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THE LIMITS AND STRENGTHS OF USING DIGITAL GAMES AS “EMPATHY MACHINES”



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Abstract

This working paper grapples with questions related to the intersection of digital games and empathy. Many people are playing games—but are they also engaged in empathy-related skills such as perspective-taking, communication, reflection, relationship-building, and choice-making as part of their game playing? Are games “empathy machines” that support greater insight into our human condition? In this paper, we seek to (1) identify strengths and weaknesses of games in relation to empathy, (2) consider how player agency, transportation, perspective-taking, communication, and other factors may affect the practice of empathy, and (3) develop initial questions, guidelines, and recommendations for creating policies and programs around using games to inspire empathy.

Introduction

Throughout the last two hundred years, new media formats have been continually lauded as being “the next empathy machine.” At the turn of the 20th century, Wagner’s opera performances were seen as being so immersive that audience members felt like they were transported from their seats and onto the stage, interacting alongside the actors (Vaitl, Vehrs, & Sternagel, 1993). In the last century, movies were also seen in this way. Roger Ebert remarked that, “Movies are the most powerful empathy machine in all the arts. When I go to a great movie I can live somebody else’s life for a while. I can walk in somebody else’s shoes” (2005, para. 2). Recently, researchers and journalists have started to connect empathy with newer media, such as games and virtual reality (e.g., Burak & Parker, 2017; Greitemeyer, Osswald, & Brauer, 2010; Isbister, 2016; Mahood & Hanus, 2017; Darvasi, 2016). Games, for instance, have been referred to as “empathy engines” (Sampat, 2017). Going further, virtual reality has been called the “ultimate empathy machine” (Milk, 2015). Filmmaker Chris Milk stated, “[Virtual reality] is a machine, but through this machine we become more compassionate, we become more empathetic, and we become more connected. And ultimately, we become more human” (2015, para. 17).

Have we overstated the potential of games for engaging empathy (e.g, Madigan, 2015)? Is any one medium especially empathy evoking? Rather than designate one medium as “the ultimate empathy machine,” we take the approach that every medium can possibly enable new ways to connect, communicate, and understand each other and ourselves; and that each medium (whether game, VR, film, literature, or website), platform, and even each particular experience, has strengths and weaknesses. Game experiences are one of many “empathy machines”—all of which have aspects

that are organic and artificial, connective and disruptive, social and antisocial, and distracting and reflective.

We, as human beings yearn to communicate exactly what is in our minds and hearts; yet, we can never fully appreciate what is in the minds and hearts of others. Each medium for communication can be viewed as simultaneously supporting greater human connection and understanding, while also being in other ways, disruptive and divisive, or antisocial and apathetic. Literature may be able to relay inner desires and intimate perspectives, but can also be seen as diluting verbal expression and oral traditions (Ong, 1982). Film may be able to transport people to another moment, time, and space, but it can also be seen as distorting truths and appeasing the masses (Murphy et al., 2011). Likewise, newer media formats such as digital games may enable us to inhabit another’s decisions and relationships, but they may also misrepresent them through the use of point systems, or by privileging goal-oriented experiences over meandering ones. Other emerging playful experiences, such as virtual reality (VR) games, may enable people to interact in hybrid realms and virtual spaces, but may not yet enable people to co-experience these worlds, or they may distract people from the real-time, complex interactions needed to fully understand another (Turkle, 2011).

The purpose of this paper, then, is to start to extract out the *who, what, why, how* and *what ifs* around games and empathy. In other words, what is the unique quality of particular playful experiences that support the production of empathy?

- *What is empathy and how do we measure it using games? Is there a more useful concept, such as compassion, perspective-taking, or sympathy that we should use?*

- *Under what conditions can particular games support empathy?*
- *What are the strengths and weaknesses of games in helping us explore, reflect on, and connect with the human condition?*
- *What are the types of elements, contexts, processes and design principles that better inspire the practice of relevant skills?*
- *What are some initial guidelines and best practices for using and designing these types of game experiences or creating policies around them?*
- *What are the gaps? What open questions should we explore next?*

This working paper builds on Darvasi's (2016) recent UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) working paper, *Empathy, Perspective and Complicity: How Digital Games Can Support Peace Education and Conflict Resolution*, which looked at connections among playing video games, empathy and peace education. Our working paper investigates initial characteristics of games in relation to empathy more generally, starting with elements proposed by Schrier (2016a; 2017) and Belman and Flanagan (2010), such as perspective-taking, identity, reflection, choice-making, agency, storytelling/narrative, relationship-building, and communication. To generate initial questions and guidelines, as well as reveal any gaps, we will share relevant empirical evidence and scholarly research, useful anecdotes, and analyses of case studies.

¹ In a separate study, published at the same time as the Anderson et al. report, Wiseman and Burch (2015) discovered issues with asking girls in surveys to self-report and identify as being a "gamer;" that term can be a loaded word. Girls reported that they play a variety of types of games, and sometimes play as different genders (Wiseman & Burch, 2015). It is also possible that girls may have self-reported playing fewer online games because of the toxic culture of bullying and harassment that can exist among players (Sholars, 2017).

Why Investigate Games and Empathy?

We sought to investigate the intersection of games and empathy for four key reasons:

(1) *Games are increasing in popularity and pervasiveness and are becoming more necessary to investigate.*

Digital games are an increasingly ubiquitous part of today's popular culture. Digital games are played in approximately two-thirds of all United States households (Entertainment Software Association, 2017). Like social media and instant messaging applications, online digital games have been increasingly pervasive in the digital landscape in which teens cultivate friendships (Anderson et al., 2015). Teenage girls tend to connect with others using social media tools, in addition to games and other media, and "teenaged boys use video games as a way to spend time and engage in day-to-day interactions with their peers and friends" (Anderson et al., 2015, p. 4)¹. Appreciating the audience and sociocultural context to game playing (such as its relationship-building, connective, and emotional facets) is therefore imperative to furthering not only our knowledge of games, but also our understanding of humanity and how we develop intimacy and connection with and empathy for others more generally.

(2) *Games may erroneously be considered antisocial and we need to research their contours and complexities.*

Compared to non-interactive, or "traditional" media (i.e., books, film), digital games are

perceived as a new medium (Behringer, 2016). As a new medium, it also has invited “moral panic,” such as the ways it may be either corrupting humanity, or that its existence is a sign of decaying values (Ferguson, 2008). For example, in the popular and mainstream press, as Darvasi (2016) notes, the possible limitations of games are often cited and emphasized (in terms of antisocial behavior, such as violence, aggression, addiction, and isolation), rather than its strengths. Burak and Parker (2017) compared the new media bias games receive to that of comic books, a storytelling genre that has similarly gone through years of growing pains to achieve cultural acceptance. However, like other once-new media, games are evolving, maturing and are continually being reinterpreted. For instance, take comic books. Once considered frivolous, Spiegelman’s (1986) Holocaust-set *Maus: A Survivor’s Tale: My Father Bleeds History*, along with *Persepolis: The Story of a Childhood* (Satrapi, 2000) and *V for Vendetta* (Moore & Lloyd, 1988) elevated many people’s perceptions of comic books as a medium, “ushering in a new era for the art form” (Burak & Parker, 2017, pp. x-xi). While it is not our goal to legitimize games and gaming, as we believe it is already a legitimate medium, art form, technology, and/or form of entertainment, in this working paper, we want to highlight features of gaming that move the conversation away from “panic” and instead toward “possibility.” Each time we create and interact with a new medium, we also need to explore its boundaries and experiment with its possibilities, while also realizing its limitations and weaknesses. Thus, a purpose of this paper is to readdress and reconsider games, even those games made for commercial aims and popular enjoyment, and propel further conversations about what games can (and cannot) do.

(3) We need to more rigorously investigate if games can help teach essential socio-emotional skills.

Games have been implicated in supporting

skills and practice in a variety of areas, from mathematics and art, to historical thinking and music (Gee, 2007; Schrier, 2016b). Can games also support socio-emotional learning (SEL) and skills? For youth in particular, the ability to be empathetic is a social awareness competency and part of the Collaborative for Academic, Social, and Emotional Learning’s evidence-centered Social Emotional Learning Framework (Core SEL Competencies, 2017). Social awareness includes the ability “to take the perspective of and empathize with others, including those from diverse backgrounds and cultures,” and it is a desired 21st century skill (Core SEL Competencies, 2017, para. 2). Games have also been implicated in areas of SEL, such as understanding, reflecting on, and regulating one’s own emotions. For instance, Bréjard et al. (2016) observed those who frequently play digital games being more adept at regulating their emotions than those who report occasional play; however, those same players may “express their emotions less than irregular gamers” (p. 347). We should also explore whether games can help build other types of SEL skills. This paper is a call to move beyond colloquial applications of empathy to gaming and interactive experiences, but to more rigorously applying and investigating it and understanding how games can support (or even destroy) connections and caring among people.

(4) We need to cultivate new ways to teach empathy-related skills amid a possible lack of such skills in everyday practice.

The mediasphere is saturated with reports of a growing divisiveness and incivility among groups, rising prejudice and racism, and the perpetuation of “echo chambers” where people only hear their own perspectives and do not engage in civil discourse with others who do not share their views (Yusuf et al., 2014, p. 1). Regardless of whether this is actually increasing, or has always existed, we need to find new ways to cultivate empathy-related skills and attitudes. For instance, how do we negotiate

and reflect on others' (and perhaps even our own) fear, racism, disrespect for others, and xenophobia? How do we manage and de-escalate behaviors like trolling, online harassment, and cyberbullying? How do we empower people to take on perspectives, to listen, to deliberate effectively, to act respectfully, and to consider others compassionately online and in public? We need to find new ways to help people connect, form relationships, bridge gaps, take on new perspectives, engage in civil discourse, gain respect for others, and learn about cultures and peoples different from themselves. Can game experiences help support the practice of essential empathy- and compassion-related skills, behaviors, and attitudes? What are the limitations?

How Do We Learn Through and With Games?

Players cannot help but learn while playing a game. In fact, there is no experience which fails to teach us something—even if it is just a glimpse into a new world, view, system, or set of rules. Games are no different, and through the very act of playing a game, players are learning about that game system, its rules and boundaries, its constraints and possibilities, and its way of addressing and communicating its values and worldviews.

What is a game? A game can be defined as “a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome” (Salen & Zimmerman, 2003, p. 80). Well-designed games present players with an ordered series of meaningful choices that are usually intended to be optimally challenging to the player (Gee, 2007; Salen & Zimmerman, 2003) and “are crafted in ways that encourage and facilitate active and critical learning and thinking” (Gee, 2007, p. 38).

As a type of interactive media, digital games offer particular affordances, or characteristics, that set it apart from other types of media, such as film and literature. Participants actively

play, inhabit, and interact with an experience, rather than just view, watch or embrace it. Play, which occurs within the bounds of a game's system, is a “voluntary” activity (Huizinga, 1938/1955, p. 28), in which “everyone knowingly and willingly” participates (McGonigal, 2011, p. 21). Suits (1978) describes this acceptance of imagined experiences as a “lusory attitude”—a playful mindset to willingly accept arbitrary constraints and goals of a game's “possibility space,” as prescribed by the rulesets (p. 121).

Games, therefore, may have distinct qualities that may support (or limit) the practice of empathy. In some games, for instance, players may perform the game using an avatar, or digital representation of them in the game or virtual world. When a player has an avatar, each game experience may be unique depending on the choices and decisions players make as that avatar; and their avatar may even grow and change based on these choices. For instance, in the role-playing game (RPG) *Fallout 3* (Bethesda Game Studios, 2008), players can customize avatars, adjusting gender, race, facial features, height, build, and hair (Graber & Graber, 2011). The player then controls this avatar as they explore a post-nuclear apocalyptic world, go on missions, interact with other characters, and fight zombies, “radscorpions,” and “deathclaws.” The avatar's stats (statistics), such as moral alignment, strength, and charisma, change based on the decisions players make for their avatar, as well as the perks, objects and points they acquire and missions they complete. These stats then affect how the avatar can interact with other characters, what areas, storylines, and missions they can access, and the groups with which they can align.

