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Curriculum Vitae

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Contents

Abstract

When designing games, breaking and reconfiguring the rules is a standard practice that serves to modify undesired outcomes and optimize the experiences afforded by gameplay. Unfortunately, when it comes to unbalanced conditions and experiential shortcomings in 'real life' that are created by racist, sexist, homophobic and related oppressive societal norms, progressive attempts of directly addressing the rules that are played by frequently fail against a variety of reinforcing resistance mechanisms. Often, normative regulations of social player performance are themselves not operating on the basis of explicit communication, but expressed implicitly and embodied subtly in a casual, everyday fashion, making them even harder to target. On a cognitive and affective level, normativity manifests as stereotyped and prejudiced attitudes towards non-conforming single players or teams, i.e. individuals or social groups that are perceived to deviate from white, male, heterosexual or other established norms in their appearance or behavior. Yet, as no player is ever beyond appearing or behaving in a way that transgresses the boundaries of normativity, and is therefore also potentially affected by the forceful repression of non-compliance, every player is constantly at risk of getting in trouble with the repressive system of norms, and hence intrinsically in conflict with it. Its transformation, even if threatening at first, is therefore ultimately in every player's interest, rather than its conservation. Digital technologies and virtual interactive environments, which feature their own mechanics and novel possibilities for self-representation, seem to provide the necessary affordances for facilitating the evasion of 'real life' identity regulations. Emergent phenomena of their exploitation for these purposes don't only reveal the readiness to temporarily relinquish societal norms, but suggest an autonomous strive and intrinsic motivation to actively defy these rules, even among players who are not apparently repressed by them in real life. In playing by the same rules as the implicit but powerful enactment of social normativity, this moment of intrinsic conflict can be subtly and efficiently exploited, in employing digital gameplay for circumventing characteristically encountered adverse responses and, ultimately, for facilitating the prosocial subversion of normative attitudes.

Based on these premises, the present study explores 'embedded' persuasive and interventional strategies for designing and evaluating small-scale, narrative- and character-driven, browser-based and single-player 'casual' games that adequately aim for affording stereotype- and prejudice-reducing social impact in everyday life scenarios. Building on a general framework for embedding progressive

content into game scenarios by their design, and in combination with persuasive techniques and subversive strategies derived from insights in queer theory, social psychology and game design research and philosophy, a set of potentially beneficial design strategies were developed, implemented and evaluated. These techniques were applied to an existing social impact game that overtly addresses societal disadvantages and interpersonal conflicts related to homophobic attitudes. The game was modified so as to obfuscate its message-related content, and make it more approachable for a not-queer(-friendly) audience while preserving its progressive message. The design strategies rely on mental imagery, effects of group membership appeals as well as the construction of procedural arguments embodied as conflict-related analogies and metaphors. Imagined intergroup contact - mental simulation of a positive encounter with a member of the stigmatized (out-)group - and ingroup bias - preference for members of the same social group - were exploited for raising levels of perspective and experience taking and narrative transportation among players who share salient (game-conflict-relevant, but not necessarily message-relevant) characteristics with the main game character. The prototype application was experimentally evaluated using an indirect semi-quantitative approach of impact assessment relying on subjectively reported levels of emotional involvement during and following gameplay experience. The results suggest the efficacy of the employed design strategies for elevating emotional engagement based on shared game-conflict-related group membership despite differences in message-related group membership, which are linked to a faciliatory potential for prejudice reduction and prosocial attitude change. Furthermore, the assessment techniques proved to be methodically suited for evaluation purposes following an 'embedded' and subversive game development approach.

Zusammenfassung

Im Game Design ist das Brechen und neu Konfigurieren von Regeln eine etablierte Praxis, die der Modifizierung ungewünschter Ergebnisse und der Optimierung des Spielerlebnisses dient. Geht es allerdings um unausgewogene Verhältnisse und erlebte Defizite im 'wirklichen Leben', die aus rassistischen, sexistischen, homophoben und ähnlichen unterdrückenden gesellschaftlichen Normen resultieren, so scheitern progressive Versuche, jene Spielregeln direkt zu adressieren, häufig an einer Reihe von reforcierenden Abwehrmechanismen. Oftmals operieren die normativen Regulierungen des Verhaltens der sozialen SpielerInnen selbst nicht auf Basis von expliziter Kommunikation, sondern werden in beiläufiger und alltäglicher Manier implizit geäußert und subtil verkörpert, was es wiederum schwieriger macht, die darunterliegende Normativität zu thematisieren. Auf einer kognitiven und affektiven Ebene manifestiert diese sich etwa als stereotypisierte und vorurteilshafte Einstellungen gegenüber nicht-konformen SpielerInnen oder Teams, i.e. Individuen oder soziale Gruppen, deren Erscheinung oder Verhalten als von weißen, männlichen, heterosexuellen oder anderen etablierten Normen abweichend wahrgenommen wird. Da jedoch keine SpielerIn wirklich dagegen gefeit ist, in ihrer Erscheinung oder ihrem Verhalten die Grenzen der Normgerechtigkeit zu überschreiten, und daher auch stets potentiell von der Unterdrückung von Nonkonformität betroffen ist, sind alle SpielerInnen dem permanenten Risiko ausgesetzt, in Schwierigkeiten mit dem repressiven Normsystem zu geraten, und stehen daher im Grunde in Konflikt mit diesem. Daher ist auch die zunächst einschüchternd wirkende Veränderung dieser Normen letztendlich im Interesse aller Beteiligten, verglichen mit deren Erhalt. Digitale Technologien und interaktive virtuelle Umgebungen, die ihre eigene Mechanik und neue Möglichkeiten zur Selbstdarstellung bieten, scheinen die nötigen Voraussetzungen für die Umgehung von Identitätsregulierungen im 'wirklichen Leben' zu bieten. Emergente Phänomene ihrer Nutzung für diese Zwecke deuten nicht bloß auf die Bereitschaft hin, vorübergehend von gesellschaftlichen Normen abzusehen, sondern auf einen autonomen Drang und eine intrinsische Motivation, diesen Spielregeln aktiv zu trotzen – selbst unter SpielerInnen, die im 'wirklichen Leben' augenscheinlich nicht von ihnen betroffen sind. Im Sinne derselben Spielregeln, denen der subtile aber wirkungsvolle Ausdruck von Normativität folgt, kann jener Aspekt des intrinsischen Konflikts auf ebenso subtile doch effiziente Weise ausgeschöpft werden, um charakteristische Abwehrreaktionen zu umgehen, und letzten Endes die pro-soziale Subversion normativer Einstellungen zu erleichtern.

Auf der Basis dieser Prämissen behandelt die vorliegende Arbeit 'eingebettete' persuasive und vermittelnde Design-Strategien für die Konzipierung und Evaluierung von kleingehaltenen, narrativ- und charakter-basierten, Web-browser-tauglichen und Single-Player 'Casual Games', die einen angemessenen Anspruch zur alltäglichen Vorurteilsintervention verfolgen. Basierend auf einem Framework zur Einbettung von progressivem Content in Spiel-Szenarien mittels Design, sowie in Kombination mit rhetorischen Techniken und subversiven Strategien aus queer-theoretischer, sozial-psychologischer sowie philosophischer Computerspiel-Forschung, wurden Design-Strategien entwickelt, implementiert und evaluiert. Diese Techniken wurden auf ein bestehendes Online-Spiel angewandt, welches auf explizite Art Aspekte gesellschaftlicher und zwischenmenschlicher Benachteiligung thematisiert, die sich aus homophoben Einstellungen ergibt. Das Spiel wurde so modifiziert, dass der Message-bezogene Content nicht offensichtlich, und das Spiel somit, unter Beibehaltung der progressiven Message, für eine nicht queere (bzw. nicht queer-offene) Zielgruppe zugänglicher ist. Die angewandten Design-Strategien basieren auf Effekten von mentaler Simulation sowie von suggerierter bzw. empfundener Gruppenzugehörigkeit und der Konstruktion von prozeduraler Argumentation verkörpert in konflikt-bezogener Analogie und Metapher. Imaginierter gruppenübergreifender Kontakt - die mentale Simulation einer positiven Begegnung mit einem Mitglied der stigmatisierten Gruppe - sowie innergruppenbezogener Bias - die Präferenz für ein Mitglied der eigenen sozialen Gruppe - wurden ausgeschöpft, um den Grad an Perspektiven- und Erfahrungsübernahme bzw. narrativer Transportation unter SpielerInnen, die sich in Spielkonflikt-relevanten, aber nicht unbedingt Message-relevanten Eigenschaften mit dem Hauptcharakter identifizieren, zu erhöhen. Die experimentelle Evaluierung des Prototypen erfolgte mittels indirekter Erhebung und semi-quantitativer Methodik zur subjektiven Angabe der emotionalen Eingebundenheit während und unmittelbar nach dem Spielerlebnis. Die Ergebnisse suggerieren die Effizienz der angewandten Design-Strategien zur Steigerung der emotionalen Involvierung auf der Basis von gemeinsamer Spielkonflikt-bezogener Gruppenzugehörigkeit, selbst bei fehlender Message-bezogener Gruppenzugehörigkeit. Diese stehen potentiell in Verbindung mit Vorurteilsminderung und prosozialer Änderung der Einstellung. Des Weiteren erwies sich der experimentelle Ansatz als methodisch geeignet für die Evaluierung im Sinne eines 'eingebetteten' und subversiven Spielentwicklungsprinzips.

Conventions

Throughout this work, the singular third-person pronoun 'they' will be used instead of masculine or feminine pronouns for referring to persons of any gender, unless gender specification is relevant and intended.

"Technology is neither good nor bad; nor is it neutral."

Melvin Kranzberg, 1986 [89]

1 Introduction

1.1 Background

Gameplay Versus Normativity. At first sight, the aim to tackle individual manifestations of racist, sexist, homophobic and related oppressive societal norms on the level of their cognitive and affective enactment as stereotyped and prejudiced attitudes [4, 53], seems to have little in common with the idea of playing video games. While the former endeavor suggests a likely unpleasant confrontation with serious, 'real-world' matters induced for activist purposes, the latter activity is more associated with enjoyment and commonly seen as a form of technologically facilitated escapism from this kind of societal reality [26]. The apparent incompatibility between social change and gameplay seems to be lexically reflected in some definitions for the terms *society* − "a large group of people [...] sharing the *work that needs to be done*"[1] − versus *game* − "an activity *that you do to have fun*"[2]. The polarity between work and fun, i.e. something pursued by force versus by choice, corresponds to the dichotomy between learning and playing, or education and entertainment [105]. The development of systems for either use case therefore differs in terms of the distinction between an extrinsic versus intrinsic motivational state among their typical target users [88]. In addition, the contrast between the high sensitivity of topics related to normativity-induced injustice, and the connotation of "games" as "something that is not treated seriously"[3], might even make play-based interventions appear ethically questionable − especially when designed for a privileged target audience, i.e. for users that don't deviate significantly from a certain norm and are hence not directly affected by the type of discrimination being addressed [28]. Without having experienced the disadvantages of non-compliance in a system of norms, recipients often not only lack an intrinsic interest in changing the patterns of injustice produced by it, but are unaware of its existence to begin with [48]. Consequently, some users might be rather suspicious than convinced of a change-related message's relevance and 'seriousness', which further raises potential doubts about the suitability of employing a hedonic approach for interventional purposes. Given these distinct aspects, and the opposed qualitative demands they seem to imply, one might even think that the design of a

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[1]http://dictionary.cambridge.org/dictionary/english/society; emphasis added.
[2]http://www.oxfordlearnersdictionaries.com/definition/english/game; emphasis added.
[3]http://dictionary.cambridge.org/dictionary/english/game

social intervention 'toolkit' should strive more in the opposite direction than towards the way an entertainment system is built (and vice versa).

Serious Games. Nonetheless, the rising popularity of play-based systems and design principles beyond entertainment contexts indicates a promising potential to surpass the boundaries between the seemingly competing nature of virtual gameplay versus real-life impact. Their successful integration is evidently exemplified in a variety of serious games, which are designed for a purpose beyond mere amusement [1], such as for educational, marketing, health-care or military training applications, among others [3, 94]. Similarly, design strategies based on the principle of gamification, i.e. the employment of game design elements in non-game contexts [38, 75], have become a popular way of increasing an informational systems usability and appeal by exploiting the "range of perceptual, cognitive, behavioural, affective, and motivational impacts and outcomes" related to playing computer games [9, p. 2]. Finally, a number of emergent phenomena resulting from the unprecedented possibilities and unexpected usage of interactive digital technologies [106] hints at their potential role as enablers for bypassing social norms [76]. On the one hand, social interaction in online gameplay scenarios is characterized by the transference of social norms into virtual environments [143]. On the other hand, these environments also seem to provide the necessary quality and degree of safety that allows for the exhibition of counter-normative behavior, which would otherwise be punished in 'real-life' settings [15]. Precisely because of the intersection of virtuality and social 'reality', or playfulness and seriousness [105, p. 1] in digital games, which "have gradually integrated into every aspect of our lives" [34], their increasing socializing role as entertainment media [116] can be both of reinforcing, but also of transformative impact. The facilitative efficacy manifested in these novel applications and usage patterns suggests the interrelation of the cognitive processing involved in learning, and the affective dimension that makes up the allure of gameplay [139]. On a cognitive-scientific account, this calls into question the separability of knowledge and activity, or thought and action [1, p. 5], in the Post-Cartesian fashion of a (socially) embodied view on the mind [93, p. 1]. From a social-philosophical perspective, it corresponds to a skeptical view towards conceiving of knowledge and discourse as the abstract and neutral reflection of 'truth', instead of accounting for its normative dimension and relation to concrete activity and power dynamics in the form of discipline [50, p. 308] or performance [104, p. 176] [25]. Thus, in an ethical sense, these considerations not only legitimate, but also motivate the development of activist games as a form of performative criticism on the embodiment of anti-social force relations in social knowledge structures.

Social Impact Games. Such "serious games for social change" [117] seek to make use of gameplay-specific benefits for inducing pro-social, i.e. anti-normative change in players. As serious

games, their design is characterized by the key challenge of balancing entertainment and 'education' in an efficient way [144, p. 404]. Yet, at heart, they share the same primary concern as any other game: the human game-player and their experience during gameplay [37]. In aiming for a specific experiential impact on the player, these systems are sometimes persuasive [105, p. 1]. Since the attempted persuasion, i.e. attitude formation or change [13, p. 403], of serious games is not only related to the play experience itself, but extended to a certain task or domain, those persuasive systems also need to meet the task- and domain-specific requirements posed by the attitudes they seek to transform. Consequently, in addition to the consideration of characteristic motivational factors, their design also has to reflect the contextual constraints faced by the attitude holders, and, not least, the technological affordances their experiential impact is mediated by.

1.2 Motivation

Core Design Challenges. The design of social impact games for prejudice- and stereotype-reduction is hence confronted with the demands of attitude change – i.e., persuasion – in general, and the specific affordances of normative attitudes in particular. Furthermore, if their development additionally comprises the focus on high accessibility and wide usability among an 'average' adult target audience, then the temporal, material or other resource-bound restrictions commonly faced by such an audience need to be an accounted for as well. Arguably, the necessity of such a focus is implied by the epistemological conditions of anti-normative interventions, especially when compared to more 'classical', instructional forms of educative systems. Classical educational applications seek to *reproduce* and *teach* established knowledges, i.e. to transmit *explicit* and *descriptive* information. This information represents specialized competence, practical skills or particular expertise which is typically authored by a set of professionals, and received by a particular audience. By contrast, social change games seek to criticize and *transform* established knowledges. Prejudice and stereotype themselves constitute a form of *prescriptive* social information that is also more *implicit*, or subtle, but at the same time quite prevalent and pervasive among the mainstream population [28]. Their internalization and persistence is thus not excepted to a specific group of players, but also includes the designers. This distinguishes the transformational aim of social change games from the informational, top-down principle of knowledge transfer between experts and learners in education scenarios. The complexly intersected system of normativity, per se, is most effective when it is invisible and unrecognized as such [30]. Therefore, even the most well-intentioned interventions are not spared from unintentionally reproducing other structures of problematic normative knowledge outside the designers' awareness, and might hence produce undesired effects [21, p. 21]. In order to minimize their resulting fallibility, games that seek to criticize and transform normativity should

3

strive to facilitate their own critical adaptation and modification. In being easily playable, but also editable and improvable by a wide audience, they should not only increase their approachability for users without a specific gaming background [144, p. 404], but also weaken the knowledge-based – and, hence, power-related [50] – division between designers and players. On this account, the present work focuses on low-threshold (and, consequently, small-scale impact) game play and development: more precisely on web-based, character- and narrative-driven, single-player "casual games" [32] that allow for platform-independent (browser-based) and time-restricted comprehension and individual, 'on-the-go' consumption. However, other possibly limiting factors for game consumption and production related to language, reading capabilities or vision abilities, as posed by the communication of (English) text through a graphical interface, are not accounted for in this context.

Current Research Status. Despite the successful deployment of several activist games for diverse users and use cases, research on their systematic design as well as evaluation is still in its early stages [6, 18, 105]. Consequently, there is a lack of well-proven frameworks, guidelines or design strategies for specialized cases for the development and assessment of games that meet the specifications given above. Moreover, as has been noted by G. Kaufman, M. Flanagan and M. Seidman [82], much work relies on a classical educational approach, and hence implements its persuasive strategy in a "direct, matter-of-fact fashion" [82, p. 2]. However, as an educational appeal might per se impair the quality of gameplay, explicit strategies that appear educational could also reduce the interventional efficacy of such games. More importantly, a variety of research results on attitude change from social psychology suggests that overt interventional approaches often fail against the characteristically strong persistence of socially normed attitudes, due to the accordingly powerful resistance mechanisms enforced in response to attempts for their modification [109], and overt persuasive approaches have even been shown to sometimes produce adverse effects in recipients [140] (cited in [82]). Not least, overt approaches are methodologically problematic in the context of attitude assessment and hence for the evaluation of social intervention games. On the basis of considerations regarding the benefits of gameplay for prosocial purposes on the one side, and the particular challenges of changing normative attitudes on the other side, G. Kaufman, M. Flanagan and M. Seidman have developed a framework for designing 'stealthy' persuasive game interventions called the *Embedded Design Model* [82]. The broad guidelines offered by this model have been successfully applied and evaluated in non-digital and multiplayer game contexts, which encourages its application and refinement for digital, single-player games.

