Well Played

a journal on video games, value and meaning

A Special Issue on Meaningful Play and Games for Social and Emotional Learning

Edited by Dr. Susan Rivers & Heidi McDonald

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A Journal on Video Games, Values, and Meaning
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SUSAN E. RIVERS & HEIDI MCDONALD

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ITHRIVE GAMES FOUNDER'S LETTER

DOROTHY N. BATTEN

I am thrilled by the release of this special issue of *Well Played*. For me, the meeting of great minds around how games can support teens' positive growth really is a dream come true. I founded iThrive Games precisely to inspire and advocate for the kind of work our fantastic authors share in this issue.

A few years ago I was in a fluke accident that shattered my leg, requiring three surgeries that left me unable to walk without assistance for a year and a half. Not able to work, I decided to take the (quite literal) downtime to get a second master's degree in counseling.

While I was enrolled in the counseling program, I stayed at home with my two teenage sons, nursing my leg back to health while I studied. I began to notice how much time my boys were spending playing video games. At first, like many parents, I nearly made myself hoarse pleading with them to "*Pleeeeeease* turn that game OFF!". I was worried they weren't doing more productive things, or spending enough time outside. I wondered whether they'd be prepared to handle the "real world." After so much isolation at home, would they have the resilience they needed when hard times inevitably came?

But my angst over their gameplay soon transformed into a new insight. While working on my thesis for my counseling degree, I studied early digital tools and computer programs designed to deliver mental health interventions. It turned out that they showed promise for improving well-being. I was excited by the idea that the digital world could be therapeutic, but when I tried a couple of the programs, I was underwhelmed. I found them so unappealing and very difficult to stick with. A light bulb went off for me: These programs would be *so* much more engaging if they were more like those games my kids are glued to. And, couldn't video games that teens love also offer meaningful experiences, boost their well-being, and foster resilience?

Of course, I wasn't the first person to make the connection that video games could teach meaningful skills. But I did see an opportunity to bring another of my passions — positive psychology — into the conversation. Instead of just addressing illness, stress, and disorder, positive psychology says we can cultivate well-being by looking through the lens of our strengths and positive emotions. I became motivated to make that insight actionable for teens in the virtual worlds where they already are and want to be.

I founded iThrive Games to ensure that teens are finding in video games the positive, meaningful experiences they need to not only cope with stress but to discover their strengths and thrive. Existing games have this potential, but we also could be designing for it more deliberately.

With each day, video games, augmented reality, and virtual reality are becoming more realistic and engaging, making them even more enticing for teens (and adults too!). It makes sense to meet teens where they are already spending so much of their time, and to take advantage of the appeal of these technologies, to promote teens' positive growth. Because technology is advancing so rapidly there is almost unlimited potential to create amazing

virtual worlds that use compelling stories, creative challenges, and the power of awe to draw teens in and invite them to build self-awareness and skills that will empower them to flourish.

The work published in this special issue features just some of the exciting games and research happening in the field. iThrive Games aims to bring together game developers, researchers, and teens to create and use games for positive growth. Let us know about your ideas and contributions to this space by visiting us at ithrivegames.org.

Dorothy N. Batten
President, D. N. Batten Foundation
January 9, 2018

INTRODUCTION TO THE SPECIAL ISSUE

Thriving Through Gameplay

SUSAN E. RIVERS

The goal of this special issue of *Well Played* is to invigorate work in the field of strengths-based games. We invited contributors to share their ideas about how games not just capture, but fully and intentionally engage the attention of players in experiences that have the potential to be transformational and strength building. The idea for the special issue originated from a desire to better understand how game developers, mental health professionals, educators, and players are using games to enact personal, positive change, and highlight the unique ways games are helping people thrive. We sought to extend the science documenting the benefits from playing video games (e.g., Gee, 2003; Granic, Lobel, & Engels, 2014) and highlight examples of games that intentionally through their design and use bring out the best in individuals and communities.

As I was preparing to write this introduction, two news reports caught my attention, reinforcing the need for the work published in this issue. The first was an interview with the director of the MIT Center for Architecture which offers Massive Open Online Courses (MOOCs; Thys, 2018). The director described their need for reinventing the case study approach offered in the MOOC, wherein students read 15-20 page case studies and listen to a professor lecture about them. He claimed that this traditional approach was no longer effective to "hold the attention of big

audiences" because "attention spans of students, especially younger students, are getting shorter" (Thys, 2018). Knowing that the science to back up the belief that students' attention spans are decreasing is inconclusive (Wilmer, Sherman, & Chein, 2017), I wondered why students were being blamed for the need to reinvent the traditional learning experience from a relatively passive one (reading and listening) to one that invites active investigation and use of information through multi-media channels (videos, artifacts, interviews, etc.). Isn't it possible that students are demanding—through their rejection of standard practice—better designed experiences that intentionally and actively immerse them in learning, engaging all their senses?

The second news report featured a letter written by two key shareholders in Apple which asked the company, according to the headlines, to "help wean digital-addicted youths" (Chappell, 2018). Research-informed, age-specific controls, the shareholders suggested, could and should be integrated into the technology to help parents regulate how much screen time their kids consume. As a parent, I welcome tools to help me help my kids more effectively manage their screen time. However, as a researcher and experience designer, I wonder why we are not asking Apple and other technology innovators—including game developers—to begin their design process with the end users' best interests in mind? What would design look like if game developers were to create products and experiences informed by the science of child and adolescent learning, development, and psychology? What would design look like if tech innovators and game developers created products that encouraged learning, personal growth, understanding, mutually supportive relationships, self-awareness, compassion, civility, and kindness?