Aside from role-playing games that use avatars, there are many other genres and types of games, such as first-person shooters, puzzle games, platformers, online social games, rogue-like, and interactive narrative games. Each of these types of games may have their own strengths and weaknesses, and approaches, to supporting

(or limiting) empathy. For one, games do not need to even have avatars or any other characters or people in them to evoke empathy, and can even just use abstract symbols and/or systems. For example, in abstract games, a symbolic grammar tells a story, as the game’s “designers tried to implement values through player actions, rewards, narrative premise and goals, and rules within the environment” (Flanagan & Nissenbaum, 2014, p. 108). In *Loneliness* (Necessary Games, 2011), the player moves a small black square around a white screen while other black squares react to its movements. The game simply and evocatively enacts, performs, and evokes emotions and conditions such as sadness and exclusion. *POX: Save the People* (Tiltfactor, 2010) uses colored tokens to symbolize sickness, tasking players to create vaccination circles, actions that illustrate “herd immunity” (Flanagan et al., 2011, p. 1). The game’s designers used dots to represent people in society vulnerable to illness, rather than illustrating largescale pandemics facing cities or nations; the idea was that players would have more empathy for individual people (Flanagan et al., 2011). The game *Layoff*, from the same design studio as *POX: Save the People*, (Tiltfactor, 2009), also abstracts real world issues, this time with “a mod [modification] of the casual game *Bejeweled*,” to represent corporate layoffs (Belman & Flanagan, 2010, p. 13). (Note: an NPC is a non-player character, or character controlled by the computer game, rather than another person). Instead of falling gems, tiles represent employees, each with “a detailed personal biography that pops up when their tile is selected,” which serves to build “a bond of empathy” between player and NPC (Belman & Flanagan, 2010, p. 13). In abstract and puzzle-based games, players demonstrate what Belman and Flanagan (2010) call a “reactive empathy” to each tile’s biographies, which may also be dependent on how players personally connects and relates to the NPCs’ backstory (p. 14). Reactive empathy describes “an emotional response that is unlike what the other person is experiencing” (Belman & Flanagan, 2010, p. 6).

Clark Abt (1970) originated the term “serious games” to describe games primarily intended for educational applications and other non-entertainment pursuits, such as research, training, or healthcare, or digital games “that serve purposes other than pure entertainment” (Arnab et al., 2013, p. 15). Examples range from the aforementioned *Layoff* to the U.S. Army-commissioned military training game *America’s Army* (2002) to Harvard Business Publishing’s teambuilding and leadership simulator *Everest* (2013). Serious games, “especially training games, usually target very specific market segments” (Michael & Chen, 2006, p. 6). For example, the serious game *Re-Mission* (2006), designed by the HopeLab Foundation, has the goal of educating young cancer patients.

While some games are specifically made for educational purposes, all games could conceivably be used, modified, or contextualized for educational purposes. For instance, in a classic example, Squire modified *Civilization III* (Firaxis Games, 2001) to be used in a social studies classroom (Squire, 2004). Schrier uses the previous year’s Global Game Jam games (games that were made for the festival in only 48 hours) to teach students about playtesting, observation, and listening by having pairs of students take turns watching each other and playing the games. Thus, regardless of the initial purpose, games not initially created for empathy could potentially be adapted and contextualized in a way to teach and help people learn or practice skills related to empathy, or to test our assumptions about it.

Using games in educational contexts can “harness the spirit of play to enable players to build new cognitive structures and ideas of substance” (Klopfer, Osterweil, & Salen, 2009, p. 5), such as those related to mastering game mechanics that are balanced with learning goals. Using games for learning purposes “structures learning activities around real-world or fictional challenges that compel learners to take on a variety of roles as they actively identify and seek

out the tools and multi-disciplinary information they need to generate solutions” (“Institute of Play,” 2015). A balanced design aligns core game mechanics, or actions players take, with the designer’s intended learning goal (Beall et al., 2015). In a balanced design game where player empathy is the goal, “desired behaviors can be modeled through game mechanics. For example, a game about assisting peers at risk for suicide might require players to notice symptoms of suicidal ideation in non-player characters (NPCs)” (Belman & Flanagan, 2010, p. 10).

For this working paper, we are interested in both existing commercial games and also games that were intentionally created to teach empathy. In the next section, we define empathy and these related skills.

Defining Empathy

First, we need a working definition of empathy—a concept that is often debated and difficult to define. A popular conception of empathy is that it involves “being in another’s shoes,” “understanding what someone else is feeling or thinking,” and considering someone else’s lived experience and inner emotional state. According to Batson, empathy includes “feeling for another person who is suffering” (Batson, 2009, p. 8). This is distinct from other concepts such as compassion, which we feel is also important to understand in relation to games. With empathy, for instance, we take on other’s suffering, joy, heartbreak, or pride, whereas with compassion, we value others, care about other’s needs and want to address them, without necessarily enacting their pain (Bloom, 2017). In fact, as discussed below, Bloom argues that there are distinct neurological and behavioral consequences for empathy and compassion (Bloom, 2017), and that compassion might be a better fit for inspiring prosocial behavior and moral decision-making.

Empathy is often described as having emotional,

behavioral, and cognitive components. For instance, building on Jean Decety’s (Decety & Jackson, 2004; Decety & Moriguchi, 2007) definition of empathy, Gerdes et al. (2012) identified four core components of empathy by Gerdes et al. (2011): “(1) the capacity for an automatic or unconscious affective response to others that may include sharing others’ emotional states; (2) a cognitive capacity to take the perspective of another; (3) the ability to regulate one’s emotions; and (4) a level of self-/other-awareness that allows some temporary identification between self and other, but also ultimately avoids confusion between self and other” (p. 112). Notably, the second component suggests that perspective-taking is a key part of empathy. This involves trying to understand someone else’s views and see another’s experience as they experience it (Brown, 2013). In other words, people who act, think, and behave empathetically: 1) see the world as others see it; 2) are non-judgmental; 3) have an understanding of another’s feelings; 4) and can communicate this understanding (Wiseman, 1996, p. 1165).

Batson (2009) identified eight common applications of empathy. People who are empathetic:

1. *Know a person’s internal states, including his or her thoughts and feelings*
2. *Adopt the posture or match the neural responses of an observed other*
3. *Come to feel as another person feels*
4. *Intuit or project oneself into another’s situation*
5. *Imagine how another is thinking and feeling*
6. *Imagine how one would think and feel in the other’s place*
7. *Feel distress at witnessing another person’s suffering*

8. *Feel for another person who is suffering* (Batson, 2009, pp. 4-8).

Moreover, research from neuroscience also suggests that imitative-observation behavior is correlated to empathy, emotions, and related thought processes (Carr et al., 2003; Jackson et al., 2005). Iacoboni (2009) argues that neuron mirroring systems help people understand actions. Biologically, this occurs in the limbic system, where mirror neurons respond to stimuli of images of facial expressions (Carr et al., 2003). This process of action representation, in which people imitate emotions of others, “is a cognitive step toward empathy” (Carr et al., 2003, p. 5501). Media, such as literature, film, or digital games, can support the process of action representation, which can affect one’s empathic abilities. However, as Chen explains, “not all stories trigger mirror neurons. The listener needs to feel so enraptured by vivid and concrete imagery that the listener feels like this is a living world filled with believable characters and situations” (Chen, 2017b).

Other disciplines approach and define empathy differently. For instance, Sutherland (2015) uses a philosophical, cultural theory, and computation approach and uses the concept of “staged empathy” to investigate how virtual reality may support empathy, which she argues consists of a reflexive and performative process that involves the “externalization of an inner imitation in a virtual reality system” (p. 9).

Furthermore, the primacy of empathy has been debated. Bloom (2017), for instance, argues that compassion is the more relevant concept. Empathy, Bloom argues, can lead to feeling what another feels, but that does not mean the outcome of decisions and actions are appropriate and effective. Bloom cites research that shows that when people are prompted to put themselves in someone’s shoes, they make biased and often unfair decisions, such as caring about the needs of one person rather than the many, or empathizing more with those in their “in-

group” than the “out-group,” possibly leading to biased decisions. This means that people may not be able to resonate with longer-term policies that can help many people because they are focused on one victim or one type of person in the short-term (Bloom, 2017). Empathy can also be exploited to disadvantage some groups or activate people against people they believe to be enemies (Bloom, 2017).

Thus, Bloom argues that compassion may be more relevant for supporting empathy, but the relationship between empathy and compassion is still not clear, and one may support the other, even if they are distinct. Moreover, empathy is important for mother and baby, friends, or partners, to support intimacy in a relationship, though it may not work as well with inspiring prosocial behaviors or ensuring fair decision-making around strangers or policies (Bloom, 2017).

We acknowledge that the behavioral, cognitive, and neurological mechanisms and consequences of compassion and empathy may be different. For the purposes of simplicity, we will focus on empathy for this paper. However, compassion may also be useful to consider further in relation to games, gaming, and play, and we invite future research on this topic.

Why Be More Empathetic?

Why might it be so important to be empathetic, and to use games or other media to enhance empathy? We have created an initial list of possible reasons, based on prior research on the intersection of games and empathy (Darvasi, 2016; Flanagan & Belman, 2010; Schrier, 2016b; Greitemeyer, 2013).

1. **Understanding of different perspectives and experiences.** First, being more empathetic can help us understand different types of experiences and human perspectives, which can help us learn more about other cultures, religions, and communities. Empathy allows us

(even if temporarily) access into other's perspectives and enables us to relate to what a character, avatar, society, culture, or creature needs and is experiencing (Gerdes et al., 2011). This enables us to not just focus on our own needs, but to also care about what is being communicated to us through a game or other media about a particular person, creature, place, object or thing, and to engage in their journey and experience.

2. **Caring for others.** Second, being an empathetic person can compel someone to tend to others (Mencl & May, 2009). Mencl and May (2009) explain that empathy is "the moral emotion concerning the welfare of others that facilitates interpersonal relationships and positively influences people to engage in prosocial and altruistic behaviors" (p. 208). Likewise, according to Feshbach and Feshbach (2009), empathy can "increase social understanding, lessen social conflict, limit aggression, increase compassion and caring, lessen prejudice, increase emotional competence, and motivate pro-social behavior" (as cited in Darvasi, 2016, p.6). Thus, empathy may be used to help individuals connect, to temper self-interest and harm of others, and to sustain societal dynamics over solely individual needs. While researchers have noted that empathy can be used both to induce altruistic and prosocial behaviors, it can also be used to manipulate and take advantage of others (Noddings, 2010), and that solely empathizing does not necessarily also lead to prosocial behaviors (Vascelos, Hollis, Nowbahari, and Kacelnik, 2012) and may instead depend on other factors such as one's identity and status (Jolliffe & Farrington, 2006; Hardy, 2006).
3. **Self-reflection and self-compassion.** Third, being more empathetic may help us

understand our own emotions and identify our needs. It makes us feel less isolated and alone and can help us to see that others are going through what we go through. It can help us become more self-compassionate (Neff, 2003), or caring toward ourselves, because we can see that our trials and tribulations, vulnerabilities and flaws are a part of the greater human condition.

4. **Help in making ethical decisions.** Moreover, empathy-related skills may be related to ethical decision-making and moral development (Jolliffe & Farrington, 2006). Schrier (2016a) looked at ethical decision-making in games, and found that skills such as perspective-taking and emotional awareness play a role in making choices in the role-playing digital game (RPG) *Fable III* (Lionhead Games/Microsoft Studios), a game where players need to decide how to rule a fictional world and treat its citizens (who are NPCs or non-player characters).

In the following sections, we will consider particular affordances or characteristics of digital games, and how they may relate to empathy based on current evidence, observations, and research. We will introduce different concepts (such as transportation) and then support that with related case studies, examples, and scholarly research. The working paper's structure is as follows:

1. *Immersion and transportation into game worlds*
2. *How player agency supports (and limits) empathy*
3. *Perspective-taking and identity*
4. *Relationships with non-player characters (NPCs)*
5. *Connection and communication*

Immersion and Transportation into Game Worlds

“Anybody can relate to being invited into a place of intimacy. It means that you’re welcome. You are not a fly on the wall. You deserve to be there, emotionally.” (R. Green, personal communication, May 11, 2017)

One of the strengths of good storytelling—whether during live storytelling, or through a book, film, or game—is the ability to engage an audience and invite them to step inside an imaginary world. When describing how readers accept events in fictional worlds, poet Samuel Taylor Coleridge coined the phrase “willing suspension of disbelief for the moment” in 1817. This suspension “refers to a reader’s (or audience’s) willingness to accept the author’s vision of a time, place, world, or characters that, were they not in a work of fiction, would be unbelievable... even if it makes no sense within our own world” (Schrier, Torner, & Hammer, in press). One way of describing this form of deep engagement is that it is a type of “transportation” to other realms, such that we feel like we are “really there experiencing the events” and immersed in the storytelling experience. When viewers emerge from the transported state, they are often changed as a result of being so deeply engrossed in the narrative,” such that their attitudes and behaviors actually change in relation to the story (Murphy et al., 2011, p. 411).

