and E. van der Spek (2013): A meta-analysis of the cognitive and motivational effects of serious games. *Journal of Educational Psychology*, 105/2, pp. 249-265.

Yang, Y-T. C. (2012): Building virtual cities, inspiring intelligent citizens: Digital games for developing students' problem solving and learning motivation. *Computers & Education,* 59, pp. 365-377.