The nonprofit iThrive Games grew out of an idea that games have incredible promise to offer teen players multi-sensorial experiences that are joyful, challenging, deeply social, agentic, relevant, and engaging. Such experiences are lacking in the

myriad ones many teens have at school and elsewhere. iThrive's mission is to promote the intentional design and use of games with the best interests of teens in mind, and was founded on the idea that experiences offered by games have potential to provide opportunities for teens to build and practice critical skills for life.

Our invitation to this special issue of *Well Played* asked contributors to consider the field of positive psychology as a guiding framework for transformation, as well as the particular needs and interests of teens. Here's why.

POSITIVE PSYCHOLOGY: A STRENGTHS-FOCUSED APPROACH

Positive psychology is a relatively new subfield of psychology that emerged in response to decades of focus on psychopathology and human suffering (e.g., Seligman & Csikszentmihalyi, 2000). Pioneers in positive psychology pushed for balance and began designing frameworks for the scientific study of how people thrive and cultivate well-being, not just the multitude of ways people suffer and how they can and need to be fixed. Positive psychology turns on its head the traditional notion of understanding people's lives from one that focused on solving or fixing problems, ailments, and deficiencies to one that identified and sought to cultivate people's strengths, including their interests, natural abilities, and learned skills.

Positive psychologists argue that the identification and use of one's core strengths makes it easier to experience positive emotions, engagement, positive relationships, meaning, and accomplishment, the five core components of well-being (Seligman, 2011). People attain well-being by drawing upon their unique strengths. Cross-cultural research has identified a set of 24 universally valued strengths, such as bravery, creativity, love of learning, and kindness (Peterson & Seligman, 2004). While individuals have different strength profiles, strengths are what direct one's thoughts, feelings, and actions. Developing an

awareness of one's strength profile allows for deeper understanding of how one interacts with the world, and can guide attention to building strengths and refining or expanding one's profile. There are several tools available that provide guides for identifying one's own strength profile (e.g., the free and validated VIA Survey, available at http://www.viacharacter.org/www/Character-Strengths-Survey; VIA Institute for Character, 2018).

Games provide a ripe opportunity for a positive psychology approach. By presenting challenges and requiring players to learn, apply, and grow specific skills and knowledge to overcome them, games have the potential to facilitate deep learning and self-awareness. Games offer "hard fun," encouraging effort and persistence that feels rewarding and often delightful (e.g., Buchanan, 2017; Lazzaro, 2004; Papert, n.d.). In games, players have choices and are free to experiment and express themselves. Games also allow players to experience and manage a wider range of emotions than many other mediums—players feel pride, frustration, gratitude, betrayal, guilt, forgiveness, complicity, and fiero, the sense of triumph that comes from hard-won accomplishment (Isbister, 2016; McGonigal, 2011). Cooperative or multi-player gameplay allows players to feel and manage these emotions in a social context. Moreover, games are increasingly tackling substantial and meaningful themes like empathy, acceptance, and social justice (Burak & Parker, 2017), planting the seeds that can transform attitudes, knowledge, and skills in a socially and politically complex time.

ADOLESCENCE AS A CRITICAL DEVELOPMENTAL MOMENT

Adolescence is a developmental period that is equal parts potential and vulnerability (Siegel, 2015; Steinberg, 2014). A successful transition to adulthood depends largely on the contexts and supports in which development takes place. During

this critical time, the environment—in the form of experiences and relationships—inscribes itself onto biology in profound ways (Giedd et al., 1999; Jensen & Nutt, 2015; Steinberg, 2014). In the best-case scenario, it is also the period in which a sense of passion and purpose is ignited, and teens begin to understand who they are and what their place in the world might be. This view of teen development as an interaction between the environment and biology, coupled with the ubiquity of technology in everyday life, provides us new opportunities to meet teens where they are in order to support their growth and progress. The settings teens inhabit influence their developmental trajectories and either facilitate or hinder their cultivation of assets. Video games are one such setting.

Positive psychology's parallel in the field of teen development is positive youth development. Similar to positive psychology, positive youth development came about as a response to decades of focus on the many ways development can "go wrong," especially with all the risks and pitfalls of the teen years. Positive youth development puts a spotlight on teens' strengths, interests, skills, and abilities. Unlike older frameworks, this approach does not try to correct what is "wrong" with teens' behavior or development; rather, positive youth development programs and practitioners seek to understand teens and offer them meaningful, engaging, and productive learning opportunities.

iThrive Games believes in the potential for video games, with their far reach and broad appeal, to positively influence development by providing teens with meaningful experiences in a highly engaging (of all the senses) environment that invites and supports learning and experimentation. Teens are primed and hungry for a wide range of meaningful experiences that will shape who they become. There is emerging evidence that games have the potential to impact cognitive (Bediou et al., 2018) and social outcomes (Granic et al., 2014), and we believe that games can offer meaningful experiences for development when

designed and used intentionally for these purposes. As game developer and Director of Design at ArenaNet Jason VandenBerghe shares in an upcoming article on iThrive's blog (www.ithrivegames.org/blog):

> As we know, teens are in a part of their lives where they are absorbing information about how the world works at an extraordinary rate. If we want to make a large, positive change in our world, I believe the best route is to focus on providing teens with better models for the world.

We have the power to do just that in video games. We hope to push the field forward by engaging with developers, scholars, and practitioners to innovate on design so that games provide meaningful experiences while maintaining the immersive, fun, and engaging qualities that make them compelling to play.