Transportation theory describes this type of “mental transport” and attitudinal change, which occurs based on the strength of a particular narrative (Gerrig, 1993; Gerrig & Prentice, 1991; Green & Brock, 2000). Transportation happens when audiences become “lost” in fictional worlds (Gerrig, 1993, p. 3) because a narrative is so strong and engaging (Murphy et al., 2011). For players to be transported into fictional game worlds they must be invested in the narrative—and, conversely, the creators of the narrative should be invested in the player’s experience.

Typically, transportation theory is applied to literature experiences, but researchers have also started applying it to digital games and suggested that certain digital games can transport players into fictional worlds and even potentially support empathy-related behaviors and actions as part of this engagement (Belman & Flanagan, 2010; Greitemeyer & Osswald, 2010; Flanagan & Nissenbaum, 2014; Mahood & Hanus, 2017). In some digital games, for instance, the player controls an avatar and acts as the protagonist-hero, who actively embarks on quests and missions to fulfill the goals of the game. The player is able to explore the world of the game, such that the player really is interacting with a virtual world, meeting its characters, traversing its topography, and finding its treasures. Games may even incorporate storytelling elements associated with mythology and folklore to encourage further player transport into the game’s system (Bowman, 2010; Cragoe, 2016).

Meaningful play, ability to explore virtual spaces, well-balanced challenges, and/or strong storytelling can help transport players into a state of “flow”—a state that one experiences when an activity is neither boring nor overly challenging (Csikszentmihalyi, 1990). When in the “flow channel,” people have “a sense of discovery, a creative feeling of transporting the person to a new reality” (Csikszentmihalyi, 1990, p. 74). In digital games, players are able to enter this “flow state” when they are well-matched with the game’s pacing and progression; such as when the skill and the difficulty levels increase in way that makes the experience neither frustrating nor boring (Lazzaro, 2009; McGonigal, 2011; Schell, 2014). Lazzaro (2009) points out that flow can occur when someone is immersed in a well-balanced activity, such as gardening, and not just in tense problem solving situations. As it happens, “players often cycle between states of deep engagement punctuated by powerful emotional moments... players clearly respond and seek out factors outside of the flow model” (Lazzaro, 2009,

p. 14). In the video game *Fallout 4* (Bethesda Game Studios, 2015), for instance, players can spend time building affiliations with factions (teams of NPCs), collecting items to level up their avatar (which can be male or female), or simply spending time exploring the landscape. There is a balance between tense battles (such as between one's avatar and a deathclaw) and more mundane tasks, such as talking, crafting, and exploring. Moreover, players do not just suddenly approach a deathclaw, but may fight much easier, lower-level zombies, and learn and grow until they are ready to approach larger challenges. This balance of activity type and progression of ability may help to maintain engagement and a feeling of flow in the game.

A question is whether there is a link among transportation, flow, emotions, and empathy. In mediated narratives such as film and television, viewers can have “parasocial interactions’ with characters, thus immersing them more deeply in those worlds” (Isbister, 2016, p. 7). In games, because of player choice, “an additional palette of social emotions” are possible, such as guilt (Isbister, 2016, p. 9). Researchers have suggested a “synergistic effect,” or link, between experiences that result in feelings of guilt, and empathy (Tangney & Dearing, 2002, p. 83). Guilt-proneness, or the ability to be receptive to guilt emotions, has been “positively associated with self-report measures of other-oriented empathy and perspective taking” (Treeby et al., 2016, p. 1509). The emotion of guilt is focused “on specific incidents and behaviors, and entails a sense of personal agency and control” (Roberts, Strayer, & Denham, 2014, p. 465), therefore a person “in the midst of a guilt experience is more likely to recognize (and have concerns about) the effects of that behavior on others rather than on others’ evaluation of the self” (Tangney & Dearing, 2002, p. 82).

Mahood and Hanus (2017) tested whether player transportation in the fictional worlds of certain role-playing games (RPGs) can bring out emotions of guilt and shame in players.

Two groups of participants played the post-apocalyptic set RPG *Fallout 3* on an Xbox 360 after viewing digital clips of past actions their on-screen avatars took; some participants’ avatars had a “positive moral backstory,” while others had a “negative, immoral backstory” (Mahood & Hanus, 2017, pp. 65-66). Player’s emotions, as well as the degree players were transported into the *Fallout 3*’s fictional narrative world, were measured. Their findings supported transportation theory in RPGs in that “players that felt transported or ‘wrapped-up’ in the narrative felt the most guilt” following negative actions they took in the game. This supports Mahood and Hanus’ (2017) hypothesis, which relates transportation theory to guilt, and perhaps, to empathy as well (p. 69).

Thus, if we want to inspire empathy, should we create games that transport us? To what extent do we maintain a balance between immersing someone in a virtual world and story space, and enabling people to connect further with others (and themselves) in their everyday lives? Could players become so wrapped up in a game that they forget to care about themselves or others in their lives? How much immersion is necessary to inspire emotions?

Moreover, not all stories, virtual worlds, or playable experiences are equal. Some games can engage our hearts and minds, and some may not. The same game may be immersive for one person and not for another. Many games use other types of techniques and characteristics, beyond storytelling or exploration of open worlds, to engage and motivate players.

Many game players are not even particularly motivated by storytelling, role-playing or immersion, and prefer the many types of experiences, such as ones involving destruction, chaos, action, strategy, or social interactions (e.g., Yee & Dicheneaut, 2016). Thus, while transportation theory and storytelling may help to describe some of the potential of games for supporting empathy, this is only one possible element.

Further questions

- What is the relationship between engagement (or “transportation”) in a game, and the practice of empathy?
- What roles do narrative and storytelling play in cultivating empathy in games? Do games need these elements to not only transport players, but also support empathy-related skills?

How Player Agency Supports (and Limits) Empathy

How does agency play a role in empathy? Agency is “the satisfying power to take meaningful action and see the results of our decision and choices” (Murray, 2017, p. 159). Agency is defined as the understanding that “actions taken by the player [will] result in significant changes within the world” (Gibbs, 2011, para. 4). Film and literature tell stories where the audience is not able to affect the outcome or embody the decisions of the narrator or characters. Does this mean viewers or readers have no agency? Regarding literature, for instance, Mendelsund (2014) has argued that readers do have agency in how they visually interpret and make meaning of an author’s words, although they cannot directly control the direction of the narrative. On the other hand, in many digital games, players can feel a sense of control over outcomes in the game’s system (Salen & Zimmerman, 2003). For instance, role-play in narrative-based games can give players a sense of agency over their virtual destiny (Fullerton, 2003). These feelings of agency are a distinguishing characteristic of games as opposed to other media—players experience the cause and its effects in games *because* the player is allowed to make meaningful choices (Isbister, 2016) and control their game experience. However, choice and agency typified in game systems are not necessary for evoking emotion (Isbister, 2016; Juul, 2003; Kokonis, 2017).

On the other hand, the sense of agency that a game player feels may be illusory. A player may feel they can make meaningful choices that affect the outcome of a game, but in fact, the story may actually be “on rails” and all multiple story threads may lead to a single outcome no matter what someone chooses. This section considers how digital games may expand or limit player choice and the relationship between agency and empathy.

The online text-based game *SPENT* (2011), from brand awareness agency McKinney, is an example of a digital game intended to inspire empathy for the poor—specifically for the homeless shelter, Urban Ministries of Durham. It has been “played by 4.5 million players from around the world and generated over 100 million media impressions with one press release” (McKinney, 2011, para. 1). Although McKinney stated that the game was not created to raise funds for the Urban Ministries of Durham, it has raised over \$70,000 (McKinney, 2011). *SPENT* presents players with two difficult financial decisions, such as whether the player should spend money on new shoes for their kid or pay to fix a broken toilet. As the player progresses in the game and makes a series of financial choices, the player can watch as their funds deplete, which serves as their score in the game (McKinney, 2011). At the end of an in-game month, players can see if they went over budget (the “lose” situation) or if they were able to maintain a score “in the black” (the “win” situation).

Roussos (2015) tested whether playing *SPENT* increased player empathy for the plight of the poor. She hypothesized that the choices in the game, which were presented to align with perspective taking, would in fact increase empathy and reduce prejudice. However, she found that playing *SPENT* actually had a negative effect on attitudes toward the poor among certain participants—“including some people who were sympathetic to the poor to begin with” (Roussos, 2015, para. 5). Roussos (2015) attributed the lowering of empathy for the

poor to the participant's preconceived beliefs of society being a meritocracy. A meritocracy is the idea that success is determined by how hard one works and that there are no external influences that affect how well one does (Kluegel & Smith, 1986). The ability to make in-game decisions implied to players that poor people have personal agency over outcomes. Some players brought to the game preconceived beliefs and biases to the game, such as that poverty is controllable and caused by people who made a series of poor life decisions (Tagler & Cozzarelli, 2013). "When they played the game, they came out of it with [even] more negative attitudes toward the poor, which was troubling because it was the opposite of what [the game] was supposed to do" (G. Roussos, personal communication, May 4, 2017). Roussos and Dovidio's (2016) findings suggested that "because playing a game about poverty (and thus having control over one's outcomes) led participants to believe that poverty is personally controllable, it did not positively influence attitudes toward the poor" (p. 14).

Roussos and Dovidio (2016) next evaluated two groups: one that played *SPENT* and a second group that watched screen recordings of it being played by others. The researchers sought to parse out "perceived personal agency" in each of the two groups (Roussos & Dovidio, 2016, p. 5). When perceived personal agency was removed for participants, such that they did not have control over the choices, the findings "supported past work indicating that observation of adversity can evoke empathic concern and other positive emotions" (Roussos & Dovidio, 2016, p. 6). These findings are related to those by Ahn and Shin (2016), who similarly compared empathy from participants of "viewable," or passive media (i.e., television) with "controllable," interactive media (digital games). Ahn and Shin (2016) reported a positive correlation between observing media and the ability to perspective take; whereas directly controllable media "was negatively associated with one domain of empathy, perspective-

taking, which in turn was associated with weaker connectedness" (p. 488). Thus, while having agency over one's choices in a game may be meaningful and personally relevant, and may also perhaps relate to greater transportation in the game world, it may also lessen empathy *because* the player is not removed enough from the choices.

On the other hand, the design of *SPENT* may also be flawed in terms of supporting agency. When Schrier played *SPENT* in a class of high school students, the students noted that they *did not* feel like they had control or agency over their choices. For instance, since they had little money in the game, the students wondered why (in the game) their character decided to have kids in the first place. Or, they would do things they would not do in real life, like break their kid's piggy bank to ensure they had enough money to get through the month. They also felt that the game did not realistically simulate how it feels to be financially insecure and insolvent, nor illustrate the real choices they would face.

Moreover, the choices presented to players in *SPENT* lack logic. Sande Chen notes that, for instance, players are asked to pay car insurance after they decided to not have a car (Chen, 2016b). Although making so-called bad choices in a game does not necessarily lead to lack of moral sensitivity (Grizzard, Tamborini, Lewis, Wang, & Prabhu, 2014), *SPENT*'s players, who are given a set amount each month and have limited choices on what to do with it, are constantly set up to fail (Chen, 2016b). "Game designers call this *forced failure*—the game is designed to make you fail" (S. Chen, personal communication, May 10, 2017), which can lead to frustration with players. These constraints could also serve to reinforce that financially struggling people receive a finite set of difficult choices and just need to make better choices, rather than the possibility that there are systemic issues that oppress them and maintain their financial struggle. Thus, while *SPENT* was successful in gaining greater awareness of

and financial support for a homeless shelter, the design of *SPENT* is flawed. *SPENT* does not adhere to the empathy game design principles Belman and Flanagan (2010) proposed. To foster empathy, players should be given “specific recommendations about how their actions can address the issues represented in the game” (Belman & Flanagan, 2010, p. 10). The only consequence to any choice is that players’ scores (their funds) decrease, but they do not experience any other consequences to the play of their game or their self in the game. These limitations may in fact reflect the oppressiveness and frustrations of being homeless. In reality, homeless people may be told that they have “win” options (e.g., apply for affordable housing assistance and you are awarded a place to live). Yet, this may not really be an option, because there is a ten-year-long wait list for the housing. It is not clear whether the game is simply poorly designed, or, whether, with its narrow choices, the game could be transmitting the “forced failure” of real life. Because *SPENT* fails to follow the principles necessary to show players how to address financial issues in the game, players may “guard themselves against feeling empathy in the future to avoid similarly unpleasant experiences” (Belman & Flanagan, 2010, p. 10).