Research Question and Goal. In relying on cross-disciplinary understandings and evidence about the functioning of social impact games suggesting "why they (should) work" [87], the present study

4

is guided by the question of 'how they could work' [59, p. 2242]. On the premise that "serious games must look like casual games" [71], this study seeks to explore possibilities to exploit the affordances of game artifacts for addressing subtle and daily and manifestations of normativity as stereotyped and prejudiced attitudes in a similarly casual and everyday fashion, i.e. by virtue of their design. The goal of this investigation is the identification, extension and refinement of appropriate principles and task-specific strategies for the development and analysis of subtly impactful, i.e. subversive digital mini-game applications. Given the broad, highly interdisciplinary and relatively underexplored field of prosocial game design, especially when narrowing the focus on mini-games suitable for everyday scenarios, this research is necessarily exploratory in nature. Hence, its aim is to obtain and collect relevant insights that can inform both the design and evaluation processes of equivalently small-scale (e.g. non-commercial and/or low-budget) development and research projects, and be refined upon in future work and larger scopes. The suitability of both design and evaluation methods applied in the course of the work will be reflected upon from both a design- and assessment-oriented perspective.

1.3 Outline

This study features a conceptual/theoretical part, and an applicational/practical part.

The theoretical part serves the purpose of collecting theoretical and evidence-based information about the nature of gameplay and normativity, especially the specific cognitive affordances of both digital games and normative attitudes. The applied part consists in the development and evaluation of a prototypical game on the basis of insights obtained in the course of the theoretical part, especially the *Embedded Design Model*, and various design and persuasion strategies as well as formal analysis guidelines. Finally, aspects from both the theoretical and applied part will be discussed.

2 Related Work

2.1 Embedded Design Model (EDM) [81]

In view of the various psychological defense responses encountered in the course of stereotype- and prejudice-reduction interventions, and of the beneficial aspects of gameplay for persuasive purposes, G. Kaufman, M. Flanagan and M. Seidman [81] have developed a general model for covertly embedding change-related messages into interventional games for prosocial attitude shifts. This framework offers broad guidelines that are applicable to a variety of different game types and genres, including digital, character-based interactive fiction games. The model specifies three general guidelines, for which the authors provide example techniques regarding their implementation.

Intermixing. This technique consists in balancing "on-message" (serious) and "off-message" (casual) content, at least in an approximately equal ratio. The developers found that an unbalanced distribution with less on-message content leads to more transformative impact than 'overloading' the game with sensitive content, and therefore recommend to rather apply message-content following a 'less is more' principle.

Obfuscating. The *Obfuscation* strategy consists in diverting the players attention away from the game's persuasive intention, by employing genre, framing language or similar devices for distraction. One variant of this technique consists in the gradual introduction of message-related content: in non-interactive fiction, for example, the delayed revelation of a characters outgroup membership has been linked to higher effects of experience-taking, which enable the reduction of outgroup bias [83]. This effect has also been exploited in interactive scenarios [17].

Distancing. This principle seeks to provide a sufficient degree of safety so as to allow for a transgression of normative boundaries despite their association with one's self-concept. Consequently, this is done by increasing the "psychological gap" be-tween in-game experience and 'real-life', thereby allowing for the players narrative transportation and emotional engagement, and enabling narrative persuasion [62]. According to the researchers, this can be achieved by employing fiction and metaphor and the suggestion of hypotheticality. The techniques offered by the EDM have been suc-

cessfully tested and applied to non-digital multi-player games of party-game genres by the developers [81]. Apart from suggestions, the model itself does not contain detailed specifications regarding the message-unrelated content (for the *Intermixing* strategy), genre choices (for the obfuscating strategy), or the narratological introduction of sensitive content (for the *Distancing* strategy). These were added on the basis of further persuasive strategies in consideration of the defense effects that normative attitudes are accompanied by.

2.2   Serious Game Design Assessment (SGDA) Framework [105]

In response to the "lack of assessment tools to analyze serious games", K. Mitgutsch and N. Alvarado developed the *Serious Game Design Assessment* Framework, "a constructive structure to examine purpose-based games" which offers "grounds for critical discussions about serious games" [105, p. 1]. The framework focuses on formal and conceptual game design assessment, i.e. on analyzing the coherence and congruency of "a game's formal conceptual design, its elements, and their relation to each other" and, ultimately, "in relation to [the game's] purpose" [105, p. 1]. The researchers' suggestion that the "purpose should be reflected in all the elements that support the game system" – i.e. content, fiction/narrative, mechanics, aesthetics/graphics, and framing – [105, p. 1], serves as a basis for analyzing the original game as well as the modified prototype in the course of the implementational part of the present work. The researchers also applied their framework to two existing social change games, which will be revisited shortly at the end of this section.

2.3   Gameplay, Embodied Persuasion and Subversive Performativity

Procedural Rhetoric. The notion of procedural rhetoric, as suggested by I. Bogost, refers to the "practice of persuading through processes", especially those of computational nature [12]. As an argumentative practice, it is helpful for both the designer and the player, as suggested by the author. Digital games, by virtue of their computational "procedurality" and interactivity, afford the employment of arguments in a procedural way, e.g. the embodiment of ideologies and normativity, and the revelation of the dynamics they result in. As such, games can function as an analogy, metaphor, or even in the sense of a subversive parody.

Parody and Ironical Re-Appropriation as Subversive Strategies. The argumentative power and function of embodied imitation was also analyzed in the context of societal norms and the possibility their transformation. As expressed by philosopher J. Butler: "*In imitating gender, drag implicitly reveals the imitative structure of gender itself—as well as its contingency*" [25, p. 175]. In this sense, gender swapping, as facilitated in digital games, might work to implicitly subvert gender

norms and related ideologies, by revealing their artificiality as opposed to their alleged "naturalness" [122]. Another powerful strategy against normative repression consists in the re-appropriation of derogatory terms by intentionally using them in an ironical sense: their iterated 'misusage' for self-referential purposes transforms their meaning and weakens their insulting power [31]. The neutral or positive meanings of the word 'queer' (as in 'queer theory'), for example, are also the result of reclaiming effects[1]. Such subversive linguistic acts are closely linked to the naming-based coding strategies employed by queer online gamers [84].

2.4 Psychotherapy-Informed Prejudice Reduction

The similarities between cognitive and affective biases that are typical for stereotype and prejudice, and anxiety-related patterns of distorted thinking and irrational fear, have motivated the employment of techniques adopted from cognitive-behavioral therapy for the purpose of prejudice-reduction [10].

Safe Exposure. One of the adopted strategies builds on the principle of exposure therapy, in which the patient is confronted with an instance of the anxiety-inducing concept in order to reduce fear and distress triggered by it [133]. This intervention requires a sufficiently safe and unthreatening environment or framing, as afforded by mentally simulating an encounter.

Imagined Intergroup Contact. As has been theorized by G. W. Allport [2], meaningful intergroup contact can effectively reduce prejudiced attitudes towards social groups. In order to evade potentially adverse effects related to persuasive pressure, the technique of imagined intergroup contact [127] relies on the safe affordances and therapeutic effects of mental simulation for prejudice reduction. The successful deployment of this interventional strategy suggests a promising efficacy when combined with the engaging, interactive and yet fictional, 'casual' appeal of gameplay.

Ingroup Bias and Positive Concept Invocation. While prejudice is understood as an unjustified negative evaluation of a person because of their perceived outgroup membership, its counterpart – a hastily positive evaluation or favoritism of an ingroup member [66] – could be made use of for reducing negative outgroup attitudes. Ingroup bias not only results in greater preference for members of one's group, but also increases empathy towards them. Empathy and sympathy, again, play a crucial role in affective persuasion [7]. As character-based games enable the occurrence of membership effects, they may enable the exploitation of ingroup bias, in the case of the present work's prototype.

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[1]https://en.oxforddictionaries.com/definition/queer

2.5 Social Impact Games – Examples

Virtual-Reality-Based Prosocial Interventions. An affirmatory strategy similar to ingroup bias effects was used by researchers who tested the behavioral effects of providing participants with 'superhero powers' in a virtual reality setting [119]. Study results have shown how the usage of role model concepts in virtual environments can promote prosocial behavior in the physical world. While these emotional appeals might arguably reinforce stereotypical concepts related to masculinity, strength and superiority, they can also serve to subtly transform these norms by constructing a more inclusive, solidary and maybe even more feminine model of the male superhero.

Alternate Reality Games (ARG) for Sexual Education. The successful employment of educational gameplay for addressing sensitive topics linked to "sexual health, sexual orientation, and homophobia" was exemplified in the evaluation of an ARG titled *The Source* [17]. Following its results, the researchers identified the "feasibility and acceptability of using an ARG for sexual education", i.e. for positively impacting "sexual health-related knowledge, attitudes, and behaviours", including "young people's thoughts and responses to sexual orientation and homophobia" [17, p. 353].

Defeating Zombies with Purpose. Another playful and embedded approach to normativity is exemplified in the survival game *Purpose* developed by H. Hlavacs and S. Sertkan [72]. In this serious game, the player is confronted with the task of putting together a strong team by selecting among several potential candidates for surviving in a zombie-invaded world. As study results have shown, player choice was influenced by stereotypical and prejudiced bias based on racism and sexism [129]. By confronting the user with their own choices, the game targets hidden normative bias, and hence serves to reveal unjust attitudes which in ordinary, 'real life' scenarios correspond to default (i.e. norm-conforming) behavior, and hence often remain undetected and unaddressed as a subtle but powerful operation of the norm [30].

Indie-Games Against Normativity. As many games in general, a variety of independently produced social impact games have also been developed outside of academic or commercial[2] contexts. Many of these games embody efficient and recitable examples.

Playable Arguments for Diversity. A vivid example of "how videogames make arguments" [12] is embodied in the open-source "playable post" called *Parable of the Polygons* developed by V. Hart and N. Case, which lets the user interactively experience "how harmless choices can make a harmful world" [68]. This game embodies an interactive, game-theoretical explanation of group-related bias

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[2]For non-profit social impact game development, see e.g. http://www.gamesforchange.org/.

and intergroup segregation effects on the basis of T. Schelling's mathematical-sociological segregation model [124] and, as explained by the developers, was inspired by game design theories and techniques such as B. Victor's "Explorable Explanations" [135], as well as I. Bogost's "procedural rhetoric" [12]. It is a vivid example of subtle, anti-normative criticism and a propositional argument for diversity that functions procedurally, i.e. by "playing the message" [52].

Embodied (Ir-)Rationality. Another example of how gameplay can make a critical statement about established 'real life' systems and conditions is *Sweatshop* created by Littleloud [95], a free browser game which addresses "manufacturing in relation to human exploitation" [105]. In application of the SGDA, K. Mitgutsch and N. Alvarado state that Sweatshop's "mechanics also imply subversive elements", since the game implements two feedback-systems that contradict each other: "being good in one system (producing more for less money) also means being evil in the other (exploiting the workers)". In this sense, the game's mechanically embodied contradiction supports its change-related purpose of engaging the user "in the systematic problems of globalised capital and labor in an emotional yet playful way" [105]. The second example game assessed by K. Mitgutsch and N. Alvarado is the game *ICED (I Can End Deportation)* created by Breakthrough [19], a "serious role-playing video game about immigration" [105]. Compared to the first example, the game focuses more on factual information, as also reflected in its explicit title – it "provides way more textbased content than *Sweatshop* that is drawn from more than 15 sources" [105]. On the other hand, there is less employment of subversive elements: "learning challenges rest in the content, not in the game mechanics" [105]. However, a procedural argument might be given in "the fact that there is no 'winning-state' in the detention center" [105], which embodies the game's criticism on inhuman immigration politics.

3 Rules and Players in Conflict

3.1 Conceptual Framing

The affinity of learning and playing suggested by the efficacy of educational games [21, p. 12], emphasizes a closer functional relation between gameplay and social normativity than intuitively assumed. Analogously, the terms "game" and "society", although differing in terms of motivational and attitudinal connotations, share formal, organizational, and procedural characteristics, as exemplified in their definition as "an activity or a sport with rules [between] people or teams"[1], and "a particular community of people who share the same customs [or] laws"[2], respectively. Their semantic relatedness further motivates a conceptual analogy between gameplay and normativity, and, ultimately, between related concepts from enactive cognitive science, queer-theoretical philosophy and game design theory, which contribute to the conceptual basis of this work. In a way, all of these knowledge domains, or discourses, or playgrounds share a common characteristic, concern or goal: to analyze, deconstruct, and reconfigure the rules within an established system of meaning – especially those that lead to conflict.

Enaction, Deconstruction, Modification. The unconventional, somewhat contra-intuitive views on cognition and action offered by cognitive-scientific "E-approaches to the mind (enactive, extended, embodied and embedded)" [93, p. 1] enable a less static and more interrelated understanding of knowledge and agency, as a critical response to their ontological dichotomization rooted in cartesian body-mind dualisms [93]. In a similar manner, "foundationalist models of identity" [122, p. 59] leading to binary categorizations based on race, gender, sexuality and related social concepts, are de-constructed by socio-philosophical approaches related to queer theory [30] – a central point of criticism emphasizes the execution and reinforcement of normativity in privileging (rewarding) of conformity, and discrimination (sanctioning) of deviations [25] [30, p. 665]. Clearly, the principle of reward and punishment is fundamentally related to gameplay, which exemplifies the transgression of the apparent dichotomy between playfulness and seriousness, in that "play itself contains its own, even sacred, seriousness" [56] cited in [105, p. 1]. In order to illustrate the cross-disciplinary

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[1]http://www.oxfordlearnersdictionaries.com/definition/english/game
[2]http://www.oxfordlearnersdictionaries.com/definition/english/society

understanding of social impact games that results from these aspects, this chapter consists in a brief illustration of relevant concepts from 'enactive' cognitive science (e.g. [55, 80, 93]) in analogy to ideas from 'de-constructivist' queer-theoretical philosophy (e.g. [25, 30, 39]) and (critical) game design theory (e.g. [12, 49, 130]). The aim is not to provide an ontological argument or an extensive explanation for the complex functioning of social normativity, gameplay or their even more complex interaction, but rather to illustrate the way in which these social cognitive phenomena are conceived and consequently approached in the course of this research. A more detailed theoretical definition for the 'target' concept of normative attitudes and a review of characteristic phenomena related to persuasive attempts will be given in the next chapter, followed by a revision of work related to interventional methods for addressing their specific requirements. Physical, social and virtual systems. As for this more abstract and figurative introduction, both games and societies can roughly be conceived as self-organized, dynamical, adaptive and not-deterministic cognitive systems of regulated interaction among a set of autonomous agents on the basis of communicated rules. The regulations within these "socially organized phenomena" [45, p. 200], in turn, produce power relations and, ultimately, certain experiences among the (sentient)[3] agents or players. In other words, when adopting a terminology from game design and research, these interactive systems or "situations with guidelines and procedures" (Flanagan2009) feature their own mechanics – regulating the possibilities of player (inter-)action – which result in specific dynamics – the "run-time behavior" of the mechanics and players in interaction – and aesthetic – i.e., experiential and emotional – aspects [74, p. 2]. Cognition, in this view, is conceived as "socioculturally situated" [145] or "socially embodied" and "extended" [55, 93, 126], i.e. inseparable from individually constituted agency as well as societally established practices. Drawing on these ideas, these cognitive systems can be further pictured as interactive environments that are characterized by certain shapes or affordances, i.e. action possibilities [58], that are embedded into and offered by their structure, respectively their design. The concept of affordance "points both ways, to the environment and to the observer", is therefore "equally a fact of the environment and a fact of behavior", and as such "cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy" [58, p. 129]. Just as spatial environments enable or constrain the possibilities of physical movement and action within them by virtue of their morphology, these enacted spaces can be shaped – i.e., designed – so as to afford or inhibit movement and transformations, also on an epistemological, emotional and social scale [111].

Meanings, Norms, Rules. What conceptually distinguishes the specific quality of the mechanics or rules regulating enacted environments from those governing 'purely natural' ones, consists in their fundamental relation to cognition. Unlike natural laws, that are conceived as static, a priori and

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[3]Whereas agents in a cognitive system could also include artificial intelligences, the focus here is on human players.

universally valid – regardless of knowledge or agency – the specific forces that regulate interactive systems are not only coupled to embodied cognitive processes – they are also the result of such processes. In accounting for the artificiality of these mechanics, the cognitive agents are also assumed to be – to a certain extend – autonomous from these, instead of being subordinated to "a passive role of obedience" [80, p. 487]. While the behavior of a purely physical (inanimate) object is completely subjected to natural-scientifically describable principles, a cognitive agent also "plays a role in determining the norms that it will follow, the 'game' that is being played." [41, p. 39]. In this sense, autonomous agents, who design and shape their environment forming meaningful technological artifacts, also shape and change, i.e. construct artifacts of cultural and discursive quality [111, p. 350]. Rules and norms, in the end, are meanings, i.e. cognitive artifacts which are not already there, but depend entirely on their construction, recognition, appreciation and reinforcement by the cognitive agents within these environments or "systems of meaning and culture" [111, p. 350]: whether in games or society, "[n]o artifact can survive within a culture without being meaningful to those that can move it through its defining process" [91, p. 413], and meaning is therefore, at the same time, "the only reality that matters" [91, p. 412]. In other words, these norms are both the powerful regulators and at the same time the fragile artifacts of the contexts they operate in, thereby forming a circular (rather than a unidirectional) constitutive relationship with processes of "sense-making", i.e. both the "creation and appreciation of meaning" [80, p. 488]. This manner of accounting for the constitution of rules as meaningful artifacts that require iterative implementation in real-time communication and (inter-)action, reflects a queer-theoretical understanding and criticism of normativity and its performative dimension [25, 30, 70]. In opposition to foundationalist anthropological ascriptions and ideologies, which are criticized for legitimizing the existence of injustice in a naturalistic fashion [122, p. 59], this view holds that social categories "result of an illusion sustained by the incessant replication of norms that materialise that which they govern" [70]. Instead of viewing social norms and the resulting unequal distribution of power as the inevitable realization of a predetermined hard-coded natural order, these phenomena are decoded as the powerful and persistent, yet fragile and contingent effects of their repetitive embodiment in discourse and action [25]. In adopting an embodied account of language or "linguistic performativity" [122, p. 56], this view links communication to action – similarly to enactive approaches to meaning and agency in cognitive science. A normative attitude can then be understood as an embodied means of communicating a certain norm which simultaneously re-produces it, i.e. endows it with its force and validity [70]. Since these communicative reproductions are necessarily imperfect re-citations of an ideal and abstract 'original', i.e. a copy that "never fully approximates the norm" [24, p. 232], normed enactments are constantly subject to certain deviations – and, thus, potential large-scale change [25]. This aspect of fragility and the constant potential

for change endow normativity with aspects of uncertainty – especially as the resulting instability affects categories that are closely linked to the construction of identity, the "internal coherence of the subject" [25, p. 23]. Resistance, Oppression and Punishment. As an important fundament which doesn't maintain itself requires constant maintenance, including protection from modification attempts, its iterative reinforcement also comprises mechanisms for repressing potential transgressions and threats to undermine it, i.e. against both explicit, anti-normative criticism and resistance, as well as implicit, non-conforming deviations [61]. In this sense, both overt and indirect forms of normative judgement and punishment of non-conformity don't only affect individual players, but are always recitations of a certain ruleset which contribute to its omnipresence and validity within a system of meaning. In games, too, penalties don't only have an effect on the individual rule breakers they are directed at – their function always entails the communication of rules and serves the maintenance of their meaning and "seriousness" [105]. However, in games, there is a special case of rule breaking, when exploiting their artificiality and fragility is not only an accepted transgression, but also an established profession: the practice of game design [130]. When designing games for "affording a desired experience" [38], changing the rules and thereby the functional or mechanical level of gameplay – "what is done when playing a game" – serves to optimize its dynamics and experiential aspects – "how playing a game is perceived" [131]. Such iterative adaptations are especially useful for the development of interactive media, considering the non-linearity of these entertainment systems' consumption, which make their potentially undesired run-time interaction with and unpleasant reception by the user hard to predict for the designer [74]. In particular, digital game development, which, as a particular kind of software engineering, comprises algorithmic construction and formal modelling, benefits from an iterative design and evaluation strategy for ensuring functionality and improving quality from a computer science perspective [103].