THIS SPECIAL ISSUE

In the first article in this issue, "Prosocial Religion and Games: *Lost & Found*," Gottlieb and Schreiber describe two games that expertly embed a prosocial (helpful, cooperative) orientation into both their content and mechanics. The *Lost & Found* game series is designed to encourage "understanding and discourse about prosocial aspects of religious legal systems throughout history." The series draws from a set of 12th century laws from Moses Maimonides' legal code to bring into focus the widely overlooked prosocial underpinnings and complexities of community living. Their article juxtaposes two approaches to engage players in deeper exploration and application of mechanics intended to model and allow for the practice of prosocial behavior, decision making, and discourse. The first game in the series, *Lost & Found* (Gottlieb, Schreiber, & Murdoch-Kitt, 2017), is a strategy resource management game that uses both cooperative and competitive mechanics to offer reflection on the tension between self-interest and the interests of the community. Strategic balancing of self and community

interests yields the ultimate "thriving community" win state in the game. *Lost & Found: Order in the Court – the Party Game* (Gottlieb & Schreiber, 2017) is a discourse-driven game where players devise backstories for a court ruling from an actual law in the Moses Maimonides' legal code. The court rulings focus on "holding society together and contributing to the common good." Through the devising of backstory narratives, players reflect on and discuss prosocial intentions and community.

Abraham's paper, "*Skazka*: Exploring Empathy through Cooperative Mechanics and Narrative," details an approach that intentionally ties the scientific literature on empathy to design mechanics, aesthetics, and narrative. She introduces us to *Skazka*, a two-player cooperative game set in the Siberian landscape, and articulates the many decisions she made in creating *Skazka* to offer players an experience of connection (vs. division), pushing against a good/evil dichotomy to explore more complex relationships to the world, and using cooperation as a lens for both problem-solving and exploration mechanics. She provides a behind-the-scenes look at creating an engaging, commercially viable game while also thinking deeply about the game mechanics that offer players the opportunity to feel and demonstrate empathy for others in the game world. Abraham reflects on the balancing act of applying the science of empathy while creating an engaging and meaningful player experience.

Goodine, Yhap, and Mundee describe in "*GUIDE* and Dangerous Play" how using empathy in game design is a pathway for reducing stress and anxiety, allowing players to practice a "personal storage of positive coping strategies." Inspired originally by iThrive's diversifier in an international game jam, *GUIDE* continues to undergo iterative prototyping and testing. The goals of Goodine et al. for the game are for players to practice coping skills and build their psychological resilience in the face of anxiety. Creating a character and game mechanics that foster empathy remain central to their approach, and playtesting

with teens allows them to evaluate during the design process the extent to which their choices are successful. Reaching teen audiences with engaging opportunities to learn and practice positive coping strategies for anxiety is important given that anxiety is the most common mental health issue among teens and there is a shortage of mental health providers that serve teens (Child Mind Institute, 2015).

Also choosing empathy to guide design, Cheng and colleagues' "Butterfly Lovers: Design Rationale of a Cooperative Virtual Reality Game for Promoting Compassion in Multigenerational Families" describes how their game aims to address the challenges of maintaining social and familial bonds. A lack of empathy, the authors argue, may lead to tension in relationships where younger family members or other caregivers are providing care for elders who suffer from physical and cognitive limitations. To provide access to the experience of physical and cognitive decline they use an asynchronous game design using both virtual and augmented reality. VR experiences alone can tend to limit connectedness with others, but a combination of VR and AR allows for a more social experience. The authors note that creating empathic experiences (i.e., taking another's perspective) may be insufficient for driving behavior change and focus on creating experiences that promote compassion, or the desire to help others. They write about the promise of technology to help people "build awareness" and learn "how to effectively express their emotions and needs" and argue that VR may be a tool for practicing what they call compassionate communication.

Stone's paper, "*Kisima Inŋitchuŋa* (*Never Alone*) as Cultural Survivance: The Potential of Video Games to Support Indigenous Well-being," is a thoughtful examination of the potential of video games to revitalize cultural knowledge and bring positive representations of Indigenous people into mainstream awareness. Stone describes how *Kisima Inŋitchuŋa*

(Upper One Games, 2014) addresses the historical traumas endured by the Iñupiat people during the "civilizing" of Alaskan Natives, traumas which serve as both the catalyst and context for the game. By framing these traumas in a game setting, Stone argues that the game acts as a conduit for passing cultural knowledge to younger generations in addition to teaching the world about Iñupiaq culture. She emphasizes the importance of incorporating traditional Iñupiat values, informed by the Iñupiaq culture and elders, into the game. But *Kisima Inŋitchuŋa* is more than a vehicle for sharing culture; Stone argues it is an act of resistance against narratives created by colonial attempts at cultural genocide, a form of "cultural survivance" that provides guidance for how other games can support thriving for Indigenous cultures.

The final article in this issue, "Beyond Empathy: Games to Foster Teens' Social and Emotional Skills," examines best practices in game design for teen audiences and how they align with a prominent approach to positive youth development and social and emotional learning. Dunlap and I devised an evidence-based framework that serves both as an evaluation tool for games that aim to promote social and emotional strengths in teen players as well as a design guide for creating strength-building games for teens. Teens develop as a function of their unique, individual endowments in interaction with experiences and relationships in both the physical and virtual worlds they inhabit. There has been a seismic shift in how teens inhabit settings as they spend more time in virtual settings than ever before. The impacts of that shift on teen behavior and development are only beginning to be understood, but it is clear that teens are interacting and relating in different ways because of their richly digital lives—experiences that have the potential to add to, or detract from, teen development. In providing an evidence-based framework and design guide for social and emotional learning, we intend to spark continued innovation in and commitment

to game development that embeds a strengths-focused, positive youth development approach which enriches the lives of players.