While some games may enable choice and active play, a designer may decide to purposely constrain choice and agency, and intentionally align more with passive media, to deepen empathy. Bogost (2017) commented that narrative games supplant agency for story. In games like *Gone Home* (Fullbright Games, 2012) and *Dear Esther* (The Chinese Room, 2012), “the glory of refusing the player agency was part of the goal” (Bogost, 2017, para. 22). For instance, one reading of *SPENT* is that its removal of meaningful agency may illustrate the irrationality of chronic poverty and homelessness, which can underscore how people can become hopeless in dire situations. Likewise, in *Depression Quest* (Zöe Quinn, 2013), an interactive fiction game about a woman’s struggle with depression, choices “appear mundane, but the protagonist,

slowed by depression’s fog, finds each one to be tremendously burdensome” (Parkin, 2014, para. 3). Thus, some choices in *Depression Quest* get grayed out to better simulate the lack of choices that people who are depressed feel they have, and simulate their constrained feeling of agency over their own lives.

In *That Dragon, Cancer* (Numinous Games, 2016), agency is sometimes part of the game experience, while at other times it is intentionally lacking. *That Dragon, Cancer* is an autobiographical game about Ryan and Amy Green’s experience with their young son Joel, who succumbed to cancer at the age of four. In this game, players assume different roles, sometimes controlling Ryan, and at other times seeming to float like a spirit among non-playable digital actors, as if the player is participating in a performance of interactive theater. The on-screen player interactions in the game often have no consequential effect on the ludic system. For instance, halfway through the game, there is a vignette in *That Dragon, Cancer* titled, “Dehydration,” in which the player acts as Ryan while he unsuccessfully tries to console Joel, who is in his hospital room crying incessantly. Nothing the player does works: Joel refuses juice boxes and cradling him is ineffective. The lack of player agency over outcomes serves to underscore the feeling of helplessness that the family faces in having a sick child that they cannot help or soothe. No matter what the player does, they cannot change the game or story. When first demonstrated at the PAX Prime Conference, players were observed, “breaking down in sobs and quickly exiting the booth” (Tenz, 2016, para. 2). “The emotion of franticness, helplessness, and the stress of not being able to stop a child from crying trigger a common experience that many can imagine. Even the sound is enough for most people” (R. Green, personal communication, May 11, 2017).

In another scene, titled, “I’m Sorry Guys, It’s Not Good,” the player sits on a couch alongside the Green family as doctors tell

the parents (and player, as eyewitness) that Joel's brain cancer has returned, and is now untreatable. Rather than exercise meaningful choices, in this vignette, the player can only watch as the room fills with water. This part of the game uses storytelling techniques such as metaphor and visual imagery (the water serving as the overwhelming emotions of the parents) to further transport players into the family's world and the game world. Here, Green uses "intimacy," an affordance more typical in cinema and photography used to "amplify identification" with actors (Isbister, 2016, p. 7). Intimacy refers to "an effort to employ visual and narrative conventions like the close-up to shorten the distance between spectator and character" (Christian, 2011, p. 122).

Unlike in *SPENT*, in *That Dragon, Cancer*, forced failure seems to be used to engage players to reflect on what it is like to lack control, or agency, in one's life and the life of a child. Additionally, because cancer has touched so many people's lives (as compared to the participants in the *SPENT* study who may not all have experienced poverty firsthand, and does not have the same type of social stigma as poverty), *That Dragon, Cancer* embeds "cognitive empathy" that can "encourage people to perceive others as more similar to themselves, and this in turn could produce positive attitude changes" (Belman & Flanagan, 2010, p. 11). Thus, the design choice of using "forced failure" serves to evoke the sense of hopelessness and despair of the Greens, who were losing their son to cancer, "so players would feel" his despair (R. Green, personal communication, May 11, 2017). By removing player agency and constraining player choices, it helps us to see that, even if we think we have choices in life, we often do not—just like when facing fatal illnesses.

Many of the game's sequences are embedded with elements from the Green's Christian worldview. The game's co-designer explained to the website *Christianity Today*: "The fact that there aren't a lot of gamey mechanics is partly

because we're trying to communicate grace" (Larson as stated to Clark, 2015, para. 12). The lack of player choice also exists to illustrate the Green's personal theological struggles, including whether individual prayers and hopes matter. Agency in digital games is an illusion of choice perceived by the player, and it is "not simply 'free will' or 'being able to do anything.'" It is interacting with a system that suggests possibilities through the representation of a fictional world and the presentation of a set of materials for action" (Wardrip-Fruin et al., 2009, p. 7). After all, games are designed, and bounded in some way. Agency and control may always be an "illusion" and in fact, player action within the game is often more limited than they realize. None of the choices players make can affect the game as a system; the eventual outcome of Joel's illness cannot be altered. However, one can argue that the core mechanic of the game is acceptance, as players must decide "to let go of Joel, and to move on" (R. Green, personal communication, May 11, 2017).

Thus, *That Dragon, Cancer* complicates the notion that a "lack of agency" leads to less meaningful interaction with a game, and more limited empathy. And, the notion of control and agency itself should be further questioned. Can any game really provide full agency to a player? If a player has too much control or agency within a game, might this even be too taxing and take up too many resources, making it more difficult to engage in empathy? We need to further unpack the interlocking layers of agency, choice, resources, as well as the perception and expectation of agency.

Further questions

- *What is the relationship between feeling "agency" in a game, and the practice of empathy?*
- *What types of meaningful interactions and choices in games are needed to support empathy?*

- *How do different contexts, audiences, and prior experiences and expectations, factor into empathy?*
- *How can “lack of agency” in a game also support the practice of empathy?*

Perspective-taking and Identity

“Games are essentially a prosthetic suit for you—as player—to take action. They offer powers and possibilities and affordances, which is quite different than in other media” (K. Isbister, personal communication, May 23, 2017).

Perspective-taking is the act of taking on another’s views such that we can better understand them, even if we ourselves do not hold these views or agree with them. Darvasi (2016) explains that perspective-taking often involves actively considering those who seem initially very different (an “outgroup”) such as by embodying their “mental state, points of view, and motivation” (p. 3). Part of the process of perspective-taking involves openness—we need to first value other perspectives such that we can embrace them and consider them more fully. These perspectives need to matter to us, and as part of this, perspective-taking involves being persuaded that other perspectives are meaningful and should be attended to (Cohen, 2001; Darvasi, 2016). Importantly, Darvasi (2016) notes that games may be particularly powerful at supporting perspective-taking because they combine the enabling of other perspectives with those persuasive techniques. For instance, Bogost (2008) explains how games use additional “persuasive” techniques such as procedural rhetoric to mount claims about the world (persuasion through “rule-based representations and interactions”), rather than only the techniques of other media, such as framing, word, visuals, time and/or repetition.

The process of perspective-taking has been shown to help reduce bias and improve attitudes toward people who initially seem different from yourself, partly because they end up seeming

more similar and less like an “outgroup” (Todd & Galinsky, 2014; Darvasi, 2016). However, perspective-taking can backfire. Darvasi (2016) notes that perspective-taking has not been shown to be effective in reducing bias if the person doing it over-identifies with their own group (in-group) and/or has low self-esteem, and it often does not work if there is a highly competitive or conflict-filled environment. Moreover, what happens if you take on someone’s perspective so much that you lose sight of the big picture, or you get so overwhelmed with another’s perspective that you cannot see any other views?

A key factor involved in perspective-taking is the ability to identify with a particular perspective, or to identify with a character who holds a particular view or embodies a type of belief, way of life, or value. However, such gameplay can raise many questions related to identity. When playing, are players acting as themselves or playing the role of another? If there is an avatar in the game, to what extent do players see themselves in their avatar (the digital representation that players control in a game), and to what extent does the avatar reflect back on the player? (For instance, we can look at Gee’s (2007; 2008) notion of the projective identity, which describes a hybrid identity between that of the avatar and player, and explores how players make decisions based on what they believe their virtual identity would choose). Do players take on the identities of their avatar, or do they engage in an inner negotiation between their own identity and that of their avatar? Can players form relationships with their avatar and what is the nature of this relationship, and how might it be involved in empathy?

Darvasi (2016) concludes that the “point of view” of a particular digital game matters in the process of perspective-taking and identity formation. For instance, he explains that in first-person games, the player embodies the avatar but does not see the avatar. The player may be less likely to engage in perspective-

taking, and rather, their identity will blur with that of the avatar. However, they may take on the perspectives of other players or NPCs. Other games enable a third-person (or even a more removed perspective, like the “view from the sky” perspective) perspective; or situations where players can switch perspectives, such as from first- to third-person. Darvasi (2016) explains that in situations where players can switch from first to third person, or can take on a third person perspective, they are able to more readily take on the perspective of that character, as they can see the character and can more easily empathize with the character’s views, needs, and experiences.

We can look in-depth at the *Mission US* series of educational games to explore further the connections between perspective-taking and empathy. The goal of *Mission US* is to enable middle school students to better understand historic moments through the eyes of a (fictional) person who lived during that time, and to practice historic empathy skills. Although players make choices, historic events cannot be altered. Each game in the *Mission US* (led and produced by Channel 13/PBS/WNET and developed by Electric Funstuff) series uses a third-person perspective, such that the players can always see their on-screen avatar while they make decisions for them. Historical empathy is embedded in the players’ actions, and can be defined as the “reconstruction of others’ beliefs, values, and goals, any or all of which are not necessarily those of the historical investigator” (Riley, 1998, p. 33). In *For Crown or Colony?* (the first game in the *Mission US* series), the players follow Nat Wheeler, a printer’s apprentice, and help him make decisions as he completes missions and tasks during the Revolutionary War-era Boston. Other games in the *Mission US* series include *A Cheyenne Odyssey*, which centers on a Little Fox, a Cheyenne boy in post-Civil War America, and *City of Immigrants*, featuring Lena Brodsky, a Jewish immigrant during the early 20th century.

In *For Crown or Colony?*, the Boston Massacre is a pivotal moment. Each player experiences this event using a random selection of vignettes from different perspectives and vantage points. For instance, some vignettes focused on snowballs that the minutemen soldiers may have thrown, while others depicted menacing British soldiers marching into the street. Teachers were encouraged to pause the game to help students reflect on why they were given different versions of what happened, and how their different perspectives might color a later decision, such as determining which party was at fault for precipitating the violence during the Boston Massacre (Schrier, Diamond, & Langendoen, 2010). Then, in the next part of the game, students playing as Nat are participate in an official deposition, where they are asked to relay their version of events. Players can choose to either lie or not lie about what they saw in the vignettes presented to them. The players’ responses during the deposition, then, have consequences for their avatar, Nat, his relationships, and the ending of the game. Education Development Center (EDC) tested students who played *For Crown or Colony?* in two New York City middle schools using pre- and post-game assessments (as described in Schrier et al., 2010). Students’ historical understanding and empathy were assessed, in part, through a number of tasks, such as analyzing an engraving of the Boston Massacre by Paul Revere and explaining the Patriot and Loyalist reasons for supporting or opposing the crown (Schrier et al., 2010). The researchers also observed and interviewed students, interviewed their teachers, and observed classroom discussions. They found that the game enhanced skills such as historical empathy, interpretation, argumentation, and perspective-taking, including the consideration of views from multiple historic roles (e.g., Patriot, Loyalist; Schrier et al., 2010).