Confrontation and Conflict. In competitive gameplay scenarios, ensuring quality by affording fairness is "one of the most fundamental types of game balancing" [123, p. 206]. Accordingly, undesired behavioral outcomes and unpleasant experiences are associated with unbalanced configurations that undermine fair play conditions among players or teams. In such cases, the arising conflict, which is a crucial element of playful competition [130], is not between individuals or teams, but between the players and the rules of the game itself. In these cases, it seems natural to confront and modify the rules or game mechanics. However, in 'real life' (societal) contexts, directly addressing the rules (i.e., norms) that lead to unbalanced and unfair conditions (i.e., injustice and inequality) is compounded by resistance mechanisms for maintaining these rules. In perception of threats against the concept of 'self' [64] or identity [25], these mechanisms restrain the flexibility of normative attitudes, holding the underlying rule system in place. Despite the perceived threat – or precisely because of

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it – the modification of these underlying norms entails the potential improvement of quality for all agents within the regulated system. Like overly limiting, rather than enabling constructions in physical environments, or the rules of an unsatisfyingly designed game, social normativity restricts and potentially affects every individual at some point in their life [96]. While the compulsive adherence to the established rules, as evident in the persistence of stereotype and prejudice [109], seems to be a sign of anxiety [10], the evasion of normativity by means of new technologies [76] can be read as revealing an inner strive – i.e. intrinsic motivation and active attempt – to resist normativity rather than its transformation. As was emphasized in this section, cognition, cognitive agents and cognitive artifacts can't be abstracted from their social context. The next section will consider the entanglement and transformative potential of digital games as cognitive artifacts, i.e. "nontrivial extensions of human conceptions into the domain of their use" [91, p. 412] within technologically driven societies.

3.2   Digital Games as Transgressive Socio-Technological Artifacts

As was mentioned at the beginning of this work, the social phenomenon of gaming is often interpreted as a form of escapism [26] – especially in the context of technologically advanced digital gameplay. The suggested necessity for virtually escaping 'physical' reality could then also be regarded as symptomatic of one of the most notable contradictions within modern industrial societies: i.e., the ongoing disparity between the remarkable degree of technological progress on the one side, and the concurrent relative persistence of social inequality on the other side [99]. Both phenomena are easily identifiable by quantitative measures.

The Progress of Digital Technologies. Especially the advance of information and computer technologies is indicated by exponential growth rates regarding productivity and functionality – as measured by the increase in computational speed [57], data storage [92], and transmission capacity [35], among other factors. Moreover, the continuous improvement in quality is accompanied by a simultaneous tendency of decrease in product price [77], thereby increasing the accessibility and prevalence of digital and web-enabled technologies. Their resulting integration in everyday life becomes apparent in view of several observed trends. The number of internet users[4] in Austria, for example, has increased from 1.9 % of the population in 1995, to 83.9 % in 2015 [79]. In the U.K., it was almost nine in ten adults that had access to the internet in 2014 [110], and the amount of hours an average user from the U.S. spent on the internet per day has risen from 2.7 in 2008, to 5.6 in 2015 [101].

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[4]Internet users are defined as "individuals who have used the Internet (from any location) in the last 12 months" [79].

Expansion Across Geographic Borders. Although such specially high numbers are still excepted to wealthy populations, the rapidity of these developments is by far not restricted to industrialized Western economies and societies. A report published by the International Telecommunication Union in 2015 records a "continued growth in ICT [information and communication technologies – ed. note] readiness around the globe" [77, p. iii]. The geographic expansion of mobile-broadband infrastructures and services and their affordability due to significantly decreasing price range indicate "the continuous evolvement of the global information society", including "least developed countries" and "low-income populations" [77]. Here, again, the numbers speak for themselves: in 1995, the total amount of internet users made up less than 1% of the world population [79]. Today, by comparison, over half of all households worldwide have an internet connection [78]. Superseding traditional media. Consequently, this evolvement correlates with the globally increased production and consumption of digitalized content for professional, commercial, educational and personal applications, which has opened up new possibilities and challenges for both users and designers of these new technologies [33]. Among the business sectors most affected by digitalization is the media and entertainment industry [141, p. 10f], which, in turn, is reflected in its growing societal relevance [43]. Especially video games are gaining more and more popularity, and superseding non-interactive forms of entertainment [44]. In 2014, for instance, four in five U.S.-based households owned a device that was used for gaming purposes, and people who spent more time with playing games instead cut down their consumption of movies and other media [44, p. 2].

Outpacing Industrial Conditions. The range of new opportunities that emerged from several "waves of innovation" [141, p. 10] have also led to unexpected usage and probably unintended purchasing behavior: among the most frequent game players in the U.S., for instance, only 29% reported that they currently paid to play online games [43, p. 4]. Side effects like these deviations from their precedent usage and consumption are hardly surprising, given that digitalization has also paved the way for fast and simple file copying and sharing solutions [134]. These achievements, in turn, are forcing new economic conditions with a "perhaps irreversible impact" [134, p. 78] on entertainment industries, probably demanding some form of adaptation to the dynamic and flexible nature of these developments.

Undermining Human-Computer Boundaries. The continuous advancement of high-standard, low-cost and user-friendly hardware, software and web services, and their increasingly high accessibility, affordability and usability, is not only outpacing and rigid industry standards and challenging the conditions of its own production (frameworks) [141, p. 11]. Just as it has become possible to bypass copy restrictions with just a few available means, ICTs have also facilitated the transgression

of geographic borders, by enabling world-wide interconnection and real-time communication. The resulting virtualization of social interaction and networking has quickly extended to practices such as commercial marketing, advertising – and, not least, self-representation. According to recent observations, the average internet user nowadays has almost seven social media accounts [60]. These statistics not only emphasize the "importance of identity in online communication" [**?**, p. 161], but also suggest a further effect of bending of regulatory constructs. The possibility to create, change, delete and restore an unlimited amount of online selves endows the notion of identity with a certain degree of flexibility, artificiality and contingency, causing it to conflict with fundamental principles of western humanistic tradition and intuition. A frequently recited illustration of the range of conceptual clashes that were enabled by last century's emergence of computer-based technologies, is given in the figure of the Cyborg [67]: a half-real, half-fictional entity that crosses the ontological boundaries of 'man' versus 'machine', and blurs the lines between the concepts 'natural' versus 'digital' and related dichotomies. In adopting a view of extended cognition, which accounts for the intersection of the mind and the material world it 'leaks out into', technology-enhanced environmental engineering consequently becomes a matter of self-engineering [36], with implications for phenomenal transformations on subjectivity and reality in a "posthuman" sense [16]. These considerations have motivated the multidisciplinary investigation of human-digital entanglements and their transformative impact on (self-)conceptions and identity categories on an individual and social scale, as indicated by the emergence of novel research areas including human-computer interaction [27], human-centered design and technology [90], and Technoself studies [98], among others.

Subverting Socially Normed Categories. Among those digital systems of specially high interest for the investigation of technology-induced effects on individual and social self-conceptions and identity categories are, again, gaming technologies [143]. On the one hand, this is due to the aforementioned globally rising popularity and availability of computer and video games. On the other hand, there is a particular high interest due to the specific qualities of digital gameplay scenarios and the affordances of computational technologies [12]. In the sense of interactive self-extension [16], online games seem to provide players with the "extraordinary freedom [...] to deviate from, or alter their offline identities" [73, p. 161]. Interestingly, this freedom seems to frequently be exercised in order to trespass the boundaries of social identity categories that seem to be especially inviolate in 'real' (non-virtual) social environments. This is demonstrated in the phenomenon of online character gender-swapping, which refers to the practice of deliberately assigning a gender to one's avatar or player character that does not match one's offline gender [76]. Although little is known about the exact motivations behind this behavior, such observations suggest an interesting strive to bypass social regulations, and the readiness to employ technical means for these purposes indicates their

suitedness for such use cases – even if these might not have been intended by the design. In this sense, these systems can be said to form virtual playgrounds for exploring, experiencing and designing alternative realities and identities, for which they seem to provide a sufficient degree of safety. From a queer-theoretical point of view, these acts constitute a performative transgression of the conceptual boundaries that regulate and maintain social gender norms and their categorical coherence, which therefore, in 'real life', face societal repression [15]. With the possibility for anonymized social interaction that was enabled by web technologies, and the 'unseriousness' provided by gameplay itself, online games serve as enablers for counter-normative, and, therefore, potentially subversive behavior. Despite these and several other promising aspects of recent transformative developments enabled by digital technologies and gameplay, these socializing media agents [116] are also characterized by the reproduction of normative realities [143], both in the content they provide as well as the social contexts which they are consumed and produced in – e.g., popular and mainstream gaming culture [17].

The Persistence of Social Norms. In a less optimistic view, technology can be regarded as the extension of oppressive social power structures [137, p. 29], cited in [132, p. 618], and video games therefore as endowed with the "ability to articulate and reproduce existing ideologies and hegemonic relations of power and inequality" [45, p. 212] (cited in [61, p. 262]).

Representing Misogynist Views. Despite the increasing visibility of female consumers and producers of video games [51], technology and gaming are still largely associated with and dominated by exclusive and hegemonic masculinity, as expressed in "misogynistic reprisals against those who challenge the old hegemony of hypermasculine performativity within the culture" [132, p. 618]. Portrayals of both men and women in mainstream media, including video games, reflect and reinforce 'real life' stereotyping based on sexist and misogynistic norms [138]. Following a study on video game cover depictions, for example, male game characters are "almost four times more frequently portrayed" and "given significantly more game relevant action" as compared to female characters, which are often depicted in an "exaggerated", "objectified" and "hyper-sexualized" fashion [23, p. 419]. Similar observations have been made about video game magazines, which "treat digital women as vacant pinups to be ogled or irrelevant sidekicks to be tolerated, and real women as annoying interlopers to be bullied" [47, p. 551]. Further studies on the cognitive impact of sexualized gameplay content showed that objectifying portrayals of female characters can "encourage men to view women as sex objects" and increase the tendency of male players to "behave inappropriately towards women in social situations" [142, p. 77]. Similarly, a recent study found a correlation "between long-term exposure to sexist video games and sexist attitudes", with higher levels of

sexism among players of such games compared with men who did not play them [128]. Accordingly, studies on the perception of female gamers suggest a linkage between "masculine norms (desire for power over women and the need for heterosexual self-presentation)" and video game sexism, i.e. "sexist beliefs about women and gaming" [51, p. 314]. Although these problematic conditions have received critical attention and consideration among the gaming community [51, p. 314], feminist media critics are often silenced in their attempts to raise awareness by means of (sexual) harassment and intimidation [132]. Unfortunately, in this context, the enabling role of anonymity in online social platforms also "facilitates harassment and other forms of negative interaction" [51, p. 314]. The aforementioned phenomenon of gender swapping in online games is thus also related to normative motives, undertaken by some male players in order to "look at female characters", and by female gamers "when in multiplayer games to avoid harassment" by staying invisible [100].

Reinforcing Racialized Ideas. Another "hierarchical structure" that has been transferred from 'real life' to virtuality and "manifested itself in video games" is related to the category of race [61]. Like gender-based oppression, racial discrimination in online gameplay scenarios is, among others, enacted by the exclusion and derogatory labeling of players that deviate from an established norm – in this case, from whiteness – and the absence of the visibility and representation of gamers of color [107]. Often, this invisibility is accompanied by a lack of awareness for racist acts against. In an exemplary interview with an Xbox Live gamer, one researcher described a typical argumentative pattern for denying or legitimizing the presence and enactment of verbal racism in online gaming, which, among others, consists in reinvoking the opposition between gameplay and seriousness, in the sense of "it's just a game" [61, p. 271]. Similarly, the usage of discriminatory utterances is legitimized by referring to the fact that it is targeted at all people, regardless of their 'actual' attributes. While this view may be grounded in a 'fair' motivation, it does not take into consideration the normative impact of discourse [25]: the usage of sexist, racist, sexist and homophobic language, even if not only used for offending women, people of color or people from the LGBT spectrum, reinforces aggression towards people who deviate from the respective norms, and creates a hostile environment for them. [51, p. 318].

Reproducing Homophobic Attitudes. Like gender and race, sexuality is a further category on the basis of which players are "brutalized in forums and in public channels in online play" [125]. And, like in 'real life', LGBT gamers are faced with the conflict of either 'coming out' – "to declare their deviance from the norm clearly and explicitly" – in order to be visible, versus staying 'closeted' – and invisible – in order to be safe [30]. In response to this "conflicting desire for both openness and protective concealment within the public spaces of online gaming", gamers have developed

'secret', naming-based communication strategies for being visible to other LGBT players and forming "in-game social organizations" [84]. Interestingly, these emergent organizations of marginalized individuals in sub-systems and cultures that create their own meanings, share characteristics with 'real life' strategies of communicating covertly via semiotic systems – comparable to color-coding systems for sexual signaling that originated among gay and bisexual male communities in the 1960s and 1970s [118]. The development of such systems points at "the historic need for discretion" [118] due to the repression of non-normative sexuality in the institutionalized form of pathologization and imprisonment [50], or in the employment of language-based violence and homophobic cyber-bullying [8].

The Interrelation of Normative Concepts. Homophobia, in its simplest definition, is "an attitude of hostility towards [. . .] homosexuals" [14, p. 3] (cited in [53]). This hostile or aversive attitude is however not an isolated phenomenon, but, from a queer-theoretical point of view, rooted in a "matrix" of entangled social norms and ideologies regulating "sex, gender, sexual practice, and desire" [25, p. 23-24]. In other words, this matrix is "an assemblage of norms that serves the particular end of producing subjects whose gender/sex/desire all cohere in certain ways" [30, p. 662]. Therefore, in a view that accounts for this aspect of interrelated normativity, homophobia is understood as a "complex system that brings together several concepts (heterosexism, sexual prejudice, heteronormativity, sexism and male dominance)" [53, p. 65], which is complexly linked to race, age, ability, education and other, seemingly neutral categories. Restricting every player. Although this system negatively affects certain people more than others [28], even those that are privileged by it experience its disadvantages: the pressure of adhering to hypermasculine norms, for example, has not only been shown to negatively impact prosocial behavior, but also to affect mental and physical health in boys and men [136]. Similarly, the highly idealized, i.e. normative depiction of hegemonic masculinity and (physiological) strength in "hyper-muscular" male game characters has been linked to higher body image dissatisfaction in male players [102]. In this sense, normativity, which oppresses deviations, limits every individual to a certain extend. As was made evident in the aforementioned examples, this oppressive system both characterizes the shape of social environments, technologies and artifacts, and is in turn formed by these. Whether for good or bad: digital technologies are undeniably socially impactful. While online games, by virtue of their 'safety', can be enablers for unexpected, counter-normative behaviors, they can also become an unsafe and "hostile environment for certain players", particularly "for those perceived as outsiders" [51, p. 314]. As in 'real life', these outsiders are individuals that are categorized as members of a social group that deviates from interrelated norms which are expressed in hostile attitudes.

4 Social Norms in Individual Attitudes

A central notion in the context of the present work is that of individual attitudes with a normative function. This chapter provides social psychological aspects about the structure of attitudes in view of various theoretical conceptualizations[1] which are underlying for this research's understanding of the specificity of normative – prejudiced or stereotypical – attitudes and, furthermore, of anti-normative, pro-social attitude change.

4.1 Basic Definition and Function of Attitudes

In basic terms, attitudes can be defined as "meaningful evaluations of the external world" [11, p. 957], respectively of this external world's mental representations in an individual's "concepts" [64, p. 4] or "object[s] of thought" [13, p. 392]. This evaluative mechanism is of fundamental importance for an agents' adaptability to its environmental context: on the basis of an attitude's activation, an individual will decide which entities to avoid, and which objects to approach or engage with [11, p. 957]. In other words, attitudes are crucial for regulating the dynamics between attitude holders and attitude objects within interactive systems. Attitude Valence. The key principle by which this mechanism provides this form of guidance in terms of advance or avoidance is realized in the valence, i.e. the positive or negative value of an attitude that corresponds to affection towards or aversion against an evaluated concept [64, p. 5]. Simply put, valence expresses whether and to what extend an attitude holder likes or dislikes an attitude object. Attitude objects. These objects of positive or negative judgement "comprise anything a person may hold in mind, ranging from the mundane to the abstract, including things, people, groups, and ideas" [13, p. 392]. Additionally, they are associated[2] with each other in the sense that the activation of one concept leads to the activation of another concept it is associated to [64, p. 5]. In a social context, where individuals are both attitude holders and attitude objects at the same time, these associations and evaluations

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[1]When viewed in more detail, some of these theoretical conceptualizations differ in the extent to which they attribute context-sensitivity versus stability to the notion of attitudes. In the present context, these distinctions will not be elaborated on further – instead, the focus is on their general common ground. In this sense, the conceptual basis is most closely oriented towards an "intermediate position" between a "constructionist" account and a "stable-entity" view of the attitude concept [13, p. 392].