CONCLUDING THOUGHTS

Designing what some might call "socially responsible games" requires multidisciplinary teams of game developers, scientists, researchers, and teens themselves. We are discovering that developing these kinds of games is a mighty task requiring the skills we seek to design for in games—cooperation, empathy, civil discourse, compassion, kindness, and courage. We need to collaborate in pushing on innovation using the best science, game mechanics, narrative design, and visual and sound elements in order to offer immersive, engaging, and commercially successful games that also contribute to making the world a better place. This special issue aims to highlight and contribute to the inspiring work our contributors and many others are doing, and to encourage others to join us.

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PROSOCIAL RELIGION AND GAMES

Lost & Found

OWEN GOTTLIEB AND IAN SCHREIBER

Figure 1. Background image for Lost & Found (Gottlieb, Schreiber, & Murdoch-Kitt, 2017) in its online storefront.

ABSTRACT

In a time when religious legal systems are discussed without an understanding of history or context, it is more important than ever to help widen the understanding and discourse about the prosocial aspects of religious legal systems throughout history. The *Lost & Found* (www.lostandfoundthegame.com) game series, targeted for an audience of teens through twentysomethings in formal, learning environments[1], is designed to teach the

1. In design, we were focusing on undergraduate players, with an eye towards sophistication of a modern table-top game. We were aiming for a game that would be interesting for college age audiences (perhaps to be used in conjunction with religious studies classes) yet

prosocial aspects of medieval religious systems—specifically collaboration, cooperation, and the balancing of communal and individual/family needs. Set in Fustat (Old Cairo) in the 12th century, the first two games in the series address laws in Moses Maimonides' law code, the *Mishneh Torah*. Future planned modules include Islamic laws of the period. Maimonides, the great Jewish legal scholar, philosopher, physician, and rabbi, was influenced by and influences great scholars of Islamic law. The first two games in the series, *Lost & Found* (Gottlieb, Schreiber, & Murdoch-Kitt, 2017) and *Lost & Found: Order in the Court – the Party Game* (Gottlieb & Schreiber, 2017) are based on the tort laws around lost and found objects. *Lost & Found* is a tabletop-to-mobile strategy game (see Figure 1) in which any number of players can win, or all players can lose. If any player goes "destitute," or the group is unable to address a disaster, or the community has not been adequately built by the end of the rounds, then all players lose. If the base level conditions are met for building the community, then players each have the opportunity to win based on how well they cared for their own family. *Order in the Court* is a party game for direct-to-discourse play around laws. Players take turns as judge to hear other players try to explain how arcane medieval legal decisions might have been made. Answers are available, but not mandatory, after storytelling which is leading in early playtests to curiosity about the medieval reasoning. The *Lost & Found* mobile prototype is sponsored by the National Endowment for the Humanities and is created by a team of nearly thirty scholars and students (see full funding data in funding acknowledgments).

INTRODUCTION

The *Lost & Found* series of games, targeted to middle school through adult players, seeks to broaden the discourse around

accessible to high school students (perhaps to be used in conjunction with social studies classes), and even tabletop-game-literate middle school students.

and improve understanding of religious legal systems, within their historical and geographical context. While much of the discussion today of religious legal systems is drawn out of fear of contemporary extremist groups' interpretations, the prosocial aspects of these legal systems become subsumed and lost. This can lead to biased and prejudicial generalizations about religious legal systems, such as demonstrations against "Sharia law" as opposed to demonstrations against or opposition to extremist groups who claim violent interpretations of historical Islamic laws. Such fear-based approaches without historical context also deprive us of access to the elements of the legal systems that are prosocial, such as systems for collaboration, cooperation, and the promotion of community sustainability.

How might a game system allow for a window into religious legal systems that could broaden the discourse and understanding, providing a variety of curricular opportunities for discussion and reflection? This is the question that the teams working on the *Lost & Found* series have been exploring. *Lost & Found* is a tabletop-to-mobile game series drawing from medieval religious legal codes and centering on the tort laws around lost and found objects. The series is set in Fustat (Old Cairo) in the 12th century, a crossroads of Jewish, Islamic, and Christian life. The series begins with two games drawing from the *Mishneh Torah*, written by Jewish legal scholar, philosopher, rabbi, and physician Moses Maimonides. With *Mishneh Torah*, Maimonides distilled Talmudic debates (redacted circa 650 CE) in a form closer to the Mishna, the first Jewish legal code to follow the Hebrew Bible (redacted circa 250 CE). The original passages on lost and found property are derived from three lines in the book of Deuteronomy, but chapters of law and volumes of debates are based upon them.

The first game, *Lost & Found* (Gottlieb, Schreiber, & Murdoch-Kitt, 2017), is a strategy resource management game combining cooperative and competitive mechanics. Players work to balance

the needs of the community with their family needs as various objects and animals go missing and the community faces various crises together. The second game, also based on *Mishneh Torah* is *Lost & Found: Order in the Court – the Party Game*, referred to below as *Order in the Court* (Gottlieb & Schreiber, 2017). In this game, players take turns as the judge, who presents a seemingly arcane law and the other players draw cards to help them create stories to explain how the case that led to that law may have come before judges in the first place. The game is typically played for humor while the rationale for the law is hidden on the back of the ruling card. After the judge picks her favorite answer, she reveals the answer if players are curious.