Students who play *For Crown or Colony?* might benefit from further discussion and deliberation within their classes, as well as teacher and

curricular support. For instance, in regard to the Boston Massacre, students may not realize that they received a different series of vignettes than others who play the game unless they engage in a discussion with their classmates—which teachers were encouraged to support. This is both a limitation and an opportunity in that it suggests games do not just “stand alone” but require a community around which to deliberate and reflect, as well as a mentor or guide who can frame it and question its design, values, and approaches. For example, when Schrier (2006) created *Reliving the Revolution*, a location-based history game where students decide who fired the first shot at the Battle of Lexington, she integrated an educator-led discussion into the game experience, where students reflected on the game, and worked together to compare evidence, interpret biases, and deliberate on possible outcomes. Schrier’s results suggested that a number of factors may have contributed to the practice of historical empathy skills (e.g., interpretation, deliberation and perspective-taking), including working in pairs in a physical location, participating in a reflective exercise after the game experience, and the inclusion of an educator (Schrier, 2006).

We have discussed how games can give opportunities for perspective-taking, but how does transportation factor into perspective-taking? Reading literary fiction can have a positive effect on people’s ability to take on new perspectives (Castano & Kidd, 2013). Stories in literature teach empathy by having readers “vicariously” identify with how characters view and interact with a fictional world. For perspective-taking to occur, the narrative fictional world must be immersive, compelling and convincing to transport the reader (Johnson, 2012). Bal and Veltkamp (2013) studied two groups, measuring how suspension of disbelief would transport readers into the literary works of Arthur Conan Doyle and José Saramago. Findings suggested a positive relationship between transportation into fiction and levels of empathy, and that readers had

to be totally immersed to become transported into fiction to effectively take on perspectives (Bal & Veltkamp, 2013), further suggesting a relationship among transportation in a world, perspective-taking, and empathy. Conversely, “when a reader is not able to identify with a fictional narrative and does not become transported, this might lead to disengagement, with the reader being distracted and frustrated” (Bal & Veltkamp, 2013, p. 8). While games are not the same as literature, Koster (2014) further asserts that “games are not stories, though players can tell stories from them” (p. 88), and these relationships should be studied further. Do we need to be fully transported into a fictional world or story to be able to take on new perspectives? What types of relationships with one’s avatar and other characters help better support perspective-taking?

Further questions

- *What is the relationship among identity, perspective-taking, transportation, point of view (first, third, “view from the sky”) and empathy in games?*
- *How do we better cultivate perspective-taking through games, particularly those with views different from our own?*
- *Which specific game elements support historic empathy?*
- *How do the activities around the game, such as teacher-led discussions, creative activities, interpretative deliberations (such as why each student received different vignettes of the Boston Massacre), reflective diaries, and other exercises, help to further support empathy-related skills?*

Relationships with Non-Player Characters

“I don’t think feelings in games come just from music and the animation of the character. They come from having journeyed with a

seemingly sentient other for a while, having been interdependent through taking action in this imaginary space” (K. Isbister, personal communication, May 23, 2017).

The player of a digital game, particularly in an action-adventure game, first-person shooter, or RPG, is sometimes the protagonist who drives the story and gameplay with their onscreen avatar (i.e., their playable persona in the game). Players might identify with their onscreen avatars; however, the stronger attachments may be to the non-playable characters (NPCs), or digital characters that are controlled by the computer/game rather than by the player. These NPCs may even help to transport players into fictional worlds. For instance, NPCs who share their backstories have been found to contribute to a player’s willing suspension of disbelief (Harth, 2017; Ochs, Sabouret, & Corruble, 2009). Players may also bond with non-playable virtual characters, which can possibly evoke similar empathetic emotions as one might experience when building relationships with real people (Harth, 2017; Isbister, 2016).

It may seem surprising that players form attachments with non-human virtual objects and characters; however, research by Turkle (2011) and Isbister (2016) suggests that human beings can build these types of attachments with non-human and even virtual entities. Harth (2017) analyzed how humans socially interact with NPCs through extensive interviews with ten experienced digital game players. Participants were social with NPCs and exhibited “virtual empathy” for virtual game companions (Harth, 2017, p. 19). Some participants reported that the empathy formed with NPCs was not as strong as with actual people, but more similar to the emotional attachment an audience would have with actors on a stage or characters in a book (Harth, 2017). This was likely attributed to the fact that participants knew that those characters were within a bounded system of a game’s fictional world (Harth, 2017).

Player interactions with NPCs often have no impact or consequence on the game’s final outcome or goal; however, in some games, the treatment of the NPC affects one’s standing in the game, as well as determine what parts of the story and game the player can access. In the space-themed *Mass Effect 3* (BioWare, 2012), players can aid NPCs in side quests, which are missions that do not necessarily advance the main storyline. In *Mass Effect 3*, “being a positive, kind, and friendly player, during conversations and stories, will make you more of a Paragon” (“Paragon,” 2012). Paragon and Renegade points are one portion of the game’s morality metric, gauging whether NPCs view the player as a someone who follows or flouts rules and laws. As they earn Paragon or Renegade points which unlock upgrades for the player’s weapons, strength, or spaceship, players who help NPCs may also grow emotional attachments to those characters.

In some games, NPCs are also integrated into the overall game experiences as guides and confidantes that lead the player on a journey or quest. They also may be teammates who fight alongside the player, and can even potentially permanently die if they are killed or while making a sacrifice for the player. This theme—the death of the hero’s mentor—occurs midway through the hero’s journey, or monomyth cycle, as proposed by Joseph Campbell in his (1949/2008) seminal book, *The Hero with a Thousand Faces*. In *Never Alone* (E-Line Media, 2014), players control Nuna, a young girl on a quest with her companion arctic fox. Halfway into the hero’s journey, the arctic fox experiences Campbell’s (1949/2008) notion of “death as rebirth,” as he is killed saving Nuna (the player), but is later resurrected as a young boy, becoming her spiritual mentor and guide (p. 318). Similarly, in *Brothers: A Tale of Two Sons* (Starbreeze Studios, 2013), the companion dies, this time permanently, without resurrection. Both characters, who are brother, are controlled simultaneously by a single player with a dual thumbstick game controller (the

type used on PlayStation and Xbox consoles), in which each thumb controls one of two brothers’ actions. When the older brother dies, half of the controllers’ buttons become functionless, which can message “mortality, grief, and strength of family” to the player, making this “an extremely powerful game to build empathy” (Chen, 2016a).

Likewise, in the role-playing game *The Elder Scrolls V: Skyrim* (Bethesda Game Studios, 2011), companion NPCs, or “followers” as they are called, can die and will not respawn or come back. This means, if the player wants to keep his or her follower, such as J’zargo, a Khajit (cat-like) mage, he or she would need to keep reloading an earlier save prior to J’zargo’s death, and then protect this character from death. In *Fallout 3*, companions such as Dogmeat (a dog follower) could die, which would result in many players having to restart from before the death. Therefore, for *Fallout 4*, the designers decided to make companions unkillable. The companions may get incapacitated but will never permanently die. In *Mass Effect 3*, players also form friendships with companion NPCs, who can join the player’s team when they embark on missions. Some of these companion NPCs can be killed permanently (for instance, due to the players’ choices in sacrificing a companion), which reconfigures which NPCs can be available for missions. A player may not even entice an NPC to join the team, such as in the *Mass Effect* series, when Wrex may not get convinced to join the player as a companion, depending on how the player interacts in diffusing a conflict and how they had interacted in the past with other NPCs.

Isbister (2016) has argued that an attachment comes from journeying for a while alongside an interdependent being. For example, in the role-playing game *Fable III*, players play as a Prince or Princess of the fictional world of Albion and need to train and go on missions to help the townspeople of Albion. During the training sessions, an NPC, Walter, helps mentor,

protect, and guide the player’s avatar as they undertake different trials. At one point, after spending around ten hours of game time with Walter, he gets hurt during one of the missions. The player then must decide whether they are going to drag Walter to safety—a physically and technically demanding feat using the game controller—or just leave him and escape alone. Walter begs the player/avatar to leave him behind and continues to plead as the player drags him along. Schrier (2017b) researched this moment in the game, and found that 19 out of the 20 male *Fable III*-playing participants she interviewed decided to drag Walter to safety, even though there was no benefit to helping him, and the game eventually forces you to leave him behind. One of the participants explained that, “Over the course of the game, I formed an emotional attachment to Walter’s character. I never even gave a thought to leaving him behind, even though he was practically begging me to.” (2017b, p. 852) Schrier (2017b) found that when interacting with the NPC Walter, players used “emotion, assessed his character, considered their friendship with him, and they took on his perspective to make their decision” more frequently than in other types of scenarios (p. 853).

Another scenario in *Fable III*, which happens in the very beginning of the game is relevant as a comparison to the “Walter” scenario, because it explores a relationship with an NPC that did not have as much time to develop. In “Surrender a Friend,” the player/avatar is asked to make a sudden decision about whether to sacrifice an NPC, who is a childhood friend of the player/avatar, or three villagers. In that scenario, which happens during the beginning of the game, about half of the players decided to save their friend, and most of them made the decisions based on other factors, such as the number of NPCs that could be saved, or whether they believed this friend could help them later in the game (Schrier, 2017b). They did not, however, suggest that their decision was based on care or attachment for the NPC, as they had only just

“met” the character. On the other hand, they had spent ten hours exploring and journeying with Walter, and did not want to sacrifice him. While the two scenarios are different, Schrier’s study suggests that spending time and being interdependent with a character can help facilitate a relationship and attachment, which could also lead to more use of empathy-related skills (such as perspective-taking or considering another’s emotion) when making decisions about those characters. When a player builds an interdependent relationship with a non-playable character over time, there may be increased opportunities to connect as well as demonstrate one’s empathy for them.

In *The Walking Dead: Season One* (Telltale Games, 2012), players control Lee, a survivor in a zombie apocalypse charged with caring for a young companion NPC girl named Clementine, the emotional core of the game (Harth, 2017; Smethurst & Craps, 2015). Madigan (2012) attributes the game’s ability to create moments of empathy to the digital facial expressions on NPCs, positing it as a demonstration of Iacoboni’s (2009) work on mirror neurons. Regarding empathy from viewing characters in *The Walking Dead: Season One*, Iacoboni stated to Madigan (2012), “By being active even when we do not move at all and simply watch other people moving, they sort of create an inner imitation of the actions of others inside us” (para. 6). Thus, empathy can occur when players mentally internalize actions from NPCs².

The Walking Dead: Season One is used in Norwegian-based high school teacher Tobias Staaby’s classroom to instruct on moral

philosophy by exploring the game’s ethical dilemmas (Tach, 2014). His students vote on dialogue choices using Kahoot (a quiz game tool) with the goal of “getting the class to feel collectively invested in the outcomes” (T. Staaby, personal communication, May 13, 2017). Staaby reported that his students overwhelmingly consider how their decisions as Lee would affect Clementine, the NPC. Staaby explained:

Episode two of season one has a dilemma where you vote who gets to eat. I have data [from the electronic voting tool] from four different classes on how they voted: 96% of students chose Clementine, even though she is basically useless—a resource drain to the group. But students care about Clementine first. After she gets to eat, we then discuss utilitarianism and who is most useful. (personal communication, May 13, 2017)

Designers should consider how best to create emotional attachments through games, such as between players and digital actors, or NPCs. In an anecdote, Staaby recounted an occasion involved the tabletop RPG *Dungeons & Dragons*: “I wanted them to think about my NPCs as characters, but they thought of them as stats with experience points and loot” (T. Staaby, personal communication, May 13, 2017). Anecdotally, Staaby reported a surprising reaction when his students played the serious game *This War of Mine* (11 Bit Studios, 2014) to learn about ethics and philosophy. “One girl burst out laughing when someone died—clearly not conveying empathy” (T. Staaby, personal communication, May 13, 2017). In this instance, the student

² “Watching other people move,” and the resultant processes that take place in a player’s mirror neurons, may explain player empathy in *That Dragon, Cancer*, too. Interestingly, *That Dragon, Cancer* does not show any facial expressions on characters. Ryan Green told the researchers that budget constraints were to blame, and he did not want his character faces to be in the “uncanny valley,” the phrase Masahiro Mori (1970) used to describe how realistic looking non-humans (i.e., robots) would disgust, and possibly frighten people. Speaking about *That Dragon, Cancer*, Fortugno (2016) referenced McCloud’s (1993) observation about how cartoon faces invite readers to project their own identities on the faces, and, perhaps Green’s technical limitation served to lead players to project themselves onto his game’s blank faces.

exhibited the emotion of *schadenfreude*, the German word describing how people “feel pleasure at another’s misfortune” (Greitemeyer et al., 2010, p. 797). However, *schadenfreude* is “not simply the mirror image of empathy, and playing a prosocial video game seems to have separate effects on empathy (increased) and *schadenfreude* (decreased)” (Greitemeyer et al., 2010, p. 800). It is unknown whether the student laughed because she lacked emotional investment in the NPC’s situation or because she found the scene to be absurd or inauthentic for other reasons.