[2]To be precise, Greenwald et al. define an attitude towards a concept as the association of this concept with a valence attribute [64, p. 5].

consequently become relevant for a variety of social cognitive functions, e.g. for "connecting with others, for self-expression, and for the maintenance of self-esteem, among others" [11, p. 958]. Self-Concept and identity. The "self" is an attitude object that refers to the attitude holder themselves, and of great importance in social contexts. Following Greenwald et al. [64], this specific concept is a "central entity in the structure of social knowledge" [64, p. 5], whereas "identity" corresponds to the association of the self with a social group concept [64, p. 9]. Social group concepts. A social group is a societally relevant and normative construct which individuals – oneself and others – are categorized by. Often, these categories correspond to hierarchized dichotomies based on a binary distinction between an ideal and its negative counterpart: gender, sexuality, or race are examples for highly salient social concepts that typically implement an 'either-or' dualism [67]. The categorization of self and others by social groups results in different ingroup or intergroup constellations and interpersonal dynamics on the basis of shared or distinct group memberships [64]. As with many other societally relevant concepts, the activation of a social group concept is mostly an automatic process –comparable to rules that were 'learned by heart'.

Attitude Formation. Attitudes are widely believed to be the result of learning processes [11, 13]. Following dual processing theories, these processes can be divided into propositional or associative learning mechanisms [13, p. 396].

Explicit Versus Implicit Attitudes. Explicit attitudes are the result of propositional or 'cognitive' evaluations – they contain information expressing an agent's assumptions, beliefs and other articulated elaborations about the world. Evaluations of propositional form can be expressed as judgements or opinions about the evaluated concept in relation to another concept or valence attribute [64]. As such, they correspond to direct and explicit utterances. Their causation and activation is typically a conscious process, and their existence and content hence known to the attitude holder [11, p. 958] (cf. [13, 64]). Implicit attitudes result from more automatic evaluations of associative or 'affective' quality – they are rather immediate responses to the concept an agent is exposed to [11, p. 958]. In other words, these reactions are not the result of explicit cognitive elaborations, but of the 'unintentional' activation of associated concepts or valences [11, p. 958]. Their activation and content is often not introspectively available to the agent, who is consequently unaware of their causation [63, p. 6-8], [11, p. 958]. Due to this aspect of subjective unawareness, these attitudes can be seen as a more internalized and therefore more subtle, often undetected manifestation of potentially problematic rules.

Attitude Stability. Compared to learned rules that guide and regulate a player's moves and behavior throughout a game, attitudes, too, must feature a certain degree of stability and reliability. In this way, an agent is enabled to quickly retrieve and reconstruct earlier evaluations in the presence of the same or related stimuli [11]. A related feature that an attitude is characterized by is its strength, which refers to both an attitudes' durability as well as its "impactfulness" [114, p. 2] (cited in [13, p. 394]). The stronger an attitude, the higher its degree of temporal and cross-situational stability, whereas a weak attitude is "less accessible and thus more susceptible to context influences" [13, p. 394]. While the strength of an attitude is important for both fast and confident responses as well as stability and self-esteem, a crucial aspect of a functioning evaluative system also consists in the adaptability of the produced beliefs and affects. In other words: attitudes should also feature a sufficient degree of flexibility or malleability [11, p. 958]. Especially in a highly dynamical surrounding, attitudes must be updatable, i.e. "amenable to modification in light of new experiences; attitudes that are characterized by rigid stability run the risk of providing obsolete or overly general behavioral guidance" [11].

4.2 Attitude Change

Both propositional and associative learning are the result of exposure to new information. Propositional learning comprises "logical reasoning and a systematic assessment of the validity of available information" [11, p. 6]. Hence, outdated propositions are ideally updated when the agent finds them to be falsified or inconsistent, i.e. with the acquaintance of new experience. Associative evaluations, too, are revised due to novel encounters [11, p. 4], where new associations between concepts are formed and strengthened rather automatically [11, p. 4]. In other words: attitude change can take "relative thoughtless as well as more thoughtful forms" [11, p. 5] [113]. The extent to which an attitude is adapted is modulated by several factors, such as the attitude's valence: negative attitudes seem harder to change than positive ones [11]. Other moderators of an attitude's adaptability include characteristics of the attitude holder, such as their personality, which makes attitudes less flexible in individuals who are "dispositionally closed minded" [11, p. 9]. Also, an individual's attitudinal flexibility is influenced by their social context, in the sense that "individuals situated in attitudinally homogeneous social networks tend to have stronger, more stable attitudes" [11, p. 3]. An important aspect in the context of attitude change is the attitude holder's motivation to update their attitudes [11].

Conflicting Attitudes and Cognitive Dissonance. Cognitive dissonance occurs when there is a conflict between attitudes, such as when the valence of an explicit attitude and its implicit equivalent are not coherent [46]. As an individual will strive to dissolve this incongruence – typically

by updating the corresponding attitudes –, cognitive dissonance has been theorized to be a strong motivator for attitude change [11].

Persuasion. Attitude change following reasoning-based persuasion has been found to be dependent on a person's motivation and ability to engage in the process of cognitive processing, as well as the strength and compelling nature of the informational cues provided [11, p. 5] [112].

4.3 Normative Attitudes

So far, attitudes have been conceived from a general perspective. This work is concerned with a specific subtype of attitudes, namely those that have a discriminatory and therefore anti-social function: i.e., prejudiced and stereotypical attitudes. As was mentioned at the beginning of this work, these types of attitudes are regarded as a form of normative enactment on an individual level. In the following, a definition for prejudice and stereotype will be given, following an analysis of their specific structure and mechanisms that need to be accounted for when designing efficient prosocial interventions.

Prejudice. 'Pre-judice', literally taken, refers to "a *judgement* or opinion formed *beforehand* or without due examination" (Chambers English Dictionary, 1988; cited in [22, p. 6]; emphasis added). In this literal meaning, a prejudiced attitude is an evaluation that is premature, yet not necessarily of negative or positive valence, nor specifically referring to a social group concept. The *Oxford Learner's Dictionary* defines *prejudice* as "an unreasonable dislike of *or preference for* a person, group, custom, etc., especially when it is based on their race, religion, sex, etc."[3]. This definition includes both negative as well as positive evaluations, and further suggests that prejudice typically refers to social group concepts. Other definitions emphasize the negative connotation of prejudice from an ethical perspective, as for example this definition given in the *Cambridge Dictionary*: "an *unfair* and unreasonable opinion or feeling, especially when formed without enough thought or knowledge"[4]. While the description as 'unreasonable', that is also included in the previous definition, denotes a fallacy of rational quality, the term 'unfair' further suggests a moral wrong. Relying on these aspects, prejudice will be regarded as an evaluation that is both objectively and ethically unjust. Furthermore, in the context of this work, the notion of prejudice will be restricted to a "negative attitude" [22], cited in [10], i.e. those that constitute negative affect such as derogation, suspicion, fear, hostility [22, p. 7], and, furthermore, to evaluations referring to social groups.

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[3]http://www.oxfordlearnersdictionaries.com/definition/english/prejudice; emphasis added
[4]http://dictionary.cambridge.org/dictionary/english/prejudice; emphasis added

Stereotype. The *Oxford Learner's Dictionary* lists *stereotype* as "a fixed idea or image that many people have of a particular type of person or thing, but which is often *not true* in reality"[5], while the *Cambridge Dictionary* defines it as "a set idea that people have about what someone or something is like, especially an idea that is *wrong*"[6]. Again, the former seems to emphasize a rather propositional than moral fallacy, while the latter could refer to both. In this context, stereotype, like prejudice, is understood to be *wrong* in both a propositional as well as a moral sense. Furthermore, stereotype, too, will refer to *negative* attitudes about *social group concepts*. However, for the sake of simplicity, prejudice and stereotype will be distinguished analogous to the distinction of implicit and explicit attitudes: i.e., prejudice is understood as a more automatic and affective negative response, and stereotype as a more conscious negative belief or conviction.

Prejudiced Versus Stereotypical Attitudes. Summing these aspects up, prejudice and stereotype are both understood as sub-types of normative attitudes, featuring the following specific criteria. 'Prejudice', or 'prejudiced attitude', refers to a prejudiced response, which is an implicit attitude towards a social group concept that is negative and – given the lack of actual negative encounters or similar criteria for its justification – relatively strong. Furthermore, a prejudiced attitude can be held against any individuals that activate a corresponding social group concept, i.e. are perceived to belong to the negatively evaluated group [10] (cf. [2, p. 10]; [22]). Furthermore, prejudice can also be auto-directed, i.e. against oneself, if one's self-concept is associated with the social group concept, which corresponds to *low self-estee*m. Most importantly, prejudice can occur even without the cooccurrence of explicit negative attitudes, as seen in the case of *implicit bias* and *aversive racism* [42]. 'Stereotype', or 'stereotypical attitude', refers to a stereotypical belief, which is an explicit attitude towards a social group concept that is negative and – given the lack of objective criteria for its justification – relatively strong. Like a prejudice, a stereotype can be held against any individuals that activate a corresponding social group concept, i.e. are perceived to belong to the negatively evaluated group. Stereotypes, too, can be auto-directed, i.e. connected to a self-concept, which corresponds to *self-stigmatization*. However, stereotypes are beliefs or opinions which the attitude holder is aware of – whereas their objective and/or moral fallacy are not necessarily recognized, and related to *cognitive bias*, e.g. in the form of *distorted thinking* and *faulty reasoning* [10, 11]. Stereotype and prejudice are meaningful evaluations that correspond to societal norms. As illustrated in the second chapter of this work, meaning, as explained by enactive approaches in cognitive science, and normativity, as conceptualized by queer theory, are both regulating and established through social interaction. The particular difficulty with normative attitudes consists in that they are accompanied

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[5] http://www.oxfordlearnersdictionaries.com/definition/english/stereotype; emphasis added
[6] http://dictionary.cambridge.org/dictionary/english/prejudice; emphasis added

by a variety of cognitive, affective and ultimately behavioral resistance mechanisms, that restrain social interaction and therefore impede the transformation of meaning and norms. The circularity of reinforcement, by which normative attitudes persist, therefore embodies a vicious circle.

4.4   Resistance Mechanisms Against Change

Normative attitudes are characterized by a high degree of persistence [109]. For one reason, this can be attributed simply to their negativity – since, as mentioned earlier, negative attitudes seem to be more resisting to change than positive ones. Even if no explicit normative attitudes are held against individuals, there is still often a lack of motivation to engage with the persuasive messages offered in the context of interventions [11, 112] – which is especially relevant when the message concerns a topic that the recipient is not directly affected by and hence not intrinsically interested in. Most importantly, prejudice and stereotype are assumed to be remarkably resistant against explicit approaches to counter-attitudinal persuasion because these are perceived to be psychologically threatening [109]. The strong association of normative attitudes to highly relevant social-cognitive constructs, fundamental worldviews and self-concepts [64], makes any attempt for their change also a potential threat for these concepts (cf. [109], [11, p. 9]). A number of mechanisms have been related to this "social identity threat" [10, p. 3], their function being that of the protection of prejudiced and stereotypical attitudes of being modified in the light of new information [11]. Typically, they take the form of biases and fallacies of relative efficiency and power: the stronger the expected threat, the greater the need for defense – and the stronger the resistance mechanism and "defensive elaboration" [11, p. 10]. As has already been recognized by Kaufman, Flanagan and Seidman [81], among others, these defensive processes require special consideration in the context of designing social intervention strategies and systems, which is why in the following a few relevant examples will be mentioned.

Avoidance, Selective Exposure and Confirmation Bias. The principle of avoidance strategies is simple: the recipient prevents their attitudes from being updated by evading any exposure to counter-attitudinal information, i.e. information that would presumably force them to modify their beliefs or feelings about or towards a topic, group or (other) ideological constructs [46] (cited in [11, p. 9]; cf. [54]). Selective exposure results when the "tension between the need to have an accurate understanding of the world and the desire for feelings of relative security and personal validity that can only exist when one's views of the world are not challenged" is dissolved on behalf of the latter [11, p. 9]. This tendency to expose oneself to "attitudinally congenial information" has empirically been found to be a common phenomenon [11, p. 9]. However, the tendency also seems to be reversible in certain contexts, such as "when the accuracy of an attitude has a direct bearing on the accomplishment of a salient goal" [11, p. 9]. Mechanisms of selective avoidance

and exposure can take the form of routinely evasion of new experiences and personal encounters [46] (cited in [11]). For example, it can be enacted as aversive racism, a form of internalized racist prejudice which leads to the unconscious avoidance of social groups [42]. "Lacking contact", again, leads to the "formation and maintenance of social stereotypes", and manifests in "hostile behavior" towards the outgroup, or avoidance of outgroup contact [10, p. 3] – in the sense of a vicious circle. In a similar way as encounters or content are selectively searched for or avoided based on apparent attitudinal suitability, information one is already exposed to can also be filtered during the course of its processing in the sense of a confirmation bias, i.e. "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" [108], also referred to as congeniality bias [69]. As avoidance and confirmation bias also manifests in selective media exposure [85], this mechanism must be considered in the context of the present work, as it could prevent potential recipients from playing a game which is perceived to contain counter-attitudinal content. In the case of strong prejudice, knowing that a game features prejudice-targeted social group member(s) might even be sufficiently repellent to trigger cognitive, affective and ultimately behavioral avoidance.

Reactance and 'Standing One's Ground'. The phenomenon of reactance to persuasive attempts is considered a resisting response that does not directly result from an individual's necessity of conserving the specific content of their targeted attitudes, but rather from the general strive to preserve their freedom and independence [20, 81]. It occurs when this independence is threated by approaches that are perceived as "manipulative" and "unwarranted" [121] (cited in [11, p. 10]), i.e. when an individual feels 'controlled' and influenced. Moreover, this effect even occurs when the attitude holder actually agrees with the position or message they are exposed to [140] (cited in [81]). Even if this mechanism is not due to the importance of normative preservation for maintaining identity, researchers have suggested that resistance to persuasion results from the same motivation of protecting the self-concept: "people spurn undue manipulation (and those who attempt it) individuals resist an undue persuasive attempt because "failing to do so threatens them with such undesirable self-labels as *dupe* and *fool* [. . .]" [121, p. 539]. For these reasons, this effect is another highly relevant instance that deserves consideration in the context of the present work: making a game appear as attempting to manipulate the player and defeating them on the "social influence battlefield" [121, p. 526] might trigger defensive responses – especially since every player typically wants to win.

Backfire Effect. A similar and very tricky occurrence that was described by B. Nyhan and J. Reifler in the context of political misperceptions refers to cases where "corrections actually *increase*

misperceptions among the group in question" [109, p. 1?]. This is especially problematic in the context of interventional argumentation, as "attitudes after a failed attempt to counterargue may be stronger than attitudes after undirected thinking" [120, p. 219]. As for interventional games, their mechanics, goal, language or other game-play elements could embody a 'correcting' instance and therefore trigger a backfiring effect. This needs to be accounted for in their design, which in turn limits the choice of game genres.

Source Derogation. An argumentative fallacy which is frequently deployed as a rhetorical strategy consists in the construction of *ad hominem* arguments [11, p. 10?]. This fallacy consists in attacking the arguer, instead of the argument – or the player, instead of the rules [107]. This hints at a way in which games can reveal such fallacies – regardless of whether they are committed consciously or unnoted by the 'attacker' – by means of embodied reconstructions. Since "norms work best when they are never exposed" [30, p. 665], this phenomenon is frequently observed in the context of explicit interventional attempts to making normativity visible.

Bias Blind Spot. Similarly to aversive racism [42], this subtle effect refers to the phenomenon of holding prejudiced attitudes without knowledge, and therefore without awareness of behavioral bias following from it [115] (cited in [83]). In such cases, there is no strive to resolve the cognitive dissonance between explicit and implicit attitudes, as it remains undetected. It is arguable whether this can be regarded as a defense mechanism with respect to its function, but it can be said to have the same effect as such a mechanism. This effect gives a further reason for focusing on modifiability when designing interventional games, as the designers might not be aware of hidden biases that might be unintentionally integrated into their game's design.

Similarities to Mental Health Disorders. The role of perceived threat and anxiety has been emphasized earlier. Indeed, from a perspective of clinical psychology, these mechanisms of resistance and avoidance are phenomenologically very similar to processes observed in pathological anxiety, as e.g. noted by M. Birtel and R. Crisp [10]. Pathologically anxious individuals suffer from symptoms such as distorted thinking and cognitive bias, i.e. show thought patterns that are, like stereotypical thinking, "overgeneralized, inaccurate, [and] resistant to new information" [40], cited in [10, p. 4]. Similarly, prejudice-resembling manifestations include an "unrealistic fear and worry as a response to a stressor" [10, p. 5].

5 The Imitation Game

On the basis of these conceptualizations, considerations and assumptions, the *Embedded Design Model* (EDM) [81] was extended and applied for the modification of an existing social impact game. The conceptual design of both game versions was analyzed based on the assessment guidelines of the *Serious Game Design Assessment* framework (SGDA) [105]. The original game was targeted for a queer or queer-friendly audience and did therefore not rely on a covert strategy or embedded approach for conveying its' message. Hence, the game was modified with the goal to conceal its interventional attempt while preserving its prosocial message.

5.1 Original Game: Coming Out Simulator [29]

The open-source single-player browser game Coming Out Simulator developed by game designer N. Case [29] is a semi-autobiographic dialogue-based fiction about a queer game developer's coming out experience. The protagonist Nick appears as non-playable character (NPC) in the first scene, and be-comes playable as the user jumps into Nick's simulator in order to interactively experience the story from first-person perspective. Throughout the story, the player interacts with the system by making choices among several answers and action options. The story has different endings, and the user is given the crucial choice to either 'come out' (i.e., to "declare their deviance from the norm clearly and explicitly" [30]) to the homophobic parents, or to stay 'closeted' (and continue to be 'invisible', i.e. mistaken for heterosexual) instead.