Both games in tabletop form are released through MAGIC Spell Studios (http://www.lostandfoundthegame.com) with sponsorship from various funding entities at the Rochester Institute of Technology (see funding acknowledgements). The digital prototype of *Lost & Found* (the strategy game), made for iOS, was funded by the National Endowment for the Humanities (NEH). It has been showcased at the Humanities Arcade at the 50th anniversary of the NEH at the University of Virginia, and has also been featured at events at Duke University and Hebrew Union College. An expansion that addresses Islamic law of the same locale and period, based on the works of Averroes (Ibn Rushd) and al-Marghinani, is currently in development.

In this article we examine both games at a play level and a mechanical level. We also include design rationale based on our goals of teaching about the prosocial aspects of religious legal systems.

LOST & FOUND, THE STRATEGY GAME

> "A *khamsin* (windstorm) is coming. If this hits us, it will wipe us out. Can anyone help out?"

"I can pitch in some *dinarim*, but I'll need you to help me at the next festival since I still have to pay for my kid's marriage."

"Keep in mind that we still need to train a doctor, and there's a plague on the table that we all have to deal with…" (The preceding is a simulated dialogue, not data from learner play.)

Two to five players are gathered around a table with various decks of cards in front of them. The decks each have a card backs inspired by architectural patterns from 12th century Fustat (Old Cairo), and the card faces depict items such as vessels, coinage, and domesticated animals from the time period. Over the course of the next 45 minutes, players ask one another for assistance, lose and find objects depicted on cards, and return found objects to their owners. They work as a team to collectively advance communal goals, while dealing with events and sudden crises as they arise, as well as individually on their own private goals. If any individual player has to spend resources they do not have this causes everyone at the table to lose, so players must help one another in addition to watching out for themselves. Players take on the roles of the Potter, Vintner, Cowherd, Shepherd, and Date Farmer families, each with their own special items and abilities, and are offered a choice of a male or female character role card. The players must complete a certain number of communal goals to be eligible to win. At the end of the game, only those players who have also completed their own private goals are considered winners—which may be no one, one player, several players, or all players.

We designed the original game in the series, *Lost & Found*, starting with the process of taking the religious legal cases in question and making those the core play scenarios. The legal cases are drawn from *Mishneh Torah*, Gezelah va'Avedah, the laws of robbery and lost property, a subsection of Nezikin, or Damages (as in, tort laws). The laws involve the responsibilities regarding lost and found objects and animals. The laws, crystallized over the centuries, balance the responsibilities of

community members to care for their neighbors with the need to also protect individuals from undue burdens. One example is the need to care for and return a neighbor's animal at potentially great expenditure of time and effort while at the same time exempting neighbors from an obligation to intercede in clear cases of owner negligence (such as letting the animal roam free). The family and communal goals of the game were based on passages from the Babylonian Talmud, which predates the *Mishneh Torah* by approximately 500 years. The Talmud is a commentary on the Mishnah in the form of legal debates and stories. For family goals, we drew from the *Mishneh Torah*'s interpretation of Talmud, Kiddushin (29a), which provides a list of what parents are expected to provide for their children. For communal goals, we drew from the list of what elements should be present in a community in order for it to merit a Torah scholar (Talmud, Sanhedrin 17b, *Mishneh Torah*, Hilkhot De'ot 4:23).

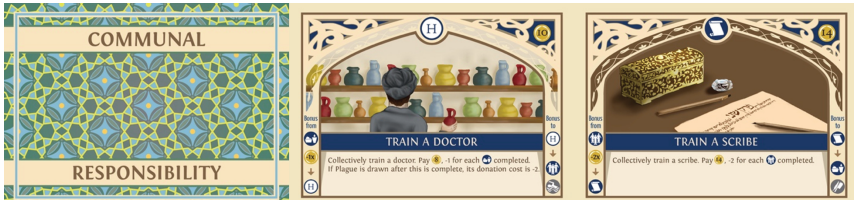

Figure 2. Communal Responsibility cards.

The game contains a set of communal responsibilities (see Figure 2) which must be fulfilled by the end of the game (at least six of the 10 in the game), or else everyone loses. If those are met, then everyone who has completed enough of their own family responsibilities (three out of the five that players are given) wins the game together as a group. There are additional loss conditions that can arise during play: as the players represent families in a community that should be working together, if any of the players is unable to pay a required amount, that player is now "destitute," a situation that is a failure of the entire community that could have been avoided, had the other players

helped the player avoid catastrophe. If any player becomes destitute, all players immediately lose because the community as a whole has failed to protect its most vulnerable members. The game is turn-limited with each player getting a certain number of turns (depending on total number of players in the game).

Resources

The primary resources that players manage during the game are "resource cards." These include animals, garments, coins, and vessels containing food and drink. At the start of a player's turn, they draw two of these cards. Each card is worth some amount of *dinarim* (currency). The resource cards each have a listed owner at the bottom of the card such as "Owner: Cowherd." Most of these cards are owned by whomever draws them (marked "any" or with the owner's role, as in Figure 3), but some are owned by a specific player, and others are owned by an unnamed character outside of the game, a "stranger," representing someone in the larger community in which the players live. Players may spend resources they own safely. They may also spend resources they do not own, but doing so is considered to break the law, which may have negative effects at the end of the game.