Can game players become too invested emotionally in these relationships, or take on the perspective and experience of their character, such that they make decisions that are not in their or a characters’ best interest? Bloom (2017) explains that emotion can bias decisions, and can affect how people think through ethical decisions, and even lead people to make problematic choices. Schrier (2016a) notes that emotion and other empathy-related skills and thought processes are part of ethical decision making, particularly when people (and even characters) are a primary part of a situation in a game—and that this may not necessarily be good or bad. We need to further consider whether emotions problematically bias decisions and ethical choices, and if there is a more nuanced understanding of the role of empathy, relationships and emotion in regard to decision-making.

Further questions

- *What is the role of relationship-building, even with NPCs, in supporting empathy in games? How can we develop authentic relationships based on intimacy and trust, rather than just points and game rewards?*
- *How do emotions and emotional interactions in games relate to empathy?*

Connection, Communication, and Reflection

Gaining perspectives and views from NPCs can be useful, and interacting with digital characters can build relationships, but communication and interaction with real people can also help to support perspective-taking, role-playing, reflection, agency, identity formation, and relationships. For example, studies have suggested the importance of social interaction in practicing empathy-related skills and learning ethics and morality (e.g., Belman & Flanagan, 2010; Maclagan, 2003; Noddings, 2010; Schrier, 2015). There are a number of ways in which real people help to teach empathy skills:

1. **Modeling.** A key component of learning involves the modeling of behavior (Bandura, 1977) or being able to directly observe how others behave and then also behaving in a way such that others learn from it and enact it themselves.
2. **Communication, dialogue and discourse.** People also learn from the act of engaging in dialogue with others. Klein (2012) explains that by listening to other people’s arguments and viewpoints, people are able to explore their perspectives and reflect on their own. Nussbaum explains that “critical, elaborative discourse” (Nussbaum, 2008, p. 347) is essential to moral and ethical decision-making, which includes compassion and empathy.
3. **Expression of emotion and relationship-building.** Emotion is also a component of communication and interaction among people. People need to observe and use each other’s emotional cues when they are working on a group activity, and adjust their interactions accordingly (Van Kleef, 2009). Emotion, communication, and connective

interactions work together to support shared goals. People need to be “in tune” with another’s emotions (care about them and even embody them) to be able to build a relationship, develop intimacy, work together, and communicate effectively to achieve goals or shared purposes. Thus, the practice of communicating and building these types of relationships helps to support and facilitate compassion and empathy for one another (Iacoboni, 2009).

Way (Coco & Co., 2011) is an example of the possible connections among communication, emotion, and collaboration in games. *Way* is a synchronous, two-person game, where participants work together using only non-verbal communication to complete the game, such as taking turns communicating how to overcome game obstacles like finding hidden platforms or avoiding moving spikes (Schrier & Shaenfield, 2016). The two players are separated in the game and can only see each other via a split screen. (The game is anonymous and online and players are randomly matched so the players do not know who they are playing with and can only communicate via their avatar using nonverbal cues and gestures.) Players need to work together to complete different tasks that they can only do with the help of the other person. Only once the players win the game can they finally be in the same space as the other. The researchers found that,

Participants in Way seemed to gradually earn each other’s trust by collaboratively guiding each other through the dangers of a game board. They developed a relationship through shared activities, and, as a result, felt more attached to each other. The continual need to rely on each other to get through to the next portion of the game helped the participants feel more comfortable with learning about not just the game and its tasks, but about each other. (Schrier & Shaenfield, 2016, p. 309)

The researchers found that attachment and

collaboration grew over time as the two players were able to communicate, even with the limit of not being able to speak. They were able to share one’s emotions through the limited use of emoticons, and they were able to use non-verbal gestures in the game, such as lifting hands, pointing, or moving. The collective ability to take turns playing a game and helping each other out, additionally, was also a type of communication. Players needed to closely attend to what their partner was telling them, because communication was limited, and also because they had to rely so closely on this communication to be able to complete the game and both be successful. Thus, players were more empathetic and caring toward their partner through the collaboration and communication process itself. At the end of the game, some of the participants remarked at how close they felt toward their counterpart, whom they had never seen and would never meet, because they had journeyed together. Said one player, “I feel like I found a friend.” At the end of the game, once both players win, they can write messages to each other. Some of the partner players were not from the United States and were not English speakers. But all of them wrote or drew messages of support and kindness to each other and often called each other their “friend” (Schrier & Shaenfield, 2016).

The exercise of players writing to each other after the gameplay ends in *Way* also seems to support reflective practice (Schön, 1983). Reflection-in-action occurs while someone is doing something: they make an action, reflect, and continue (Schön, 1983). Reflection and reflective practice helps people to think back on their experience and to reconsider it given new information, relationships, and learning. Schönian reflective practice includes reflection-in-action, while practice is occurring, and reflection-on-action, which takes place afterwards (Schön, 1983). Reflection-on-action in digital games can help to strengthen connections with content and other people, and frame new knowledge, and it “happens outside

the game entirely. It’s the thing the teacher must package around the game” (Shaffer as stated in Farber, 2018, p. 184).

In *SchoolLife* (GiantOtter, 2016), players communicate with NPCs and even other players to help the game learn the best ways to teach and support empathy around bullying behaviors and situations (Schrier, 2016b). Players of *SchoolLife* participate in bullying-related scenarios and respond to dialogue expressed by the NPCs. The participants do not speak aloud, but write out their responses to the NPC, who is able to process the dialogue using natural language processing. The participants and NPCs continue to respond to each other improvisationally, just as in a typical conversation. For instance, NPCs alter what they say based on what the player writes, and vice versa. Part of the impetus for *SchoolLife* was to cull natural responses to bullying scenarios. The NPCs would continually learn from these responses and their interactions with real people. Then, in subsequent games, the NPCs could more and more organically interact with people and they could also adjust and adapt to the players to be better able to teach players how to use empathy-related skills (e.g., such as listening to others, deliberating with others, and considering other’s emotions) and better manage bullying scenarios (Schrier, 2016b). Subsequent versions of the game also incorporate multiple players responding to the NPCs and each other; however, the game is still in progress.

While we have considered the benefits of social interaction and community, we have not discussed their limitations. Just as social interactions may be empowering, they can also be enervating and even toxic. And, just as games may seek to find solutions to bullying, games, game players, and game communities can also potentially reward and even promote bullying and uncivil behavior, toxic talk, and problematic norms. What are the drawbacks of emergent communities around game playing, and how can their design and culture possibly

limit empathy? How might communication platforms promote or limit empathy, rather than negative talk (such as how *Splatoon* (Nintendo, 2015) only allows friend group communication or *League of Legends* (Riot Games, 2009) includes hot keys and conversation starters that relate to gameplay and collaborative strategy). How might participation in a community that rewards competition rather than teamwork limit empathy for others?

Further questions

- *What is the role of communication in building relationships and supporting empathy through games?*
- *How can community features, emergent communities, and cultural contexts support or limit empathy?*
- *How is reflection and reflective practice involved in empathy in games?*

Discussion and Conclusion

In this working paper, we sought to ask questions and share initial insights into the intersections among games and empathy. Our discussion was driven by some underlying questions, such as: are games really unique in their ability to support (or limit) empathy? Are there elements, processes, and/or actions related to digital games that inspire empathy-related skills? What are any limitations and gaps in our understandings, and what are the recommended next steps? In this paper, we specifically looked at storytelling, flow, and immersion (transportation); perspective-taking and identity; agency, choice and control, relationship-building and emotion; and connection, community and reflection. We used a mix of empirical evidence, anecdotal perspectives, case study analyses, and textual analysis to share initial observations. As research and empirical evidence in the intersection among games and empathy is limited, we often asked more questions than provided answers. In the future, we recommend much more research in this burgeoning area and, in particular, more consideration as to the specific factors of gaming that may inspire or constrain empathy skills, behaviors, and attitudes; such as context of play, game content and gameplay, audience, opportunities for reflection, role of teacher or mentor, curriculum context, emergent cultures around and within the game, and player interactions. Moreover, we recommend considering compassion, sympathy and other related concepts and applying them to games and gaming as well.

Based on our initial research, we propose the following recommendations which are posted on the next two pages:

Recommendations and Future Research

Recommendations for policy-makers and educators:

- Consider games as another possible experience for practicing empathy in classrooms and beyond.
- Understand the importance of the role of the teacher and curricular context in how the game is framed, received and reflected upon.
- Organize professional development workshops for educators on discussion, reflection, and perspective-taking strategies to precede and follow a game.
- Consider the need to spend time with a game—whether to enable the building of relationships with characters, or even player-to-player relationships.
- If a game does not enable agency and meaningful choices, or has other flaws, ask students to consider why, and create alternative designs.
- Create and/or participate in an online community of practice in which educators, game designers, and academics can share best practices.
- Consider how the communities that form around and within a game may not act how you expect—continue to explore how students negotiate and address the norms of the game and the community at large.
- Be inclusive of different perspectives, play approaches, and types of game experiences, and also ways of developing and expressing empathy, as well as acting on it.

Recommendations for game designers

- Find ways to support player-to-player and/or player-to-character relationships and build trust and intimacy over time.
- If you are creating a story-heavy fictional world, ensure there are opportunities for “tension and release” and enable exploration, meandering, and mundane interactions, in addition to pivotal moments.
- Consider the agency of your player and ability for them to access and make meaningful choices. If there is a lack of agency, make that meaningful as well.
- Provide opportunities for reflection and bonding, particularly after engaged journeys, whether of mind, heart, or virtual world.
- Consider novel ways to inspire authentic empathy, care, perspective-taking and openness to ideas and identities.
- Consider how point of view (first person vs. third person) may affect empathy for players and characters, and design accordingly.
- Build in ways for teachers, players, and other stakeholders to “make the game” their own, by modifying content and gameplay, accessing the game on different platforms, engaging in communities around the game, and/or designing curricula and activities to take place around and within the game.
- Find ways to reward players that are not just based on points, money, trophies, and other achievements, but more intrinsic connections, such as care, friendship, emotional catharsis, and closeness.

Recommendations for researchers:

- Evaluate the role of storytelling and narrative engagement (or “transportation”) in games, and its relationship to players’ feeling of “agency,” perspective-taking, and relationship-building.
- Consider and evaluate how different contexts, audiences, and prior experiences and expectations factor into empathy through games.
- Test and evaluate further on how reflective practice, deliberative discourse, communication of emotions, argumentation, perspective exchanges, and other practices can be used in and around games.
- Address how emotion and emotional interactions in games relate to empathy, such as with other features, including transportation and storytelling, relationship-building, or perspective-taking.
- Investigate community features, emergent communities, and cultural contexts, and how they negotiate norms and values, alongside the games that they emerge from and within, and their relationship to empathy.
- Consider further the distinctions among compassion and empathy—neurologically, cognitively, and behaviorally—and how this intersects with gaming and play.