Game Message. The game addresses and vividly depicts social and even physical dimension of rejection faced when deviating from the heterosexual norm. It therefore addresses heteronormativity, and targets homophobic, anti-bisexual and other sexuality-related negative evaluations. In addition to criticizing homophobia and its negative consequences, it can be of representational and encouraging value for people affected by this kind of discrimination – given that it features a queer protagonist and story, which are rather rare in mainstream games.

Target Audience. In the sense of representation and encouragement, the game's target users are people from the homo- or bisexual spectrum that are affected by the sexuality-based normativity

depictured. In addition to a (sexually) queer audience, the game also appeals to people who are affected by similar mechanisms of discrimination, that are also characterized by 'coming out' situations: e.g. transgender and gender-nonconforming people, or people whose origin or identity is different than the one ascribed to them by default. Finally, the game could also attract straight but queer-friendly players who seek to have an unknown experience – indeed, curiosity is a common motivation for media choice, including playing games. These target players, too, are then driven by an intrinsic motivation to engage with the topic.

Synopsis. The game starts with the player meeting Nick, the main character, who introduces them to the game concept: in the following, the user will interactively experience Nick's coming out story (or dilemma), which, due to the interactive influence of the player, is also fictional at the same time. On the one side, Nick's boyfriend encourages (but also pressures) the player to finally be open about their relationship and sexuality to the parents. On the other hand, Nick's parents embody a repressive threat, which leads to a confrontation in which the user can attempt to come out or stay closeted. At each end, the user returns to the NPC-version of Nick again, who evidently was affected by the tough experience, but has also made it through it.

Game Principles and Mechanics. Since the game is framed as a story and not as a quest or puzzle, it does not specify a goal or score metrics, i.e. there are no 'right' or 'wrong' answers. This can be regarded a crucial part of the game's rhetoric [12] embodied through its mechanics [105]: the system does not correct the player. While this is a beneficial aspect e.g. with regard to the aforementioned backfiring effect [109], it also poses a difficulty when reframing the game in the sense of the *Obfuscation* strategy defined by the *Embedded Design Model* [81].

Narratological Design and Structure. The game's conceptualization as a 'story within a story' can be said to embody a sort of pathway for narrative transportation [62]: by introducing another layer of hypotheticality, the game suggests a further step away from 'real life', in the sense of the *Distancing* strategy described by the EDM [81]. In addition, the shift of narrative perspective along with the concept of 'simulation' encourages experience-taking [83]. Furthermore, the game's description as 'a half-true story about half-truths' [29] can be viewed as the employment of irony [67] for handling (and transgressing) the dualistic contradiction and resulting conflict between telling a story and playing a game (which changes the story), as faced in the context of interactive fiction writing. At the same time, it can function as a critical commentary on essentialist constructions of heteronormative ideologies and the fallacies of stereotype and prejudice that center around unary identity and universal truth [67, 122].
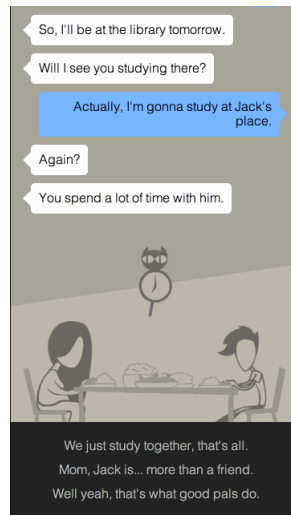
Figure 5.1: Screenshot of the original game's coming out scene (retrieved from imgur.com/a/lxp1z).

Graphical Design and Interface. The graphical user interface is kept in the style of online or mobile text messaging applications, which supports the game's focus on dialogue and communication, and – since most players are used to communicating via similar applications in everyday scenarios – encourages presence and engagement [refSimulation]. Furthermore, the "cartoonish style", as the characters' design was described by one of the experiment's participants, endows the game with a pleasant, innocent and casual appeal [71], which again works in the sense of *Distancing* [81]. At the same time, the rather dark color scheme of the scenery endows the game with melancholic aesthetics and a gloomy ambience, which expresses the emotional impact of rejection.

5.2 Design Strategies in Consideration of Defense Mechanisms

Avoiding Avoidance. The game could trigger homophobia-based avoidance simply by revealing the main character's sexuality – even if the game is not framed as an interventional game. By applying the EDM's *Distancing* strategy, the game conceals its homosexuality-related content. The implementation of this technique consists in the delayed revelation of the main character's outgroup membership, i.e. their sexuality. Since the protagonist is the PC (player character) at the same time, this means that the player finds out about 'their' sexuality in the course of the game. Until this point in the plot, the player should therefore already be engaged in the game enough in order for the identification with the PC to sustain, despite their outgroup membership. In this way, avoidance could be overcome.
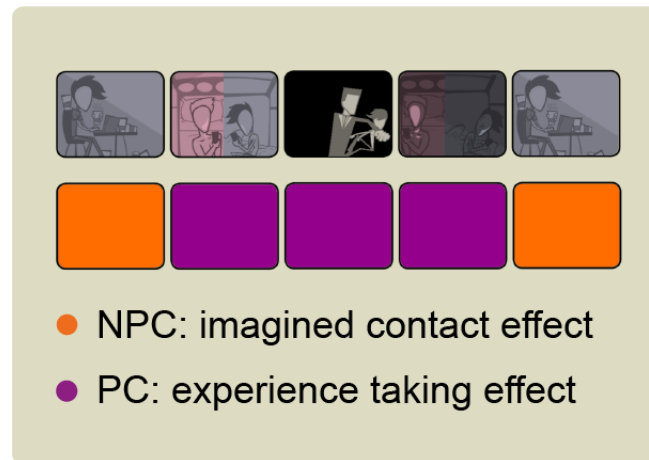
Figure 5.2: Storyboard and effects related to narrative perspective (applying to both the original and the modified game).

Resisting Reactance. In order to avoid triggering defensive responses, interventional games should restrain from appearing as employing "tactics of attack" or "weapons of influence" [121, p. 526]. In other words: they should not suggest a battle or competition between the player (or their attitudes) and the game (or its arguments) – since the player will want to win this battle or argument. However, precisely this strive to win an argument, is employed in an interventional sense: by making the player 'fight' on the side of the game. This was implemented by the employment of conflict [130] in a specific order that simultaneously works as a procedural argument [12] due to the structural similarity of the conflicts the player engages in. The first conflict affects a different, "off-message" topic (in the sense of the *Intermixing* strategy of the EDM), followed by an "on-message" conflict (which, in the present context, is homophobia-related). If the player has already *emotionally* engages in the previous conflict, they will likely be affected by the second conflict as well. In this way, the appeal is of an affective form.

Raising Awareness for Hidden Bias. Moreover, if the player was also *cognitively* elaborating during the first conflict, i.e. took the side of the PC in evaluating 'what is right' or 'fair' in an argumentative sense, then they are 'forced' to come to the same conclusion in the second conflict – since both conflicts involve the same structure of stereotypical and prejudiced elaboration. In a similar way as reactance to undue argumentation is linked to one's self-value, in the sense that individuals want to avoid labeling themselves as vulnerable to manipulation [121, p. 526], defying due arguments would also be a threat to one's social desirability [86]. A player who reaches this

conclusion on a cognitive level, but notices attitudinal incongruence and dissonance on due to unease on an implicit level, might be made aware of their hidden aversion against homosexuality. In this way, procedural rhetoric is employed to reveal the functioning of normative reasoning, which should weaken normativity by exposing its hidden operation [30, p. 665].

Defeating Backfiring and Source Derogation. Being corrected can increase prejudice and stereotype [109]. For the present work, this consideration motivated the prevention of 'corrective' or policing motives, which could be suggested by mechanics, language or other gameplay elements, that could judge 'wrong' decisions and trigger a backfire effect. This was already employed by the original game where 'there are no right or wrong answers'. However, for the present work, this posed a limitation as to the implementation of the *Intermixing* and *Obfuscation* strategies of the EDM, since the prototype needed to be reframed with regard to content and genre. In order to avoid a moralizing or corrective tone, the game was not re-designed as a puzzle, quest or learning game, as this would have included an instance for the correction of 'wrong' answers or choices made by the player, or the possibility to 'fail' the game. Moreover, the presence of a controlling and evaluating dimension might have impacted the player's ability for experience-taking and narrative transportation. For these reasons, the prototype remained framed as an interactive personal story; however, not in an activist and topic-related, but in a rather casual and thus unthreatening and innocent sense. This could arguably trigger a feeling of randomness and confusion in the player. However, these elements can be beneficial, as noted by K. Salen and E. Zimmermann: "[a] game that doesn't have any feeling of randomness is likely to feel very dry, and generally more intensely competitive than a game that does have an element of randomness" [130, Ch. 15, p. 4]. The design strategy for a non-policing game was also employed for evading cognitive bias in the sense of *ad hominem* reasoning: the game refrained from featuring direct personal instructions by an NPC or a (game) authority, and instead focused on affording procedural argumentation [12]. As this was already provided by the original game, the modification attempted to preserve this aspect when reframing the story: the narrative introduction and the instructions provided at the beginning of gameplay therefore don't embody an imperative style of telling the player to do the 'right' thing. However, the original game 'invited' the player, and the protagonist 'offered' them the experience of coming out, which the modified game can't do. Yet, the modified prototype appeals to the players curiosity in a similar sense of an exploration game: the main character 'asks' the player for their help – which requires taking over the character's position, perspective and experience. In this way, if the player is not positively influenced by the gameplay experience, they will at least not show adverse responses, i.e. show backfiring effects or derogation against the game for attempting to be persuasive.

5.3 Modification

The modification attempted to retain those beneficial elements which were already afforded by the original game design and didn't interfere with the embedded design approach, i.e. those that didn't reveal the message beforehand. The game mechanics and graphical interface were therefore mostly preserved.

Original Versus Modified Message. The basic narratological structure and hence message was retained as well, with one exception: the modified game version does not feature multiple endings, but 'forces' the user to perform the act of 'coming out' to the parents. On the one hand, this design choice was made with regard to the evaluation, for the sake of comparability. On the other hand, it embodies the lack of power to escape or correct unjustified prejudice, which is also the case for some choices in the original game and makes up and is part of the procedural rhetoric of the game. However, this exemplifies how the game elements reflect and hence influence the game's purpose, or the message it tells [105]: the original game let the player experience the coercion of the choice between coming out (becoming visible and targetable) and staying closeted (and invisible) – both of which are aspects of heteronormative disadvantage faced by non-heterosexual individuals [30], which are also transferred to online gaming communities [84]. By taking away this element of choice, the modified game tells and embodies a slightly different message: it lets the user experience the disadvantage of having to come out, but not the dilemma that consists in the other given 'option' of not doing so. In this sense, the modified game might also forfeit its suitability for a queer audience in an encouraging sense.

Target Audience. The modified version is designed for a non-queer (heterosexual) audience which might have moderately explicit or implicit prejudiced attitudes towards queer (not heterosexual) individuals or topics. However, the persuasive effects are expected to be highest in players who share salient characteristics with the protagonist that are of significance with regard to the conflicts. In this version of the game, those features are the character's educational background and, as in the original game, the character's sexual orientation. In this work, we were most interested in players who shared the first group membership with the character, but not the second.

Synopsis. The interactive fiction, titled *The Imitation Game*, was framed as a metaphorical story about a difficult day in the life of a computer-science student, on which he faces two situations of stereotype-based rejection. The first conflict occurs at a job interview, based on the interviewer's stereotypical belief that computer geeks are the opposite of 'creative'. The conflict is followed by
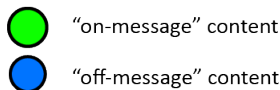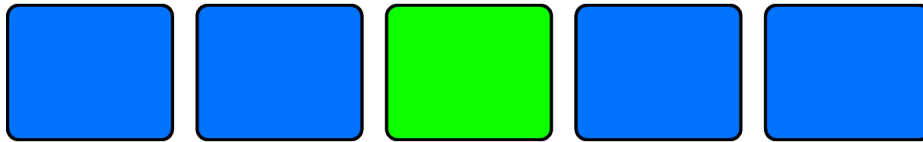
Content

Original Game

Modified Game

🟢 "on-message" content

🔵 "off-message" content
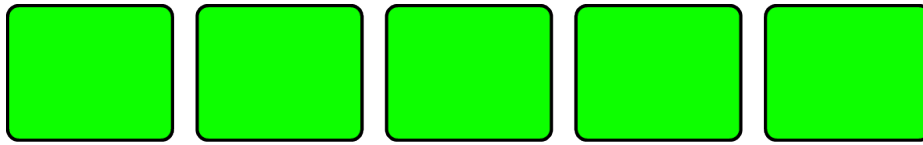
Figure 5.3: Original vs. modified storyboard after application of *Intermixing* strategy (EDM).

the character's coming out as gay[1] to the parents, for which he is rejected following the same logics of prejudice. Before returning, the player makes one last positive encounter with an NPC. His little brother asks him for help with his computer-science homework.

Narratological Design and Structure. The structure of the game was generally retained: the player has an encounter with the NPC, who then becomes playable, however with a different motivation: instead of offering the player to experience a simulation, the NPC asks the player to help them (re-)write their story in real-time. The player now has the chance (the task) to create a 'true' story about the NPC, even if it isn't the story others might like to hear.

Graphical Design and Interface. The aesthetic aspects and "cartoonish" style was preserved. The introduction of another NPC for the first conflict and the post-conflict scene therefore tried to 'imitate' the original games style. Following the experimental results, there was no negative feedback regarding possible incoherencies regarding the game's graphical design that could have arisen from the modification by the introduction of novel graphical game elements.

Persuasive Effects. The game relies on appeals to empathy, sympathy and identification effects due to *ingroup bias*, which hypothetically also affect *experience-taking* and *narrative transportation* in players who identify with the protagonists' initially revealed group membership (computer science students, game designers, geeks, gamers and related labels). The first conflict, in which the
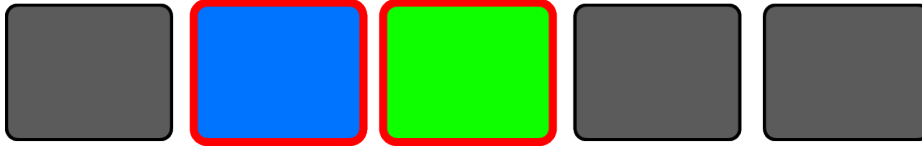
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[1]In the original game, the main character is bisexual, and therefore also experiences specific kinds of stereotype related to bisexuality.
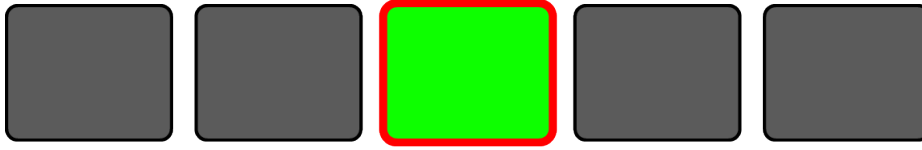
Figure 5.4: Original vs. modified storyboard after implementation of second game conflict.

antagonistic NPC invokes negative stereotypes towards this group, should generate more emotional engagement in players who identify with this group. If this effect is strong enough, it should maintain those players' engagement also in the following scene and conflict, where the character's outgroup membership (gay, bisexual, queer) is revealed. In this sense, the order of the events serves in the sense of an *affective* strategy of persuasion, and polarizes the player's attitudes.

Moreover, this procedural aspect also embodies a *propositional* argument: the first conflict has the same fallacious structure as the second one. Hence, it serves as an *analogy* that reveals the flaws of prejudiced logics. This forces a player to reach the same conclusions in the second conflict as in the first conflict, also on a level of affect. If a player felt a sense of injustice and anger in the first case, these implicit evaluations should also hold for the second case.

The positive encounter in the last scene is meant to reinvoke and appeal to the first group membership (ingroup bias) again, and to *procedurally* implicate and encourage a similar positive and affirmative reaction towards members from the second group. As the player returns, and the PC becomes an NPC again, the player both had an *imaginary encounter with* and also *took the perspective of* an outgroup member (regarding the second group concept).

5.4   Gameplay

Scene 1: Intro. The game starts with a short 'typesetter' letter animation suggesting that the title and the subtitle(s) are written onto the screen (and deleted again) in real-time, and by a person who is insecure about what they want to say. The font and syntax are a potential source of identification for players with sufficient programming knowledge to recognize and read the text as 'code'.

Figure 5.5: From left to right: screenshots from the opening animation, scene 1 (Nicky as NPC), and scene 2 (Nicky as PC).

Subsequently, the player (who is not represented by any avatar) meets Nicky, the main character, sitting in a café in front of his laptop. Nicky, who is still an NPC, addresses the player directly, telling them what they are witnessing: he is struggling with 'finding the right words' for his 'creative writing for computer scientists' class and reached a point of inability to type. This is the first direct (explicit) appeal to the players' potential similarity – if they identify with the group of 'IT students' – and anticipates the stereotype that the first conflict will be based upon: i.e., the binary distinction between 'computer geeks' versus 'creativity', which is closely related to rationality versus affect[2]. The player enters a dialogue with Nicky, in which they are represented by the answers they give by selecting among several optional answers. After agreeing to helping Nicky to 'write a non-pretentious, non-success story that he himself would like to read', the player enters the game-within-the-game, in which they will enact a character they hardly know in order to simultaneously create a more 'true' story about him than he is able to express himself. At the beginning of each 'page' (i.e., scene), Nicky will 'write' a short info for the player, who immediately find themselves in the middle of the scene plot.

Scene 2: Job Interview. The next scene starts with Nicky's job interview, in which the player (now represented by the avatar of Nicky) is confronted with an arrogant interviewer, i.e. with

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[2]This relation suggests a similar hierarchization, which is why the analogy between the kinds of stereotypical thinking depicted in the game may seem unfit at first sight. However, as was elaborated on in the previous chapters, normative thinking is per se limiting, as it prevents both individuals from the lower and the higher privileged 'side' of a dichotomous concept to transgress the categorical boundaries in order to maintain their power. Furthermore, the 'nerd' concept is also associated with highly stereotypical (i.e., negative) evaluations, e.g. lack of social competence, undesirability and similar forms of 'disabilities' related to social skills and power.

the first antagonistic NPC and, hence, conflict. When the player reveals their background to the interviewer, who is obsessed with an exclusive (and almost essentialist) idea of creativity, they are immediately dismissed with reference to several stereotypes about 'geeks', i.e. lack of social skills, creative thinking, etc. Instead, the interviewer devalues computer related knowledge as 'useful' in that it assists and facilitates the work of artists. The player's answers are sometimes shortened – indicating that the interviewer has interrupted them in an attempt of correction. The player can be careful and attempt to rescue the job interview, or defiant and expressing what they (and probably Nicky) would have wanted to say. In the end, however, the player has no other option but to leave.