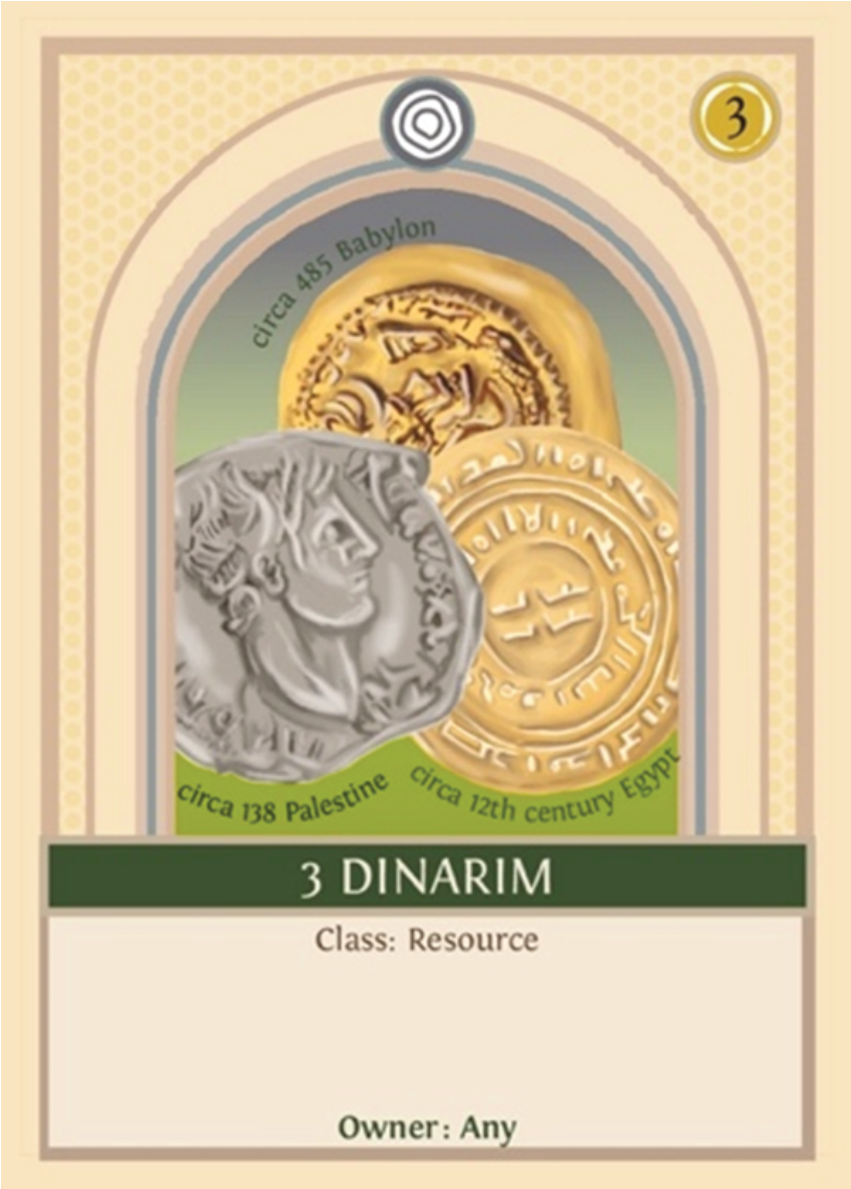

Figure 3. A resource card.

Drawing a card that is not yours represents the finding of a lost object. The laws mandated that for certain items of value in certain situations, the finder was obligated to take them for

safekeeping until such time as the owner could be found. Sometimes this may have been as simple as returning a clearly marked item to a neighbor who you recognize; other times the owner is unknown and the item must be declared at a gathering such as a festival, at which large numbers of people in the community have come together. Within the game, finding a lost item represents a choice between a risky opportunity (use it for your own goals, with the possibility of paying a heavy price later if you are "caught") or taking on a burden (keep the card even though it takes up precious room in your hand).

Since resources are randomly drawn, the distribution of wealth in the game quickly becomes uneven, as some players receive better draws than others. This puts some players in a privileged position over others, giving the advantaged players the choice of how much to use their wealth to benefit the community, while the disadvantaged players must contribute to the game in other ways, such as making valuable suggestions about the group's strategies.

Events

Figure 4. Event cards.

After drawing resource cards, the active player then draws and resolves an event card (see Figure 4), most of which are based on one of the laws or cases in the *Mishneh Torah*. Some events are negative situations that must be dealt with (such as fire or flood), others are positive (finding money in such a way that the finder is now the owner), and others give the players choices

between following the law, going above and beyond what the law strictly requires, or breaking the law (if a fellow player's vessel of date honey cracks en route to market, you may pour out your less valuable wine to catch the honey, only do so after negotiating a price, or ignore their plight entirely). In this way, the events give players the sense of facing the challenges and struggles represented in the laws.

Some events follow special rules. Disasters are sudden events that require an immediate response: players must collectively lose a large amount of *dinarim*. Crises are like disasters but allow for advance planning: they stay in play until everyone has had a turn, and then if they have not been addressed the players pay a heavy penalty for their failure to prepare (see Figure 5). In both cases, if the costs cannot be paid, the players suffer an immediate loss of game, so these are looming threats throughout the course of the game.

Figure 5. Crisis cards force players to work together.

Festivals are communal gathering events that allow players to trade amongst themselves. Players can return unlimited amounts of items that are owned by one another, and have a random chance of being able to find the owner of an item owned by a stranger outside of the game. Players can thus free up their hands considerably. Additionally, the ability to trade lets resource-rich players give assistance to resource-starved players if they wish. The existence of crises and disasters gives those players who have drawn few resources a means to threaten the group: if they do not have enough resources to meet their family responsibilities and they are thus going to lose the game anyway, they lose nothing by dragging everyone else into defeat with them. It is therefore in the self-interest of the "rich" players to help out those who are trailing, either by making favorable trades during festivals, or else donating more heavily towards communal goals, crises, and disasters. Here, we intend to model that the principles underlying the laws, suggesting that maintaining the wider community also has long term self-interest impacts for players.