References

- 11 Bit Studios. (2014). *This War of Mine*. PC [Computer game].
- Abt. C. (1970). *Serious games*. New York, NY: UPA.
- Ahn, D., & Shin, D. (2016). Observers versus agents. *Information Technology & People*, 29(3), 474-495.
- Anderson, M., Duggan, M., Lenhart, A., Smith, A., Perrin, A. (2015, August). *Teens, Technology and Friendships*. Pew Research Center. Available at: <http://www.pewinternet.org/2015/08/06/teens-technology-and-friendships/> (Accessed 1 October 2017)
- Arnab, S., Brown, K., Clarke, S., Dunwell, I., Lim, T., Suttie, N., Louchart, S., Hendrix, M., de Freitas, S. (2013). The Development Approach of a Pedagogically-Driven Serious Game to support Relationship and Sex Education (RSE) within a classroom setting. *Computers & Education*, 69, 15-30.
- Bal, P. M., & Veltkamp, M. (2013). How does fiction reading influence empathy? an experimental investigation on the role of emotional transportation. *PLoS One*, 8(1), 1-12. doi:10.1371/journal.pone.0055341
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice Hall.
- Batson, C. D. (2009). The definition of empathy. In J. Decety and W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 3-16). Cambridge, MA: MIT Press Scholarship.
- Beall, M., Clarke-Midura, J., Groff, J., Owen, V. E., & Rosenheck, L. (2015). *Better learning in games: A balanced design lens for a new generation of learning games*. Available at MIT Scheller Teacher Education Program website: <http://education.mit.edu/post-news/new-guide-from-lgn-and-education-arcade-informs-next-generation-of-game-design/> (Accessed 1 October 2017)
- Behringer, M. (2016, February 1). Bias against new media. Available at: <https://www.filamentgames.com/blog/bias-against-new-media> (Accessed 26 September 2017)
- Belman, J., and Flanagan, M. (2010). Designing games to foster empathy. *Cognitive Technology*, 14(2), 5-15.
- Bethesda Game Studios. (2011). *The Elder Scrolls V: Skyrim*. PC [Computer game].
- Bethesda Game Studios. (2008). *Fallout 3*. PC [Computer game].
- Bethesda Game Studios. (2015). *Fallout 4*. PC [Computer game].
- BioWare. (2012) *Mass Effect 3*. PC [Computer game].
- Bloom, P. (2017). Empathy and its discontents. *Trends in Cognitive Sciences*, 21(1), 24-31. doi: 10.1016/j.tics.2016.11.004
- Bogost, I. (2008). The rhetoric of video games. In K. Salen (Ed.), *The ecology of games: Connecting youth, games, and learning* (pp. 117-140). The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: MIT Press. doi:10.1162/dmal.9780262693646.117
- Bogost, I. (2017, April). Video games are better without stories. Available at: <https://www.theatlantic.com/technology/archive/2017/04/video-games-stories/524148/>
- Bowman, S. (2010). *The functions of role-playing games: How participants create community, solve problems and explore identity*. New York, NY: McFarland.
- Bréjard, V., Bonnet, A. & Gaetan, S. (2016). Video games in adolescence and emotional functioning: Emotion regulation, emotion intensity, emotion expression, and alexithymia. *Computers in Human Behavior*, 61, 344-349. doi:10.1016/j.chb.2016.03.027
- Brown, B. (2013). Brené Brown on empathy. Available at: <https://youtu.be/1Evwgu369Jw> (Accessed 20 May 2017).
- Burak, A., & Parker, L. (2017). *Power play: How video games can save the world*. New York, NY: St. Martin's Press.
- Campbell, J. (2008). *The hero with a thousand faces* (3rd ed.). Novato, CA: New World Library. (Original work published 1949).
- Carr, L., Iacoboni, M., Dubeau, M., Mazziotta, J. C., & Lenzi, G. L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences of the United States of America*, 100(9), 5497-5502. doi:10.1073/pnas.0935845100
- Castano, E. and Kidd, D. C. (2013, October 3). Reading literary fiction improves theory of mind. *Science*, 342(6156), 377-380. doi: 10.1126/science.1239918.
- Chen, M. (2016a, October). Review of brothers: brothers-a-tale-of-two-sons Available at: <https://www>

- commonsense.org/education/game/brothers-a-tale-of-two-sons (Accessed 25 September 2017).
- Chen, S. (2016b, June 29). Forced failure in SPENT. Available at: http://www.gamasutra.com/blogs/SandeChen/20160629/276106/Forced_Failure_in_SPENT.php (Accessed May 19, 2017).
- Chen, S. (2017b, June 29). Great narrative stories are the answer. Available at: <http://gamedesignaspect.blogspot.com/2017/08/narrative-stories-are-answer.html> (Accessed 25 September 2017).
- The Chinese Room. (2012). *Dear Esther*. PC [Computer game].
- Christian, A. J. (2011). Joe Swanberg, intimacy, and the digital aesthetic. *Cinema Journal*, 50(4), 117-135.
- Clark, R. (2015, June 2). Meet the Christian video-game makers. Available at: <http://www.christianitytoday.com/ct/2015/may/meet-christian-video-game-makers.html> (Accessed 30 October 2017).
- Coco & Co. (2011). *Way*. PC [Computer game].
- Cohen, J. (2001). Designing identification: a theoretical look at the identification of audiences with media characters. *Mass Communication & Society*, 4, 245-264.
- Core SEL Competencies. (2017). Available at: <http://www.casel.org/core-competencies/> (Accessed 23 May 2017).
- Cragoe, N. G. (2016). RPG mythos: Narrative gaming as modern mythmaking. *Games and Culture*, 11(6), 583-607. doi:10.1177/1555412015574195
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.
- Darvasi, P. (2016, November). Empathy, perspective and complicity: How digital games can support peace education and conflict resolution. UNESCO MGIEP Working Paper 2016-03. Available at: <http://unesdoc.unesco.org/images/0025/002599/259928e.pdf> (Accessed 20 September 2017).
- Decety, J., & Jackson, P. L. (2004). The functional architecture of human empathy. *Behavioral Cognitive Neuroscience Review*, 3, 71-100.
- Decety, J., & Moriguchi, Y. (2007). The empathic brain and its dysfunction in psychiatric populations: Implications for intervention across different clinical conditions. *BioPsychoSocial Medicine*, 1, 22.
- E-Line Media. (2014). *Never Alone*. PC [Computer game].
- Ebert, R. (2005, June 24). Ebert's walk of fame remarks. Available at: <http://www.rogerebert.com/rogers-journal/eberts-walk-of-fame-remarks> (Accessed 23 May 2017).
- Electric Funstuff. (2017). *Mission US*. PC [Computer game].
- Entertainment Software Association. (2017). Essential facts about the computer and video game industry. Available at: <http://www.theesa.com/article/two-thirds-american-households-regularly-play-video-games/>
- Farber, M. (2018). *Game-based learning in action: How an expert affinity group teaches with games*. New York, NY: Peter Lang.
- Ferguson, C. J. (2008). The school shooting/violent video game link: causal relationship or moral panic? *Journal of Investigative Psychology and Offender Profiling*, 5(1-2), 25-37.
- Feshbach, N.D., and Feshbach, S. (2009). 'Empathy and education', in Jean Decety and William Ickes (eds), *The Social Neuroscience of Empathy* (pp. 85-97) Cambridge, MA and London: MIT Press.
- Firaxis Games. (2001). *Civilization III*. PC [Computer game].
- Flanagan, N., & Nissenbaum, H. (2014). *Values at play in digital games*. Cambridge, MA: MIT Press.
- Flanagan, M., Seidman, M., Belman, J., Punjasthitkul, S., Downs, Z., Ayoob, M., Driscoll, A., & Downs, M. (2011, September). "Preventing a POX Among the People? Community-based Game Design for 'Herd Immunity.'" *Proceedings of DiGRA 2011 Conference: Think Design Play*. Hilversum, The Netherlands: Digital Games Research Association DiGRA.
- Fortugno, N. (2016, July 15). Well played: That Dragon Cancer. Available at: <https://youtu.be/QyMHh7z8LGA> (Accessed 26 May 2017).
- Fullbright Company. (2016). *Gone Home*. PC [Computer game].
- Fullerton, T. (2013). *Game design workshop: A playcentric approach to creating innovative games* (3rd ed.). Amsterdam, The Netherlands: Elsevier Morgan Kaufmann.
- Gee, J. P. (2007). *What video games have to teach us about learning and literacy* (rev. ed.). New York, NY: Palgrave Macmillan.
- Gee, J. P. (2008). Video games and embodiment. *Games and Culture*, 3(3-4), 253-263. doi:10.1177/1555412008317309
- Gerdes, K. E., Segal, E. A., Jackson, K. F., & Mullins, J. L.

- (2011). Teaching empathy: A framework rooted in social cognitive neuroscience and social justice. *Journal of Social Work Education*, 47, 109–131.
- Gerrig, R. J. (1993). *Experiencing narrative worlds: On the psychological activities of reading*. New Haven, CT: Yale University Press.
- Gerrig, R. J., & Prentice, D. A. (1991). The representation of fictional information. *Psychological Science*, 2, 336–340.
- GiantOtter. (2016). *School Life*. PC [Computer game].
- Gibbs, J. (2011). Player agency, critical states, and games as formal systems. Available at: http://gamasutra.com/blogs/JoeyGibbs/20110713/89809/Player_Agency_Critical_States_and_Games_as_Formal_Systems.php (Accessed 23 May 2017).
- Graber, M. A., & Graber, A. D. (2011). Black, white or green: 'race', gender and avatars within the therapeutic space. *Medical Humanities*, 37(1), 9. doi: 10.1136/jmh.2010.005637
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79(5), 701-721. doi:10.1037/0022-3514.79.5.701
- Greitemeyer, T. (2013). Playing video games cooperatively increases empathic concern. *Social Psychology*, 44(6), 408-413. doi:10.1027/1864-9335/a000154
- Greitemeyer, T., & Osswald, S. (2010). Effects of prosocial video games on prosocial behavior. *Journal of Personality and Social Psychology*, 98(2), 211-221. doi:10.1037/a0016997
- Greitemeyer, T., Osswald, S., & Brauer, M. (2010). Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion*, 10(6), 796-802. doi: 10.1037/a0020194
- Grizzard, M., Tamborini, R., Lewis, R. J., Wang, L., & Prabhu, S. (2014). Being bad in a video game can make us morally sensitive. *Cyberpsychology, Behavior and Social Networking*, 17(8), 499–504.
- Hardy, S. A. (2006). Identity, reasoning, and emotion: An empirical comparison of three sources of moral motivation. *Motivation and Emotion*, 30, 207–215.
- Harvard Business Publishing. (2013) *Everest*. PC [Computer game].
- Harth, J. (2017). Empathy with non-player characters? An empirical approach to the foundations of human/non-human relationships. *Journal of Virtual Worlds Research*, 10(2).1-25. doi: 10.4101/jvwr.v10i2.7272
- HopeLab. (2006). *Re-Mission*. PC [Computer game].
- Huizinga, J. (1955). *Homo ludens: A study of the play-element in culture*. Boston, MA: Beacon Press. (Original work published 1938).
- Iacoboni, M. (2009). Imitation, empathy, and mirror neurons. *Annual Review of Psychology*, 60(1), 653-670. doi:10.1146/annurev.psych.60.110707.163604
- Institute of Play. (2015). Available at: <http://www.instituteofplay.org> (Accessed 20 September 2016).
- Isbister, K. (2016). *How games move us: Emotion by design*. Cambridge, MA: MIT Press.
- Jackson, P. L., Meltzoff, A. N., & Decety, J. (2005). How do we perceive the pain of others? A window into the neural processes involved in empathy. *NeuroImage*, 24(3), 771-779. doi: 10.1016/j.neuroimage.2004.09.006
- Johnson, D. R. (2012). Transportation into a story increases empathy, prosocial behavior, and perceptual bias toward fearful expressions. *Personality and Individual Differences*, 52(2), 150-155. doi:10.1016/j.paid.2011.10.005
- Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the basic empathy scale. *Journal of Adolescence*, 29(4), 589–611.
- Juul, J. (2003). The game, the player, the world: Looking for a heart of gameness. In M. Copier & J. Raessens (Eds.), *Level up: Digital Games Research Conference Proceedings* (pp. 30–45). Utrecht, The Netherlands: Utrecht University. Available at: <http://www.jesperjuul.net/text/gameplayerworld/>
- Klein, M. (2012). Enabling large-scale deliberation using attention-mediation metrics. *Computer Supported Cooperative Work*, 21, 449–473.
- Klopfer, E., Osterweil, S., & Salen, K. (2009). *Moving learning games forward*. Available at MIT Education Arcade website: http://education.mit.edu/wp-content/uploads/2015/01/MovingLearningGamesForward_EdArcade.pdf
- Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about inequality: Americans' views of what is and what ought to be*. New York, NY: DeGruyter.
- Kokonis, M. (2014). Intermediality between games and fiction: The "Ludology vs. narratology" debate in computer game studies: A response to gonzalo frasca. *Acta Universitatis Sapientiae, Film and Media Studies*, 9(1), 171-188. doi:10.1515/ausfm-2015-0009
- Koster, R. (2014). *A theory of fun for game design* (2nd ed.). Sebastopol, CA: O'Reilly Media.