Scene 3: Coming Out. In this scene, the NPC-version of Nick, who is now represented by a few lines he writes at the beginning of each scene, informs the player about his intentions to announce his relationship with 'Elli' to his parents. The player find themselves sitting at a table, about to have dinner with the parents. During this scene, it is first revealed through Nicky's mother that 'Elli' is the nickname of a friend called 'Elliot' – and hence that Nicky is in a homosexual relationship. The gender-neutral name for the character 'Elli', who is only mentioned, but does not appear during the game, was chosen for enabling this ambiguity: in this sense, the *Distancing* strategy (delayed revelation of a character's outgroup membership) was applied[3]. The player is now in the situation where they know about 'their' homosexuality, but the mother, apparently, still thinks that Elli is 'just a friend'. In this prototypical version, the possibility for the player to influence the plot is restricted to the way in which they reveal this fact to their parents. For these reasons, the basic structure of the 'coming out' dialogue was retained from the original game's version in which the player chooses to come out (however, adaptations were made where narratological consistency demanded it). The player first comes out to the mother character, who reacts in an emotional way and confronts her son with stereotypes that resemble the kind of judgements faced in the previous scene. This analogy and structural similarity is also emphasized in the resemblance of the answer options. Nicky's mother will then try to stop the player from telling his authoritarian father, who is about to come home from work, fearfully anticipating his reaction. When his father finds out as well – either because the player tell him themselves, or in accidentally being outed by the mother – Nicky gets rejected verbally and physically: the scene ends when the player is punched in the face by the father character, which was taken from the original game as well.

Scene 4: Helping the Little Brother. This scene opens with the PC still sitting at the dinner table, despite the father having told him to leave. In this scene, a friendly NPC appears: Nicky's

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[3]To be precise, the game does not directly specify Nicky's gender at any point either (and the name would work ambiguously as well), but all of the participants assigned 'male' to the player character, and therefore also applied the label 'homosexual' or 'other'
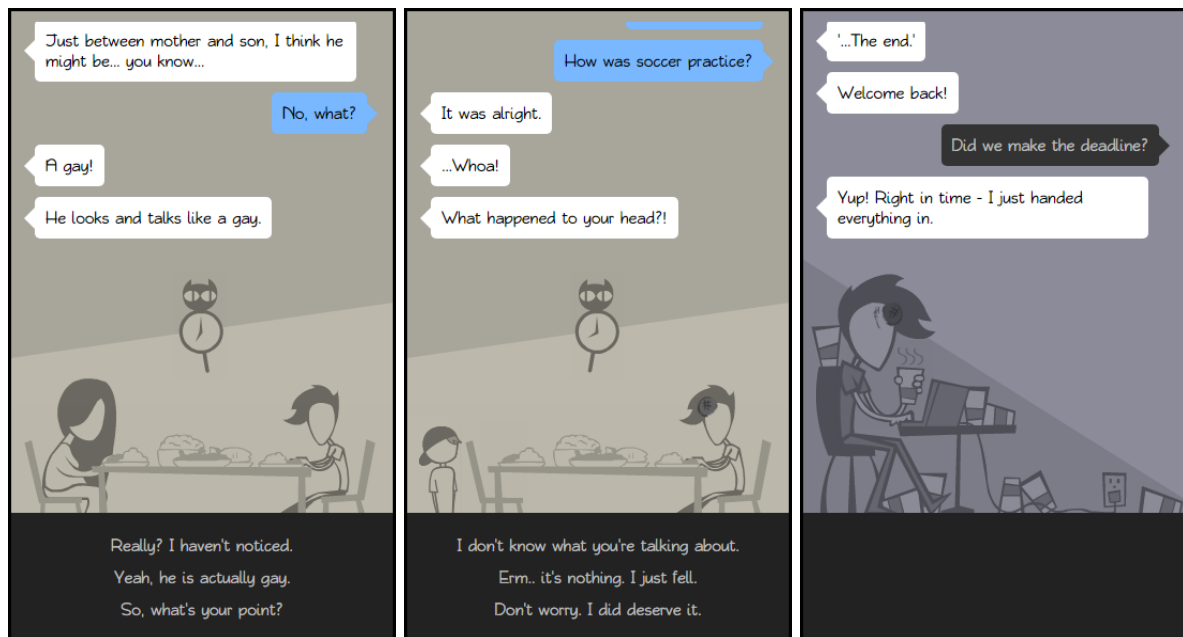
Figure 5.6: From left to right: screenshots from scene 3 and 4 (Nicky as PC) and the outro (Nicky as NPC again).

little brother, who asks the player for help with his computer science homework. Again, this appeals to the player character's according group membership – however in a positive, affirming sense. The player can refuse to help, but this will not lead to an unpleasant twist or encounter with the NPC – i.e. the brother will still continue to be 'proud' and encouraging. This, again, served the purpose of comparability. The dialogue between the two brothers further contains a 'moral' question to the player: the NPC asks whether it was 'stupid' to have pretended not to be interested in a topic he is actually curious about (i.e., computer science) at school, out of shame due to his lack of knowledge. This serves as another metaphor for the dilemma of 'coming out' versus 'staying closeted', and the reasoning and emotional aspects related to it. The game-within-the-game ends after the positive encounter with the little brother.

Outro. The player returns to the NPC-version of Nicky, who witnessed the story about himself – and reaffirms the encouragement and positive attitude towards the player.

6 Evaluation

6.1 Methodology

The experimental evaluation followed a semi-quantitative approach for in-game and post-game subjective assessment of gameplay experience. Participants were asked to test-play the prototype game and report their experiences qualitatively (providing answers to open-ended questions) as well as quantitatively (indicating their level of agreement with subjective statements on a 7-point Likert scale). These reports were obtained in written form, for which a questionnaire was used.

6.2 Experimental Setup

Participants. The study was conducted with 10 participants, 8 of them male, all of which were between 23 and 28 year-old university students. Each participant completed the test individually and voluntarily after written consent was obtained.

Setting. The study was conducted in a controlled environment, using the same infrastructure and prototype version of the game. In order to facilitate mental involvement, participants were made aware that the study did not depend on psychometric data or other objective performance measures (e.g. reaction time, reading speed or similar factors), but solely relied on the experiential data subjectively reported by them. Each run-through had a duration of about 30-40 minutes (20-25 minutes for gameplay and 10-15 minutes for completing the questionnaire). The questionnaire used for obtaining subjective data consisted of two parts: one for in-game evaluation, and one for post-game evaluation as well as for obtaining demographic data.

Questionnaire - Part I (In-Game). Part one of the questionnaire consisted of a series of three scales ranging from 1 (low or 'not at all') to 7 (high or 'very much'), indicating the level of *empathy* (the sense of being able to comprehend the character's emotions), of *sympathy* (the degree to which the player is on the character's side), and of *identification* (the degree of perceived similarity and connection between oneself and the character), respectively, that the participant had felt towards the main character Nick (referring to both the NPC and the PC version) during gameplay. This series

was answered immediately at the end of each scene (the intro/scene 1, scene 2, scene 3 and scene 4) – except for the last scene (the outro), where the second part of the questionnaire was provided.

Questionnaire - Part II (Post-Game). The same scales were used once again after gameplay, to indicate the overall levels of felt *empathy*, *sympathy* and *identification*, referring to the gameplay experience in general. Additionally, participants were asked to report their levels of *narrative transportation* using the 6-item narrative transportation scale, short form [5]. In order to assess whether the game was perceived as an educational, interventional or persuasive game, participants were asked to describe what the game was about in an open-ended question. Demographic and personal data was partly obtained indirectly, by asking participants to indicate which (perceived) demographic characteristics they share with the character. Other questions regarded interaction possibilities, technical/functional aspects of the gameplay experience, as well as feedback regarding the game and the evaluation itself.

6.3 Procedure

Pre-Game. After written consent was obtained, each participant was subsequently provided with instructions for playing the game, as well as the first part of the questionnaire, which they were asked to fill out after each game scene respectively. After the concepts empathy, sympathy and identification were explained and further remaining questions were answered, the participants started playing the game.

In-Game. The game's hypothesized ingroup effects depend on the player's impression of shared group membership, and hence on the saliency of (stereo-)typical group membership characteristics that 'unite' ingroup players with the main character. Players who indicated to identify with IT-related social concepts will be referred to as 'same-background individuals' or 'ingroup participants', and participants who did not identify with this category will be referred to as 'different-background individuals' or 'outgroup participants' (where 'background' is the defining criterion for group membership). The communication of these characteristics rely on visual and verbal (transmitted it written form) cues and metaphors embedded in the narrative.

Post-Game. Immediately after gameplay, each participant received and answered the second part of the questionnaire.

6.4 Results

The obtained data was analyzed by grouping participants based on their indication of perceived similarity (i.e. group membership) to the character with regards to five salient characteristics: educational/professional background/study field, age, gender, sexual orientation/sexuality, and interest in gaming/computer games. Of especially high interest was the impact of 'background'-based ingroup effects, i.e. to what extend a perceived shared educational/professional background and/or interest in computer games would have influenced levels of empathy, sympathy and identification felt towards the character during each scene (scene 1 – scene 4) and overall.

Levels of Emotional Engagement per Scene and Overall.

Scene 1 (Intro). During this scene, the ratings of emotional engagement on either level (empathy, sympathy or identification) don't differ significantly for any configuration of participants grouped by group membership (i.e., participants' ratings were relatively equal across all groups).

Scene 2 (Job). During this scene, the levels of sympathy rise for both same- and different-background participants. The rating of sympathy are at highest (7) for same-background, and will remain at this level throughout the next scenes, including the overall felt sympathy. The levels of empathy for different-background players increase only minimally, while same-background players indicate a rather strong rise in empathy. The greatest gap between same-group versus different-group compared levels of identification occur during this scene and for background-based group comparison (i.e. between same-background versus different background players). Identification degrees, which were on the same level for both groups during the first scene, decrease in players who don't see themselves as belonging to the group concept of 'IT' or 'computer people' during the second scene, but rise remarkably for participants who share this group membership with the main character. Their overall emotional engagement is now clearly more elevated compared to the other group, and should also facilitate experience-taking in the next scene.

Scene 3 (C.O.[1]). In this scene, the gap between emotional engagement in background-based ingroup versus outgroup participants closes again, by the overall rise in levels of empathy, sympathy and identification for outgroup participants. Sympathy-levels continue to be at highest for ingroup participants, and empathy-levels rise. Both these levels are higher compared to outgroup participants. However, identification levels fall from 6 to 5.4 in ingroup participants, and are slightly below the levels of outgroup participants (5.6). It is remarkable that despite this fall in identification rating
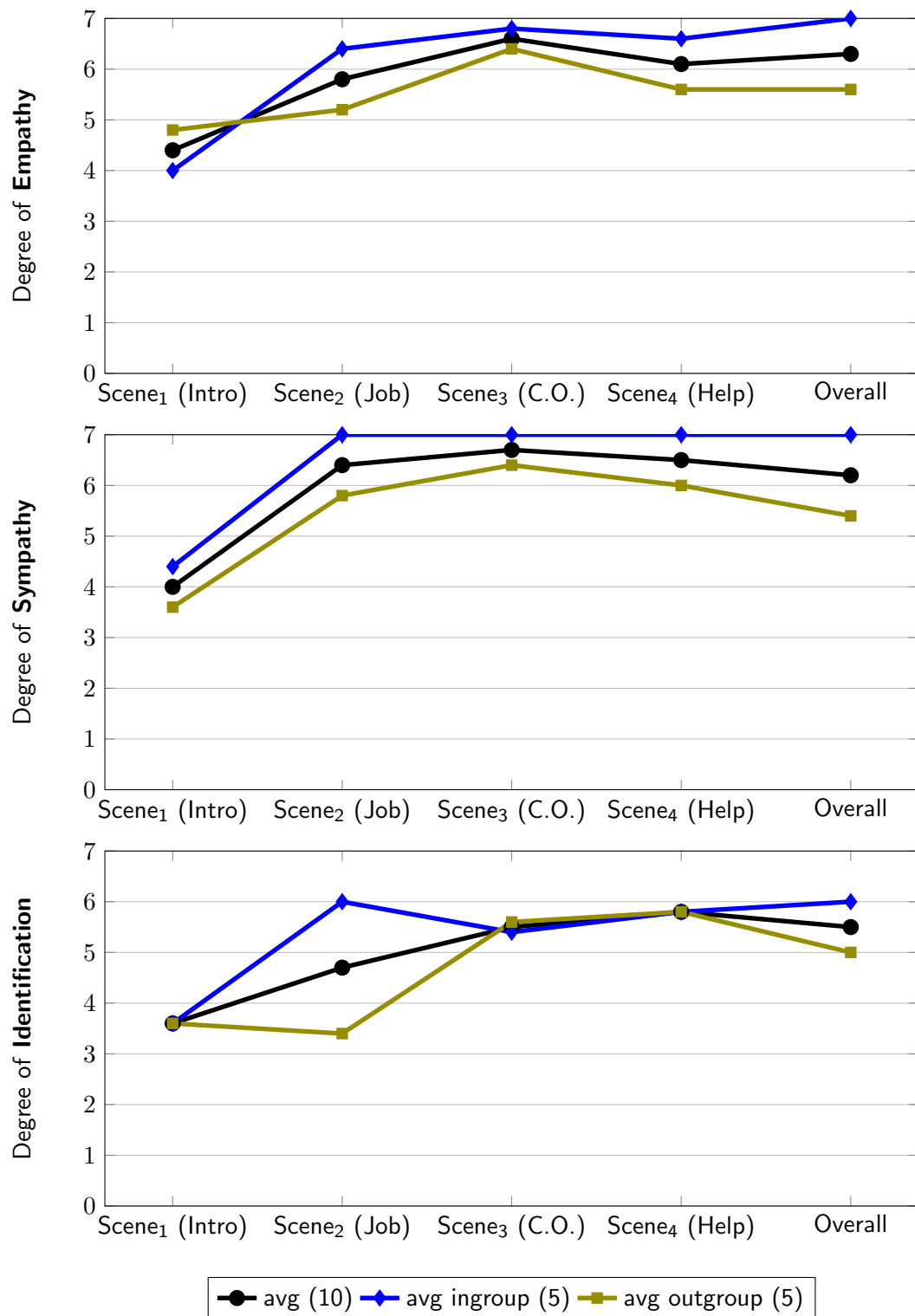
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[1]abbrev. for 'Coming Out'.

Figure 6.1: Average indicated levels (1/low - 7/high) of *empathy*, *sympathy* and *identification* in scene 1 - 4 (in-game) and overall (post-game), comparison of same-background participants (avg ingroup), not-same-background participants (avg outgroup), and all participants (avg).

during the main conflict (and longest scene), the overall rating of identifiability will again *rise* for ingroup participants, but *fall* for outgroup participants.

Scene 4 (Help). In this scene, the gap between ingroup and outgroup levels for empathy and sympathy increases again – however, identification levels still remain similar.

Overall Gameplay Experience Rating. Despite a decrease in identification levels in the main conflict, the overall identification levels of ingroup participants were higher compared to outgroup participants. All ingroup participants show a *rise* in empathy, sympathy and identification levels throughout gameplay: most importantly, their overall levels for all three concepts are higher in the overall rating of their gameplay experience compared to during the conflict. This is not the case for outgroup participants: this group shows a decrease in all levels in the overall evaluation of their emotional engagement during gameplay, *despite* elevated levels during the main conflict.

Narrative Transportation Levels. The six-item short-form *Transportation Scale* [5] was adapted so at to match the gameplay scenario. Four items were rated higher by ingroup versus outgroup participants, e.g. the of 'mental involvement' (item two), among others.

Perceived Group Memberships.

Identification with Main Character's Educational Background. Five participants indicated that they identify with the background of the main character, whereas two of them ascribed a different background to the main character than computer science, i.e. art studies and game design, which interestingly matched their background. The main character was associated with 'computer science', 'IT' or similar terms by the majority of the participants in their answer to the corresponding open-ended question.

Identification with Main Character's Age. Only two participants perceived to be of the same age as the main character (both of which chose the answer '20-25'), while the rest perceived the main character to be younger than themselves.

Identification with Main Character's Gender. Eight participants stated that their gender matches that of the main character, which was perceived to be male (or male and/or other) by all participants.

Identification with Main Character's Sexual Orientation. All participants ascribed homo- or bisexuality (and/or 'other') to the main character, whereat half of the participants indicated to identify with the main character's sexual orientation.

Identification with Main Character's Interest in Gaming. All participants responded positively to the question whether the main character had a high interest in computer games, and half of them reported to identify with that interest.

Identification with Main Character's Occupation. Nine participants perceived the main character as a student, whereat all participants stated that they themselves identify as students.

Other Perceived Similarities.

Visual Appearance. Two participants stated that the visual appearance of the main character had a faciliatory effect on their degree of identification with them. Four participants generally commented positively on the graphic design of the character and/or the game.

Family Situation. One participant also stated that the similar family situation helped them to identify with the main character.

Perceived Dissimilarities with Negative Influence on Identification Effects.

Character Motivation. One participant stated that the perceived 'attitude' of the main character during scene 1 – within which he asks the player to help him with his homework – had made them 'annoyed', because they felt that the main character 'should just do his homework on his own'.

Educational Background. At least one participant explicitly stated that their dissimilarity regarding the educational background (which was perceived to be 'something with computers') had made it rather difficult to identify with the character.

Family Situation. One participant also included the relevance of similarities concerning family settings in their feedback: the fact that they did not have a younger brother had an inhibitory impact on their ability to identify with the PC in scene 4, they stated.