Returning an Object or Addressing a Crisis

Once the event is resolved, the player can then give up to one of their cards back to its rightful owner, if it is owned by another player. This allows players to generate goodwill amongst themselves while also getting excess cards out of their hand, as they must discard down to three cards by the end of the turn. The player is not obligated to give a card away, e.g. if they plan to (illegally) use it later.

The player may, instead, choose to give some resources towards an active crisis event if there are any in play, but doing so means they have to keep any unowned cards for later. In such a case, the player must decide the most pressing issue: helping a fellow player directly, or helping the entire community indirectly, or doing neither and sticking with what they have.

Contributing Toward a Responsibility

After giving away cards (or not), the active player may contribute either to one of their family responsibilities, or a communal responsibility, but only to a single one. Family responsibilities have a *dinarim* cost that must be paid in full as a lump sum, which usually means the player spends most or all of what they have on hand. To accumulate enough resources, a player either must build up cards over several turns, have a high-value item returned to them by another player on that player's turn, make favorable trades during a festival, or otherwise receive a lucky event that gives them extra resources for free.

Communal responsibilities, on the other hand, are more expensive but players can contribute to them piecemeal, and thus can be completed with contributions from multiple players over several turns. If a player does not have enough resources on hand to complete their own family responsibility, they might pay some smaller amount towards a communal responsibility, as a way of advancing everyone's shared goals and showing the other players that they are not freeloading. If all players donate an equal amount to the communal responsibilities split between them, they are actually rather cheap: a 20 *dinarim* cost split five ways is only four *dinarim* per player, compared with an average of about 10 *dinarim* for family responsibilities.

Each responsibility also has additional effects. Each communal responsibility gives discounts to a class of other communal responsibilities and also one of the family responsibilities (see Figure 6), so that if the communal responsibilities are completed early they reduce the costs of everything else and make the game's objectives more cost-efficient. Family responsibilities give gameplay bonuses to the player who completes them, which makes that player more resource-efficient, so a player who completes their own responsibilities early on will be in better

shape to contribute to the community later, as well as being more certain of their own end-game standing.

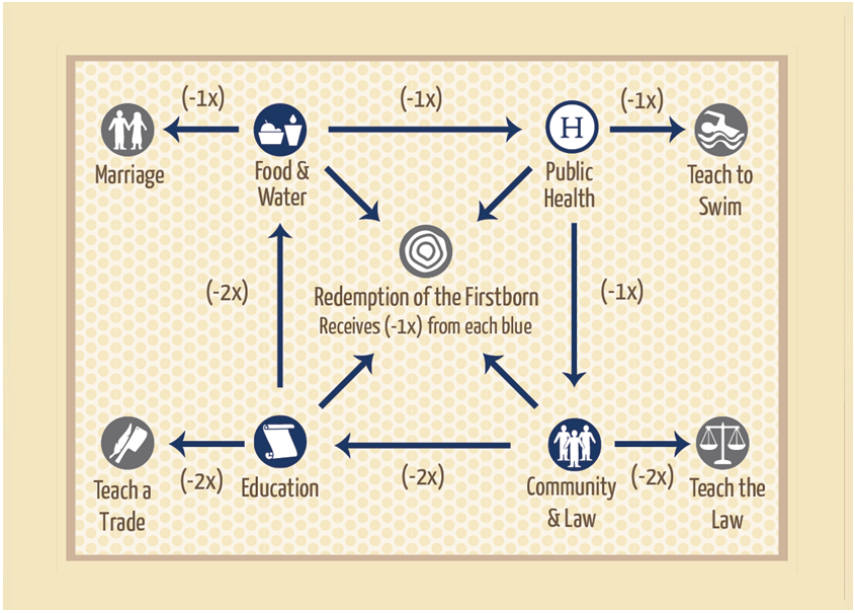

Figure 6. Quick reference card showing responsibility chaining bonuses.

While it is more efficient for players to collaborate on building their community first, doing so exclusively puts the players in a far more precarious position—in a five-player game (the maximum allowed), each player only has six turns. As the player can only contribute to a single responsibility per turn, this means that a player must spend at least half of their turns completing their own family responsibilities or else fall short of their target. On the other hand, if players behave selfishly in the early game, they run the risk of needing more late-game resources than are available to complete the required communal responsibilities. Players must therefore find a balance in this tragedy-of-the-commons situation between individual security and communal security, where neglecting either can lead to a loss of the game.

End of Turn

At the end of a player's turn, they must discard down to three cards. Cards in their hand that they do not own (but that they are legally required to care for until the owner is found) take up valuable storage space in their hand, which creates a burden on the player who wants to save up to complete a family responsibility. On the other hand, discarding unowned cards is a transgression of the law and can lead to consequences later on. This provides another choice on many turns between caring for the community (in this case, by looking after the lost valuables of another) and caring for oneself and one's family. The game then proceeds to the next player in turn order, and the sequence is repeated throughout the game.

End Game

When the event deck has been exhausted, the game ends, and the number of communal and family responsibilities is checked to see if the community survives and, if so, which families (players) completed enough family responsibilities to win. Before the final tally, players must deal with the consequences of their actions taken during play. For every time they broke the law they draw a card from a special *Heshbon* (meaning "accounting" –used in both mathematical and spiritual sense, see Figure 7) deck that may cause them to pay a penalty (representing the chance that they were caught), with the most severe penalty being the loss of one of their precious family responsibilities. For every time they went above and beyond the law, they may randomly get a bonus (representing the good that came back to them through the bonds of community), potentially allowing them to complete additional family responsibilities in the "eleventh hour." This extra draw at the end adds tension for players who are barely on the edge, while also making the choices of how (and when) to follow the law more meaningful during play. If all players win, it is considered a "thriving" community.