- Lazarro, N. (2009). Understanding emotions. In C. Bateman (Ed.), *Beyond game design: Nine steps toward creating better videogames* (pp. 3-33). New York, NY: Charles River Media.
- Lionhead Games/Microsoft Studios. (2010). *Fable III*. PC [Computer game].
- Maclagan, P. (2003). Varieties of moral issue and dilemma: A framework for the analysis of case material in business ethics education. *Journal of Business Ethics*, 48(1), 21-32. doi:10.1023/B:BUSI.0000004364.63317.73
- Madigan, J. (2015). *Getting gamers: The psychology of video games and their impact on the people who play them*. New York, NY: Rowman & Littlefield Publishers.
- Madigan, J. (2012). The walking dead, mirror neurons, and empathy. Available at: <http://www.psychologyofgames.com/2012/11/the-walking-dead-mirror-neurons-and-empathy/> (Accessed 19 September 2017)
- Mahood, C., & Hanus, M. (2017). Role-playing video games and emotion: How transportation into the narrative mediates the relationship between immoral actions and feelings of guilt. *Psychology of Popular Media Culture*, 6(1), 61-73. doi: 10.1037/ppm0000084
- McCloud, S. (1993). *Understanding comics*. New York, NY: HarperPerennial.
- McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world*. New York, NY: Penguin Press.
- McKinney. (2011). *SPENT*. PC [Computer game].
- Mendelsund, P. (2014). *What we see when we read*. New York, NY: Vintage.
- Mencl, J., & May, D. R. (2009). The effects of proximity and empathy on ethical decision-making: An exploratory investigation. *Journal of Business Ethics*, 85(2), 201-226. doi:10.1007/s10551-008-9765-5
- Michael, D., & Chen, S. (2006). *Serious games: Games that educate, train, and inform*. Mason, OH: Course Technology.
- Milk, C. (2015). How virtual reality can create the ultimate empathy machine. Available at: https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine/transcript?language=en (Accessed 20 September 2017).
- Mori, M. (1970/2005). The uncanny valley. (K. F. MacDorman, & T. Minato, Trans.). *Energy*, 7, 33-35.
- Moore, A., & Lloyd, D. (1988). *V for Vendetta*. Burbank, CA: DC Comics.
- Murray, J. H. (2017). *Hamlet on the holodeck: The future of narrative in cyberspace*. Cambridge, MA: MIT Press.
- Murphy, S. T., Frank, L. B., Moran, M. B., & Patnoe-Woodley, P. (2011). Involved, transported, or emotional? Exploring the determinants of change in knowledge, attitudes, and behavior in entertainment-education. *Journal of Communication*, 61, 407-431. doi: 10.1111/j.1460-2466.2011.01554.x
- Necessary Games. (2011). *Loneliness*. PC [Computer game].
- Neff, B. D. (2003). Decisions about parental care in response to perceived paternity. *Nature*, 422(6933), 716-719. doi:10.1038/nature01528
- Nintendo. (2015). *Splatoon*. PC. [Computer game].
- Noddings, N. (2010). Moral education and caring. *Theory and Research in Education*, 8, 145-151.
- Nussbaum, M. E. (2008). Collaborative discourse, argumentation, and learning: Preface and literature review. *Contemporary Educational Psychology*, 33(3), 345-359. doi:10.1016/j.cedpsych.2008.06.001
- Numinous Games. (2016). *That Dragon, Cancer*. PC [Computer game].
- Ochs, M., Sabouret, N., & Corruble, V. (2009). Simulation of the dynamics of nonplayer characters' emotions and social relations in games. *IEEE Transactions on Computational Intelligence and AI in Games*, 1(4), 281-297. doi:10.1109/TCIAIG.2009.2036247
- Ong, W. J. (1982). *Orality and literacy*. New York, NY: Routledge.
- Paragon. (2012). Available at: <http://www.ign.com/wikis/mass-effect-3/Paragon> (Accessed 26 September 2017).
- Parkin, S. (2014, September 9). Zoë Quinn's Depression Quest. Available at: <https://www.newyorker.com/tech/elements/zoe-quinns-depression-quest> (Accessed 28 October 2017).
- Quinn, Z., (2013). *Depression Quest*. PC [Computer game].
- Riley, K. L. (1998). Historical empathy and the holocaust: Theory into practice. *International Journal of Social Education*, 13(1), 32.
- Riot Games. (2009). *League of Legends*. PC [Computer game].
- Roberts, W., Strayer, J., & Denham, S. (2014). Empathy, anger, guilt: Emotions and prosocial behavior. *Canadian Journal of Behavioral Science*, 46(4), 465-474.

- Roussos, G., & Dovidio, J. F. (2016). Playing below the poverty line: Investigating an online game as a way to reduce prejudice toward the poor. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 10(2), 1-24.
- Roussos, G. (2015, December 7). When good intentions go awry: The counterintuitive effects of a prosocial online game. Available at: <https://www.psychologytoday.com/blog/sound-science-sound-policy/201512/when-good-intentions-go-awry> (Accessed 23 May 2017).
- Salen, K., & Zimmerman, E. (2003). *Rules of play: Game design fundamentals*. Cambridge, MA: MIT Press.
- Sampat, E. (2017). *Empathy engines: Design games that are personal, political, and profound*. Seattle, WA: CreateSpace.
- Satrapı, M. (2004). *Persepolis: The Story of a Childhood*. New York, NY: Pantheon.
- Schell, J. (2014). *The art of game design: A book of lenses*. Amsterdam, The Netherlands: Elsevier/Morgan Kaufmann.
- Schrier, K. (2006). Using augmented reality games to teach 21st century skills. *Proceedings of ACM SIGGRAPH 2006 educators program*. Boston, MA.
- Schrier, K. (2015). EPIC: A framework for using video games in ethics education. *Journal of Moral Education*, 44(4), 393-424.
- Schrier, K. (2016a). Emotion, empathy and ethical thinking in *Fable III*. In S. Tettegah & W. Huang (Eds.), *Emotion, Technology, and Digital Games* (pp. 35-60). New York, NY: Elsevier.
- Schrier, K. (2016b). *Knowledge games: How playing games can solve problems, create insight, and make change*. Baltimore, MD: Johns Hopkins University Press.
- Schrier, K. (2017a). Designing games for real-world moral problem solving. *Games & Culture*. doi:10.1177/155541201711514
- Schrier, K. (2017b). Designing role-playing video games for ethical thinking. *Educational Technology Research & Development*. 65(4): 831-868.
- Schrier, K., Diamond, J., & Langendoen, D. (2010). Using Mission US: For crown or colony? to develop historical empathy and nurture ethical thinking. In K. Schrier & D. Gibson (Eds.), *Ethics and game design: Teaching values through play* (pp. 239-261). Hershey, PA: IGI.
- Schrier, K., & Shaenfield, D. (2016). Collaboration and emotion in *Way*. In S. Tettegah & W. Huang (Eds.), *Emotion, Technology, and Digital Games* (pp. 289- 312). New York, NY: Elsevier.
- Schrier, K., Torner, E., & Hammer, J. (in press). “Worldbuilding in Role-playing games” In S. Deterding & J. Zagal (Eds.). *Role-Playing Game Studies: Transmedia Foundations*. New York, NY: Routledge.
- Schön, D. A. (1983). *The reflective practitioner*. London, England: Temple Smith.
- Sholars, M. (2017, September 21). Gamers like PewDiePie are why I don’t play games online. Available at: <https://www.polygon.com/2017/9/21/16341458/pewdiepie-racial-slurs-online-gaming> (Accessed 24 September 2017).
- Smethurst, T., & Craps, S. (2015). Playing with trauma: Interactivity, empathy, and complicity in the walking dead video game. *Games and Culture*, 10(3), 269-290. doi:10.1177/1555412014559306
- Spiegelman, A. (1986). *Maus: A Survivor’s tale: My father bleeds history*. New York, NY: Pantheon.
- Squire, K. D. (2004). *Replaying history: Learning world history through playing “Civilization III”* (Order No. 3152836). Available from ProQuest Dissertations & Theses Global (305195950).
- Starbreeze Studios. (2013). *Brothers: A Tale of Two Sons*. PC [Computer game].
- Suits, B. (1978). *The Grasshopper: Games, life and Utopia*. Ontario, CA: Broadview Press.
- Sutherland, A. (2015). Staged empathy: empathy and visual perception in virtual reality systems. Master’s Thesis (Comparative media studies program), Massachusetts Institute of Technology, Boston, MA.
- Tach, D. (2014, January 17). Why Norwegian students are playing The Walking Dead in class. Available at: <https://www.polygon.com/2014/1/17/5320314/norwegian-high-school-students-the-walking-dead-video> (Accessed 20 May 2017).
- Tagler, M. J., & Cozzarelli, C. (2013). Feelings toward the poor and beliefs about the causes of poverty: The role of affective-cognitive consistency in help-giving. *The Journal of Psychology*, 147(6), 517-539. doi:10.1080/00223980.2012.718721
- Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. New York, NY: Guilford Press.
- Telltale Games. (2012). *The Walking Dead*. PC [Computer game].
- Tenz, J. (2016, January). A father, a dying son, and the quest to make the most profound videogame ever. Available

- at:<https://www.wired.com/2016/01/that-dragon-cancer/> (Accessed 20 May 2017).
- Tiltfactor. (2009). *Layoff*. PC [Computer game].
- Tiltfactor. (2010). *POX: Save the People*. Tablet [Computer game].
- Todd, A. R., & Galinsky, A. D. (2014). Perspective taking as a strategy for improving intergroup relations: Evidence, mechanisms, and qualifications. *Social and Personality Psychology Compass*, 8(7), 374-387. doi:10.1111/spc3.12116
- Treeby, M. S., Prado, C., Rice, S. M., & Crowe, S. F. (2016). Shame, guilt, and facial emotion processing: Initial evidence for a positive relationship between guilt-proneness and facial emotion recognition ability. *Cognition and Emotion*, 30(8), 1504-1511. doi:10.1080/02699931.2015.1072497
- Turkle, S. (2011). *Alone together*. New York, NY: Basic Books.
- United States Army. (2002) *America's Army*. PC [Computer game].
- Vaitl, D., Vehrs, W., & Sternagel, S. (1993). Prompts-leitmotif-emotion: Play it again, Richard Wagner. In N. Birbaumer & A. Ohman (Eds.), *The structure of emotion: Psychophysiological, cognitive, and clinical aspects* (pp. 169-189). Seattle: Hogrefe & Huber.
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184-188. doi:10.1111/j.1467-8721.2009.01633.x
- Vascocelos, M., Hollis, K., Nowbahari, E., & Kacelnik, A. (2012). Pro-sociality without empathy. *Biology Letters*, 8(6), 910-912. doi:10.1098/rsbl.2012.0554
- Wardrip-Fruin, N.; Mateas, M.; Dow, S.; and Sali, S. (2009). Agency reconsidered. In *DiGRA 09*.
- Wiseman, T. (1996). A concept analysis of empathy. *Journal of Advanced Nursing*, 23(6), 1162. doi:10.1111/1365-2648.ep8554631.
- Wiseman, R., and Burch, A. (2015). Wiseman and Burch 2015 GDC study. Available at: <https://www.scribd.com/doc/257893404/Wiseman-and-Burch-GDC-2015-study> (Accessed 24 September 2017).
- Yee, N., Dicheneaut, N. & Quantic Foundry. (2016). Gamer motivation model. Available at: <http://quanticfoundry.com/reports/> (Accessed 24 September 2017).
- Yusuf, N., Al-Banawi, N., & Rahman Al-Imam, H. A. (2014). The social media as echo chamber: The digital impact. *Journal of Business & Economics Research (Online)*, 12(1), 1-10. Available at: <https://www.cluteinstitute.com/ojs/index.php/JBER/article/view/8369> (Accessed 1 October 2017). doi: 10.19030/jber.v12i1.8369.

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