7 Discussion

7.1 Indications

This exploratory study demonstrates a possible application of the general guidelines offered by the *Embedded Design Model* and their combination with further persuasive techniques and subversive strategies and assessment frameworks and tools such as the Serious Game Design Analysis framework. The proposed prototypical design is considered an iterable starting point. Similarly, the experimental findings are rather regarded as a stepping stone for further research and iteration. The experimental results suggest the occurrence of ingroup bias effects with correspondingly elevated levels of sympathy, empathy and identification reported during the introductory scene and first conflict by members who share the group membership (computer-related background) that was made salient there. Empathy and sympathy levels continued to be elevated in the second conflict even if players didn't share the group membership (queer sexual orientation) that was made salient at this point of the interactive fiction. More importantly, the levels for all three items raised after gameplay, as reflected in the overall evaluation of the game. This is consistent with the finding that narrative transportation levels on average were higher for same-background individuals as compared to not-same background individuals.

Successful Embedding of Change-Related Theme. None of the participants' answers regarding the game itself indicated that they perceived the game as an educational, interventional or social change game, while all participants were aware of the character's sexual orientation, and experienced the conflict related to it with high levels of empathy and sympathy towards the character during their coming out, which furthermore continued to be elevated for ingroup participants. The fact that the levels of identification increased again after the coming out scene further indicates that during this scene, potential defense mechanisms were circumvented – else, the participants would likely have responded with an aversion towards the game and hence decrease in emotional engagement during gameplay. The overall gameplay experience ratings were higher in all participants compared to their initial ratings, which further indicates the evasion of resistance responses. These results suggest the successful implementation of both an embedded design and evaluation strategy.

Unexpected Observations. An interesting observation was made regarding the identification of and with the character's educational background or study field: two participants ascribed a different background to the main character than the other participants, which overlapped with their own background or the one they each identified with. This suggests a potential inclination and flexibility in the perception of game character attributes, that could be exploited when designing games for a large audience. Character design could aim at ambiguity, e.g. in the visual representation or in the verbal reference to a character (as in the design choice of a gender neutral name for the NPC 'Elli') in order to be appealing for different, maybe even contradictory reasons. In consideration of the coding strategies developed by non-normative communities, e.g. naming conventions [84] or color codes [118] among queer people, ambiguity might even be employed in order to make an interventional appe,al on both an overt and a concealed level at the same time: in the first sense, such a strategy could help to communicate a game's change-related theme to a discrimination-affected or -aware target audience beforehand, and simultaneously embed the change message for a potentially averse target audience in the second sense. Another finding that deserves to be mentioned is the relevance of visual appearance and aesthetic appeal of the "cute" and "cartoonish" character design, as commented on by participants in their 'additional feedback'. Perception of similarity to the character was also facilitated through visual appearance. One participant (who reported to have a 'high interest in gaming') displayed an notable pattern in their response to 'what they like' and 'what they didn't like' about the game: their answer was 'that my answers didn't matter'. It is likely that the participant had a different approach to gameplay and higher awareness due to their gaming experience, and therefore were more susceptible to the subtle hints as e.g. given through the game mechanics. The participant did however not use terms that might have indicated their labeling of the game as persuasive, interventional or message-driven (e.g. terms like 'serious game', 'social change game', 'activist game' or the like).

7.2   Current Limitations and Further Extension Possibilities

Due to the exploratory aim and the limited scope of the present study, there are of course a number of shortcomings (or extension possibilities) that will demand consideration, elaboration and refinement in future work. On a theoretical, social psychological and cognitive-scientific level concerned with the phenomenology of normative attitude change, there are various effects and responses that additionally need to be reviewed and accounted for. The same goes for further possible persuasive strategies: research and findings in the fields of education, psychotherapy, but also marketing and advertising can provide meaningful insights, efficient techniques and suitable strategies, that deserve further investigation. On the level of conceptual design and implementation, the restrictions consist in

design choices that might have affected the game's efficiency or evaluability. Although none of the feedback given by the participants indicated unintentional negative influencing effects – e.g. due to quality impairments on the level of functionality, graphical/interface design, narratological or other gameplay elements –, the modified game was still a prototype that would need to be iterated upon in future studies. Probably the greatest shortcoming of the current design lies in the conditionality of its efficacy, which requires the message to stay hidden to the users until they 'play' it [52]. This poses a limitation to a games' (re-)usability, especially for activist purposes that seek to reach a wide audience. Also, it's effect is currently restricted to one gameplay session. This aspect could be refined with the aid of narratological devices such as cliffhanger situations [97]. These techniques could motivate further confrontation with the game and topic once the player is involved, and thereby enhance the game's efficacy and impact. Regarding methodology and evaluation, a limiting factor consists in the low sample size in combination with (semi-)quantitative data collection and analysis. In the context of the present study and its exploratory purpose, this is tenable with respect to its focus on feasibility rather than representativeness. Future work seeking to obtain reliable and representative experimental results would require further methodological elaboration. Another possible restriction regarding reliability lies in the indirect approach to attitude assessment. However, direct subjective attitudinal measures have been linked to poor reliability as well [86]. A possible way of handling these methodological challenges would be to employ implicit attitude assessment techniques [65]. Further extensions on the level of methodological design could include the collection of subjective data through in-game video- or audio-recordings in combination with post-game in-depth interviews, as was done for the game evaluation in [72]. Future studies should furthermore implement stronger control measures for asserting the understanding of concepts (e.g. sympathy, empathy and identification) and avoiding possible ambiguities of their meaning among participants. Also, the number of items the second questionnaire encompassed was perceived as slightly too high by two participants, which should be considered in follow-up questionnaire designs as well. Further, the approach of in-game questioning could be problematic: answering questions during gameplay might impact levels of immersive experience and narrative transportation, as the participants are asked to 'step out' of the game or narrative in order to reflect upon the past sequence for a short point in the plot. On the other hand, relying on retrospective feedback only would have make it more difficult to analyze the particular effects of individual gameplay elements and event order on levels of emotional engagement. While a qualitatively oriented research design seems to suit the demands of research related to subjective gameplay experience, automatic responses and objective data can assist evaluation and enrichen study results. Such data and collection methods could include methods for recording and evaluating player behavior, e.g. by logging user input (the choices that were made),

response time, or similar metrics that could further help to identify game aspects that drained most of the user's cognitive resources and/or emotional attention. A mixed-method approach might be best suited for integrating these and further aspects, but requires a greater amount of capabilities as well.

Designers as Players. Finally, a probably inevitable limitation consists in the fact that, even with highly elaborate conceptualization, design and analysis, transformational effects in autonomous cognitive agents or players can't be 'planned' for. As societal norms don't follow deterministic natural laws, but consist in the dynamical creation and re-appreciation of powerful yet contingent meanings in real-time interaction, their subversion is itself an "incalculable effect" [30]. Therefore, in the end, interventional game design might require to be approached with a playful, casual, "press-your-luck" attitude itself. After all, "[a] completely random game can also be meaningful, if the players are making interesting choices as they explore the game's system, pushing their luck and taking risks" [130, Ch. 15, p. 4].

Bibliography

[1] C. Abt. *Serious Games*. University Press of America, Lanham, MD, 1987.

[2] G. W. Allport. *The Nature of Prejudice*. Doubleday Anchor, 1958.

[3] J. Alvarez and L. Michaud. *Serious Games. Advergaming, Edugaming, Training and More*. IDATE, Montpellier, France, 2008.

[4] A. C. Aosved and P. J. Long. Co-occurrence of Rape Myth Acceptance, Sexism, Racism, Homophobia, Ageism, Classism, and Religious Intolerance. *Sex Roles*, 55(7):481–492, 2006.

[5] M. Appel, T. Gnambs, T. Richter, and M. C. Green. The Transportation Scale–Short Form (TS–SF). *Media Psychology*, 18(2):243–266, Feb 2015.

[6] S. Arnab, T. Lim, M. B. Carvalho, F. Bellotti, S. de Freitas, S. Louchart, N. Suttie, R. Berta, and A. D. Gloria. Mapping Learning and Game Mechanics for Serious Games Analysis. *British Journal of Educational Technology*, 46(2):391–411, Jan 2014.

[7] H.-S. Bae. Entertainment-Education and Recruitment of Cornea Donors: The Role of Emotion and Issue Involvement. *Journal of Health Communication*, 13(1):20–36, Feb 2008.

[8] M. E. Ballard and K. M. Welch. Virtual Warfare: Cyberbullying and Cyber-Victimization in MMOG Play. *Games and Culture*, Jun 2015.

[9] F. Bellotti, B. Kapralos, K. Lee, P. Moreno-Ger, and R. Berta. Assessment in and of Serious Games: An Overview. *Advances in Human-Computer Interaction*, 2013:1–11, 2013.

[10] M. D. Birtel and R. J. Crisp. Psychotherapy and Social Change: Utilizing Principles of Cognitive-Behavioral Therapy to Help Develop New Prejudice-Reduction Interventions. *Frontiers in Psychology*, 6, Nov 2015.

[11] G. Bodenhausen and B. Gawronski. *Attitude Change*, pages 957–969. Oxford Unversity Press, 2013.

[12] I. Bogost. *Persuasive Games: The Expressive Power of Videogames*. The MIT Press, 2007.

[13] G. Bohner and N. Dickel. Attitudes and Attitude Change. *Annual Review of Psychology*, 62(1):391–417, Jan 2011.

[14] D. Borrillo. Homofobia [Homophobia]. 2001.

[15] J. K. Bosson, J. N. Taylor, and J. L. Prewitt-Freilino. Gender Role Violations and Identity Misclassification: The Roles of Audience and Actor Variables. *Sex Roles*, 55(1-2):13–24, Nov 2006.

[16] J. Boulter. *Parables of the Posthuman: Digital Realities, Gaming, and the Player Experience*. Contemporary Approaches to Film and Media Series. Wayne State University Press, 2015.

[17] A. Bouris, J. Mancino, P. Jagoda, B. J. Hill, and M. Gilliam. Reinvigorating Adolescent Sexuality Education Through Alternate Reality Games: The Case of "The Source". *Sex Education*, 16(4):353–367, Oct 2015.

[18] E. A. Boyle, T. Hainey, T. M. Connolly, G. Gray, J. Earp, M. Ott, T. Lim, M. Ninaus, C. Ribeiro, and J. Pereira. An Update to the Systematic Literature Review of Empirical Evidence of the Impacts and Outcomes of Computer Games and Serious Games. *Computers & Education*, 94(C):178–192, Mar 2016.

[19] Breakthrough. ICED (I Can End Deportation), 2008. Available at: http://www.breakthrough.tv.

[20] J. W. Brehm. Control, It's Loss, and Psychological Reactance. In *Control Motivation and Social Cognition*, pages 3–30. Springer Nature, 1993.

[21] J. Breuer and G. Bente. Why so Serious? On the Relation of Serious Games and Learning. *Eludamos. Journal for Computer Game Culture*, 4(1), 2010.

[22] R. Brown. *Prejudice: It's Social Psychology*. Wiley-Blackwell, Hoboken, New Jersey, 2010.

[23] M. C. R. Burgess, S. P. Stermer, and S. R. Burgess. Sex, Lies, and Video Games: The Portrayal of Male and Female Characters on Video Game Covers. *Sex Roles*, 57(5-6):419–433, Jun 2007.

[24] J. Butler. *Bodies That Matter: On the Discursive Limits of "Sex"*. Philosophy. Gender studies. Routledge, 1993.

[25] J. Butler. *Gender Trouble: Feminism and the Subversion of Identity (Tenth Anniversary Edition)*. Routledge, New York, 1999.

[26] G. Calleja. Digital Games and Escapism. *Games and Culture*, 5(4):335–353, Oct 2010.

[27] S. Card, T. Moran, and A. Newell. *The Psychology of Human-Computer Interaction*. Taylor & Francis, 1986.

[28] K. A. Case, J. Iuzzini, and M. Hopkins. Systems of Privilege: Intersections, Awareness, and Applications. *Journal of Social Issues*, 68(1):1–10, Mar 2012.

[29] N. Case. Coming Out Simulator, 2014. Available at: http://ncase.me.

[30] S. A. Chambers. 'An Incalculable Effect': Subversions of Heteronormativity. *Political Studies*, 55(3):656–679, Oct 2007.

[31] M. Chen. Speech Lost from Speech: The Cognitive Linguistics of Alienation, Objectification, and Reclaiming. *PhD Dissertation. UC Berkeley: Department of Linguistics*, 2004. Available at: http://escholarship.org/uc/item/7rv3j4nf.

[32] L. Chiapello. Formalizing Casual Games: A Study Based on Game Designers' Professional Knowledge. *Proceedings of Digital Games Research Association, DiGRA, Atlanta, GA*, Aug 2013.

[33] L. Chiapello. Casual Gaming: The Changing Role of the Designer. In *Social, Casual and Mobile Games: The Changing Gaming Landscape*. Bloomsbury Academic, 2015.

[34] L. Chiapello. From "Spectator Knowledge" to "Pragmatic Knowledge": How a Philosophical Understanding of Knowledge Can Help Create Better Video Game Tutorials. In *The Philosophy of Computer Games Conference, Malta*, Nov 2016.

[35] Cisco. Cisco Visual Networking Index (VNI): Forecast and Methodology, 2015–2020, 2016. Available at: http://www.cisco.com/c/en/us/solutions/service-provider/visual-networking-index-vni/index.html.

[36] A. Clark. *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*. Philosophy of Mind. Oxford University Press, 2008.

[37] C. Crawford. The Art of Computer Game Design, 1984. Available at: http://www.vancouver.wsu.edu/fac/peabody/game-book/Coverpage.html.

[38] S. Deterding, S. L. Björk, L. E. Nacke, D. Dixon, and E. Lawley. Designing Gamification: Creating Gameful and Playful Experiences. In *CHI'13 Extended Abstracts on Human Factors in Computing Systems.*, pages 3263–3266. ACM SIGCHI Conference on Human Factors in Computing Systems, Paris, Apr-May 2013.

[39] P. Deutscher. *Yielding Gender: Feminism, Deconstruction and the History of Philosophy*. Taylor & Francis, 2002.

[40] P. G. Devine. Stereotypes and Prejudice: Their Automatic and Controlled Components. *Journal of Personality and Social Psychology*, 56(1):5–18, 1989.

[41] E. Di Paolo, M. Rohde, H. De Jaegher, and U. of Sussex. Horizons for the Enactive Mind: Values, Social Interaction and Play. In J. Stewart, editor, *Enaction: Toward a New Paradigm for Cognitive Science*. MIT Press, Cambridge, Mass, 2010.

[42] J. F. Dovidio. *Prejudice, Discrimination, and Racism*. Academic Press, University of Michigan, 1986.

[43] Entertainment Software Association (ESA). Essential Facts About The Computer And Video Game Industry, 2015. Available at: http://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf.

[44] Entertainment Software Association (ESA). Essential Facts About The Computer And Video Game Industry, 2016. Available at: http://essentialfacts.theesa.com/Essential-Facts-2016.pdf.

[45] P. Ewick and S. S. Silbey. Subversive Stories and Hegemonic Tales: Toward a Sociology of Narrative. *Law & Society Review*, 29(2):197, 1995.

[46] L. Festinger. *Conflict, Decision, and Dissonance*, volume 3 of *Stanford Studies in Psychology*. Stanford University Press, 1964.

[47] H. D. Fisher. Sexy, Dangerous — and Ignored. *Games and Culture*, 10(6):551–570, Nov 2015.

[48] B. J. Flagg. *Was Blind, But Now I See: White Race Concsiousness and the Law*. New York University Press, 1998.

[49] M. Flanagan. *Critical Play: Radical Game Design*. EBSCO E-Book Academic Collection. MIT Press, 2009.

[50] M. Foucault. *Discipline and Punish: The Birth of the Prison*. Vintage Books, New York, 1995.

[51] J. Fox and W. Y. Tang. Sexism in Online Video Games: The Role of Conformity to Masculine Norms and Social Dominance Orientation. *Computers in Human Behavior*, 33:314–320, Apr 2014.

[52] G. Frasca. Play the Message: Play, Game and Videogame Rhetoric. *PhD Dissertation. IT University of Copenhagen, Denmark*, 2007.

[53] C. Fraïssé and J. Barrientos. The Concept of Homophobia: A Psychosocial Perspective. *Sexologies*, 25(4):e65–e69, Nov 2016.

[54] D. Frey. Recent Research on Selective Exposure to Information. In *Advances in Experimental Social Psychology*, pages 41–80. Elsevier BV, 1986.

[55] T. Froese. Enactive Neuroscience, the Direct Perception Hypothesis, and the Socially Extended Mind. *Behavioral and Brain Sciences*, 38:e75, 2015.

[56] H. Gadamer. *Truth and Method*. Continuum, New York, 1998.

[57] R. M. Geraci. *Moore's Law*, pages 1364–1364. Springer Netherlands, Dordrecht, 2013.

[58] J. J. Gibson. *The Senses Considered as Perceptual Systems*. Houghton Mifflin Company, Boston, 1966.

[59] H. W. Giessen. Serious Games Effects: An Overview. *Procedia - Social and Behavioral Sciences*, 174:2240–2244, Feb 2015.

[60] Global Web Index (GWI). Data Coverage, 2016. Available at: https://www.globalwebindex.net.

[61] K. L. Gray. Deviant Bodies, Stigmatized Identities, and Racist Acts: Examining the Experiences of African-american Gamers in Xbox Live. *New Review of Hypermedia and Multimedia*, 18(4):261–276, Dec 2012.

[62] M. C. Green and T. C. Brock. The Role of Transportation in the Persuasiveness of Public Narratives. *Journal of Personality and Social Psychology*, 79(5):701–721, 2000.

[63] A. G. Greenwald and M. R. Banaji. Implicit Social Cognition: Attitudes, Self-esteem, and Stereotypes. *Psychological Review*, 102(1):4–27, 1995.

[64] A. G. Greenwald, M. R. Banaji, L. A. Rudman, S. D. Farnham, B. A. Nosek, and D. S. Mellott. A Unified Theory of Implicit Attitudes, Stereotypes, Self-esteem, and Self-concept. *Psychological Review*, 109(1):3–25, 2002.

[65] A. G. Greenwald, D. E. McGhee, and J. L. Schwartz. Measuring Individual Differences in Implicit Cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74(6):1464, 1998.

[66] J. N. Gutsell and M. Inzlicht. Intergroup Differences in the Sharing of Emotive States: Neural Evidence of an Empathy Gap. *Social Cognitive and Affective Neuroscience*, 7(5):596–603, Jun 2011.

[67] D. Haraway. *"A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," In Simians, Cyborgs and Women: The Reinvention of Nature.* Routledge, 1991.

[68] V. Hart and N. Case. Parable of the Polygons, 2014. Available at: http://vihart.com and http://ncase.me.

[69] W. Hart, D. Albarracín, A. H. Eagly, I. Brechan, M. J. Lindberg, and L. Merrill. Feeling Validated Versus Being Correct: A Meta-analysis of Selective Exposure to Information. *Psychological Bulletin*, 135(4):555–588, 2009.

[70] V. Hey. The Politics of Performative Resignification: Translating Judith Butler's Theoretical Discourse and Its Potential for a Sociology of Education. *British Journal of Sociology of Education*, 27(4):439–457, Sep 2006.

[71] H. Hlavacs. Serious Games Must Look Like Casual Games. In *Entertainment in Serious Games and Entertaining Serious Purposes Workshop at ICEC2014*, Sydney, Australia, Sep 2014.

[72] H. Hlavacs and S. Sertkan. Purpose, 2016. Available at: http://purpose.cs.univie.ac.at.

[73] S. Huh and D. Williams. Dude Looks like a Lady: Gender Swapping in an Online Game. In *Online Worlds: Convergence of the Real and the Virtual*, pages 161–174. Springer London, Oct 2009.

[74] R. Hunicke, M. Leblanc, and R. Zubek. MDA: A Formal Approach to Game Design and Game Research. In *Proceedings of the Challenges in Games AI Workshop, Nineteenth National Conference of Artificial Intelligence*, pages 1–5, San Jose, CA, Jul 2004. AAAI Press.

[75] K. Huotari and J. Hamari. Defining Gamification. In *Proceedings of the 16th International Academic MindTrek'12 Conference on Media of the Future*, Tampere, Finland, Oct 2012. ACM Press.

[76] Z. Hussain and M. D. Griffiths. Gender Swapping and Socializing in Cyberspace: An Exploratory Study. *CyberPsychology & Behavior*, 11(1):47–53, Feb 2008.

[77] International Telecommunication Union (ITU). Measuring the Information Society (MIS) Report, 2015. Available at: http://www.itu.int/pub/D-IND-ICTOI-2015.

[78] International Telecommunication Union (ITU). Facts and Figures, 2016. Available at: http://www.itu.int/ict.

[79] International Telecommunication Union (ITU) / World Bank. Internet Users (Per 100 People), 2016. Available at: http://data.worldbank.org/indicator/IT.NET.USER.P2.

[80] H. D. Jaegher and E. D. Paolo. Participatory Sense-making. *Phenomenology and the Cognitive Sciences*, 6(4):485–507, Oct 2007.

[81] G. Kaufman, M. Flanagan, and M. Seidman. Creating Stealth Game Interventions for Attitude and Behavior Change: An 'Embedded Design' Model. In *DiGRA'15 - Proceedings of the 2015 DiGRA International Conference*. Digital Games Research Association, May 2015.

[82] G. Kaufman, M. Flanagan, and M. Seidman. Creating Stealth Game Interventions for Attitude and Behavior Change: An 'Embedded Design' Model. *Diversity of Play: Games – Cultures – Identities*, 2(3):173–193, 2016.

[83] G. F. Kaufman and L. K. Libby. Changing Beliefs and Behavior Through Experience-Taking. *Journal of Personality and Social Psychology*, 103(1):1–19, 2012.

[84] J. B. Kelley. Gay Naming in Online Gaming. *Names. A Journal of Onomastics*, 60(4):193–200, Dec 2012.

[85] H. S. Kim, H. Forquer, J. Rusko, R. C. Hornik, and J. N. Cappella. Selective Exposure to Health Information: The Role of Headline Features in the Choice of Health Newsletter Articles. *Media Psychology*, 19(4):614–637, Jan 2016.

[86] M. F. King and G. C. Bruner. Social Desirability Bias: A Neglected Aspect of Validity Testing. *Psychology and Marketing*, 17(2):79–103, 2000.

[87] C. Klimmt. Serious Games and Social Change. Why They (Should) Work. In U. Ritterfeld, M. Cody, and P. Vorderer, editors, *Serious Games: Effects and Mechanisms*, pages 247–270. Routledge, New York, 2009.

[88] G. D. Konetes. The Function of Intrinsic and Extrinsic Motivation in Educational Virtual Games and Simulations (Rising Scholar Paper). *Journal of Emerging Technologies in Web Intelligence*, 2(1), Feb 2010.

[89] M. Kranzberg. Technology and History: "Kranzberg's Laws". *Technology and Culture*, 27(3):544, Jul 1986.

[90] K. Krippendorff. *The Semantic Turn: A New Foundation for Design*. CRC Press, 2005.

[91] K. Krippendorff. Principles of Design and a Trajectory of Artificiality. *Journal of Product Innovation Management*, 28(3):411–418, Mar 2011.

[92] M. Kryder and C. S. Kim. After Hard Drives - What Comes Next? *IEEE Transactions on Magnetics*, 45(10):3406–3413, Oct 2009.

[93] M. Kyselo. The Fragile Nature of the Social Mind. In T. K. Metzinger and J. M. Windt, editors, *Open MIND*, chapter 27(C). MIND Group, Frankfurt/Main, 2015.

[94] F. Laamarti, M. Eid, and A. E. Saddik. An Overview of Serious Games. *International Journal of Computer Games Technology*, 2014:1–15, 2014.

[95] Littleloud. Sweatshop, 2011. Available at: http://www.playsweatshop.com.

[96] M. A. Lodahl. Ending the Straight World Order [Video File], October 2013. Available at: tedxcopenhagen.dk/talks/ending-straight-world-order.

[97] A. Lugmayr, E. S. J. Suhonen, C. I. Sendano, and H. Hlavacs. Serious Storytelling and Serious Enter-
tainment - A Survey and Definition. 2017. Accepted by Multimedia Tools and Applications.

[98] R. Luppicini. *Handbook of Research on Technoself: Identity in a Technological Society*. IGI Global,
2013.

[99] H. Marcuse. *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Beacon
Paperbacks. Beacon Press, 1964.

[100] N. Martins, D. C. Williams, R. A. Ratan, and K. Harrison. Virtual Muscularity: A Content Analysis of
Male Video Game Characters. *Body Image*, 8(1):43–51, Jan 2011.

[101] Mary Meeker / Kleiner, Perkins, Caufield and Byers (KPCB). Internet Trends 2016 - Code Conference,
2016. Available at: https://kpcb.com/internettrends.

[102] N. L. Matthews, T. Lynch, and N. Martins. Real Ideal: Investigating How Ideal and Hyper-ideal Video
Game Bodies Affect Men and Women. *Computers in Human Behavior*, 59:155–164, Jun 2016.

[103] S. McConnell. *Code Complete*. Microsoft Press, Redmond, Washington, 2004.

[104] J. McKenzie. *Perform Or Else: From Discipline to Performance*. Routledge, 2001.

[105] K. Mitgutsch and N. Alvarado. Purposeful by Design? A Serious Game Design Assessment Framework.
In *Proceedings of the International Conference on the Foundations of Digital Games, Raleigh, NC*. ACM
Press, May-Jun 2012.

[106] L. Nakamura. Race In/For Cyberspace: Identity Tourism and Racial Passing on the Internet. In D. Trend,
editor, *Reading Digital Culture*, pages 226–235. Blackwell, Malden, MA, 2001.

[107] L. Nakamura. Don't Hate the Player, Hate the Game: The Racialization of Labor in World of Warcraft.
Critical Studies in Media Communication, 26(2):128–144, Jun 2009.

[108] R. S. Nickerson. Confirmation Bias: A Ubiquitous Phenomenon in Many Guises. *Review of General
Psychology*, 2(2):175–220, 1998.

[109] B. Nyhan and J. Reifler. When Corrections Fail: The Persistence of Political Misperceptions. *Political
Behavior*, 32(2):303–330, Mar 2010.

[110] Ofcom. Children and Parents: Media Use and Attitudes Report 2015, 2015. Available at:
https://www.ofcom.org.uk.

[111] M. F. Peschl and T. Fundneider. Designing and Enabling Spaces for Collaborative Knowledge Cre-
ation and Innovation: From Managing to Enabling Innovation as Socio-epistemological Technology.
Computers in Human Behavior, 37:346–359, Aug 2014.

[112] R. Petty and P. Briñol. The Elaboration Likelihood Model. In P. Van Lange, A. Kruglanski, and
E. Higgins, editors, *Handbook of Theories of Social Psychology: Collection: Volumes 1 & 2*, SAGE
Social Psychology Program, pages 224–245. SAGE Publications, 2011.

[113] R. Petty and J. Cacioppo. *Attitudes and Persuasion – Classic and Contemporary Approaches*. W.C.
Brown Company Publishers, 1981.

[114] R. Petty and J. A. Krosnick. *Attitude Strength: Antecedents and Consequences*. Lawrence Erlbaum
Associates, Mahwah, New Jersey, 1995.

[115] E. Pronin, D. Y. Lin, and L. Ross. The Bias Blind Spot: Perceptions of Bias in Self Versus Others.
Personality and Social Psychology Bulletin, 28(3):369–381, Mar 2002.

[116] S. Prot, C. A. Anderson, D. A. Gentile, W. Warburton, M. Saleem, C. L. Groves, and S. C. Brown.
Media as Agents of Socialization. In J. Grusec and P. D. Hastings, editors, *Handbook of Socialization*,
pages 276–300. Guilford Press, New York, 2015.

[117] R. Ratan and U. Ritterfeld. *Classifying Serious Games*, pages 10–24. Routledge Taylor and Francis Group, Aug 2009.

[118] A. Reilly and E. J. Saethre. The Hankie Code Revisited: From Function to Fashion. *Critical Studies in Men's Fashion*, 1(1):69–78, 2013.

[119] R. S. Rosenberg, S. L. Baughman, and J. N. Bailenson. Virtual Superheroes: Using Superpowers in Virtual Reality to Encourage Prosocial Behavior. *PLoS ONE*, 8(1):e55003, Jan 2013.

[120] D. D. Rucker and R. E. Petty. When Resistance Is Futile: Consequences of Failed Counterarguing for Attitude Certainty. *Journal of Personality and Social Psychology*, 86(2):219–235, 2004.

[121] B. J. Sagarin, R. B. Cialdini, W. E. Rice, and S. B. Serna. Dispelling the Illusion of Invulnerability: The Motivations and Mechanisms of Resistance to Persuasion. *Journal of Personality and Social Psychology*, pages 526–541, 2002.

[122] S. Salih. On Judith Butler and Performativity. In K. Lovaas, editor, *Sexualities & Communication in Everyday Life: A Reader*, pages 55–67. SAGE Publications, Thousand Oaks, Calif, 2007.

[123] J. Schell. *The Art of Game Design: A Book of Lenses (Second Edition)*. CRC Press, 2015.

[124] T. C. Schelling. Dynamic Models of Segregation. *Journal of Mathematical Sociology*, 1(2):143–186, 1971.

[125] A. Shaw. *Gaming at the Edge: Sexuality and Gender at the Margins of Gamer Culture*. University of Minnesota Press, Minneapolis, London, 2014.

[126] J. Slaby and S. Gallagher. Critical Neuroscience and Socially Extended Minds. *Theory, Culture & Society*, 32(1):33–59, Jan 2015.

[127] S. Stathi, K. Tsantila, and R. J. Crisp. Imagining Intergroup Contact Can Combat Mental Health Stigma by Reducing Anxiety, Avoidance and Negative Stereotyping. *The Journal of Social Psychology*, 152(6):746–757, Nov 2012.

[128] S. P. Stermer and M. Burkley. SeX-Box: Exposure to Sexist Video Games Predicts Benevolent Sexism. *Psychology of Popular Media Culture*, 4(1):47–55, 2015.

[129] B. Stetina, N. Rodax, A. Klaps, Z. Kovacovsky, S. Sertkan, and H. Hlavacs. Racism and Sexism Approached With "Purpose". Poster at General Online Research (GOR) 2017, Berlin, Mar. 15-17 2017.

[130] K. S. Tekinbaş and E. Zimmerman. *Rules of Play: Game Design Fundamentals*. MIT Press, Cambridge, Mass, 2004.

[131] K. S. Tekinbaş and E. Zimmerman. *The Game Design Reader: A Rules of Play Anthology*. MIT Press, Cambridge, Mass, 2006.

[132] S. Tomkinson and T. Harper. The Position of Women in Video Game Culture: Perez and Days Twitter Incident. *Continuum*, 29(4):617–634, Apr 2015.

[133] R. N. Turner, M. Hewstone, and A. Voci. Reducing Explicit and Implicit Outgroup Prejudice via Direct and Extended Contact: The Mediating Role of Self-disclosure and Intergroup Anxiety. *Journal of Personality and Social Psychology*, 93(3):369–388, 2007.

[134] United States Copyright Office (USCO). Copyright and the Music Marketplace. A Report of the Register of Copyrights, 2015. Available at: https://www.copyright.gov.

[135] B. Victor. Explorable Explanations, 2011. Available at: http://worrydream.com/ExplorableExplanations.

[136] D. L. Vogel and P. J. Heath. Men, Masculinities, and Help-seeking Patterns. In *APA Handbook of Men and Masculinities*, pages 685–707. American Psychological Association, 2016.

[137] J. Wajcman. *TechnoFeminism*. Wiley, 2004.

[138] D. Williams, N. Martins, M. Consalvo, and J. D. Ivory. The Virtual Census: Representations of Gender, Race and Age in Video Games. *New Media & Society*, 11(5):815–834, Aug 2009.

[139] W. L. Wong, C. Shen, L. Nocera, E. Carriazo, F. Tang, S. Bugga, H. Narayanan, H. Wang, and U. Ritterfeld. Serious Video Game Effectiveness. In *Proceedings of the International Conference on Advances in Computer Entertainment Technology - ACE 07*, Salzburg, Austria, Jun 2007. ACM Press.

[140] S. Worchel and J. W. Brehm. Effect of Threats to Attitudinal Freedom as a Function of Agreement with the Communicator. *Journal of Personality and Social Psychology*, 14(1):18–22, 1970.

[141] World Economic Forum (WEF). Digital Transformation of Industries, 2016. Available at: http://digital.weforum.org.

[142] M. Z. Yao, C. Mahood, and D. Linz. Sexual Priming, Gender Stereotyping, and Likelihood to Sexually Harass: Examining the Cognitive Effects of Playing a Sexually-Explicit Video Game. *Sex Roles*, 62(1-2):77–88, Sep 2009.

[143] N. Yee, J. N. Bailenson, M. Urbanek, F. Chang, and D. Merget. The Unbearable Likeness of Being Digital: The Persistence of Nonverbal Social Norms in Online Virtual Environments. *CyberPsychology & Behavior*, 10(1):115–121, Feb 2007.

[144] R. Zheng and M. Gardner. *Handbook of Research on Serious Games for Educational Applications*. Advances in Game-Based Learning. IGI Global, 2016.

[145] T. Ziemke, J. Zlatev, and R. M. Frank. *Body, Language, and Mind: Sociocultural Situatedness*. Body, Language, and Mind. Mouton de Gruyter, 2008.

List of Figures

58

Appendix

Questionnaire Part I – In-Game

Scene 1.
Please indicate your level of agreement with the following statements about the non-player character Nick, on a scale from 1 (="not at all") to 7 (="very much").

I empathize with Nick (I can comprehend his feelings).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7
I sympathize with Nick (I am on his side).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7
I identify with Nick (I have a sense of similarity and connection to him).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7

Scene 2.
Please indicate your level of agreement with the following statements about the player character Nick, on a scale from 1 (="not at all") to 7 (="very much").

I empathize with Nick (I can comprehend his feelings).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7
I sympathize with Nick (I am on his side).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7
I identify with Nick (I have a sense of similarity and connection to him).
□ 1　　□ 2　　□ 3　　□ 4　　□ 5　　□ 6　　□ 7

Scene 3.

Please indicate your level of agreement with the following statements about the player character Nick, on a scale from 1 (="not at all") to 7 (="very much").

I empathize with Nick (I can comprehend his feelings).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

I sympathize with Nick (I am on his side).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

I identify with Nick (I have a sense of similarity and connection to him).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

Scene 4.

Please indicate your level of agreement with the following statements about the player character Nick, on a scale from 1 (="not at all") to 7 (="very much").

I empathize with Nick (I can comprehend his feelings).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

I sympathize with Nick (I am on his side).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

I identify with Nick (I have a sense of similarity and connection to him).

□ 1   □ 2   □ 3   □ 4   □ 5   □ 6   □ 7

Questionnaire Part II – Post-Game

1. General
Please describe in a few words what this game was about.

2. Story[1]
Please indicate your level of agreement with the following statements on a scale from 1 ("not at all") to 7 ("very much").

I could picture myself in the scene of the events during gameplay.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7
I was mentally involved in the story during gameplay.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7
I wanted to learn how the story ended.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7
The story affected me emotionally.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7
While talking to the non-player character Nick, I had a vivid image of Nick.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7
While playing as Nick, I had a vivid image of the other non-player characters.
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

What did you particularly like or dislike about the story?

Like:

Dislike:

How would you rate your experience of the story on a scale from 1 ("=very unpleasant") to 7 ("=very pleasant")?
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

How would you rate the degree of impact the story had on your overall gameplay experience, on a scale from 1 (="no impact at all") to 7 (="very high impact")?
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

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[1]Transportation Scale, Short Form [5], with according adaptations.

3. Character Design
Please indicate your level of agreement with the following statements on a scale from 1 ("not at all") to 7 ("very much").

The main character was likeable.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

I could sympathize with the main character.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

I could identify with the main character.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

4. Interaction Possibilities
Please indicate your level of agreement with the following statements on a scale from 1 ("not at all") to 7 ("very much").

My choices seemed to have an impact on the immediate course of the story.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

My choices seemed to have an impact on the overall outcome of the story.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

I was satisfied with the possibility to interact with the game.

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

What did you particularly like or dislike regarding your possibility to interact?

Like:

Dislike:

How would you rate your experience of the interaction possibilities on a scale from 1 ("=very unpleasant") to 7 ("=very pleasant")?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

How would you rate the degree of impact the interaction possibilities had on your overall gameplay experience, on a scale from 1 (="no impact at all") to 7 (="very high impact")?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

5. Functionality
Did you encounter any technical difficulties or issues due to software bugs during gameplay?

6. Questionnaire
Do you have any feedback regarding this questionnaire?