Figure 7. Back of a Heshbon card.

We carefully balanced *Lost & Found* so that it is possible, with optimal play, for all players to win; however, usually about half

of the players win, and occasionally through a miscalculation or serious blunder the entire team will have a total loss.

Mechanically, *Lost & Found* is a representation of the kinds of choices that individuals and families might make when their own best interests were in conflict with that of their community, and how the laws of the time were developed to balance this tension. Players may also see why not merely following the letter of the law, but going beyond the bare minimum is sometimes valuable (the value of going above and beyond the law is a Talmudic principle), and also how desperation or greed might entice players to selectively break the law for their own protection. The concept of requiring people to look after and care for found valuables until they can be returned was in the religious law, a higher standard than in contemporary secular law. Play scenarios can illustrate the value of such standards: as a player, it can be a joy and relief when another player returns something that belongs to you and you can then use it to complete another family responsibility, just as it is burdensome to hold a hand full of cards that you cannot legally use because you are protecting them on behalf of others.

We designed these systems to work in concert with curricula that will allow for reflection on the various cases and actions taken during the game. How might a player reflect upon what it felt like to finally have a high value item returned? How did they make the decision to break the law? Why? What forces were they working against? What were the tensions between community and self? How might the laws assist, hinder, or guide?

This strategy game takes place over the course of about 45 minutes to an hour depending on "table talk." Much of the talk centers on players trying to determine how to solve problems together while maintaining enough resources for each individual to have a chance at winning. Learning games require connection to curriculum (Bauman & Games, 2011; Hays, 2005; Sitzmann,

2011; Squire, 2010), and the curriculum for the *Lost & Found* series is in early stages of development and experimentation. In the strategy game we are seeing that, in small sample IRB studies conducted by Gottlieb and David Simkins, with discussion prompts for reflection learners move from resource management discussions to implications of those resource management decisions.

We also took the talk practice data (discussions and conversations around these laws) regarding resource management as a challenge to play with different mechanics in order to experiment with direct-to-discourse play. The results of those experiments are the second game in the series, one that will use different curricular scaffolding. The party game has lower fidelity with regard to opposing incentives, but features immediate direct-to-discourse play regarding legal reasoning.

ORDER IN THE COURT, THE PARTY GAME

Figure 8. Background image for Order in the Court in its online storefront.

For the second game in the *Lost & Found* series (see Figure 8), the design team tried a different approach to mechanics. Rather than modeling real-world cases as the core mechanics to generate player behaviors of case resolution, we started with the discourse we were trying to elicit. In this case, that discourse was legal reasoning, as opposed to the simulated case decision resolution in the strategy game. Specifically, we wanted players to have low-

prompt conversations about not just what the laws of the time were, but *why* they were the way they were, and *how* such laws might be useful or necessary for holding society together and contributing to the common good.

For this second game, then, we took the desired kinds of talk practice and made *those* the core mechanic of the game. While starting with core mechanics based around deciding how to act given an event and a law pushed us in the direction of a resource-management strategy game, starting with core mechanics based around talk practice led us to an entirely different genre, a light party game.

In this new game, each player in turn takes on the role of a judge (similar to games such as *Apples to Apples* [Kirby & Osterhaus, 1999] and *Cards Against Humanity* [Dillon et al., 2009]). The judge provides a scenario, the other players tell improvised stories based on the scenario, and the judge chooses their favorite story by whatever criteria they choose. After playing a set number of rounds, whoever was chosen the most wins the game.

Reading the Case

The heart of *Order in the Court* is a set of Case cards. Each card is derived from an actual law in the *Mishneh Torah*, then obfuscated and taken entirely out of context. We assume that each of these laws exists because it was, at some point, a valid disagreement between at least two parties that was taken before a judge or a *beit din* (a Jewish legal tribunal), and the card reads as if it were a case ruling. For example, one such card reads: "The court rules that you should shake it, but not rip it." This is similar to the Law category in *Absolute Balderdash* (Toyne, 1993), except that the game allows players to fill in the details of an incompletely-stated law, rather than players explaining the backstory to a complete ruling. The judging player reads this out loud to the other players, and then sets a 90-second timer for each of them to

construct a scenario that could plausibly lead to this as the final verdict.

Constructing Scenarios

This game contains a second, larger set of Story cards (separate from the Case cards). Each player starts each round with six of these cards (drawing up as needed), and has the option of discarding unwanted ones and redrawing once before the round starts.

All players other than the judge of the round must construct a story about how a disagreement led to the verdict on the Case card that was read aloud this round. In their story, they must use at least half of the Story cards in their hand. Some of these cards contain characters (such as a date farmer, caravaneer, or murderous cat), some contain objects (a vessel of water, a block of stone), and the rest contain adjectives (has a distinguishing mark, was dropped in the dust).

These cards serve two purposes. First, they provide scaffolding for players who are not natural storytellers. Telling someone to construct a story with no further prompts leaves an extremely wide possibility space which can be overwhelming for players who do not yet consider themselves "creative" in this way. Offering cards with words on them helps narrow the space down. This technique is used to similar effect in storytelling card games such as *Aye, Dark Overlord!* (Bonifacio, Crosa, Enrico, Ferlito, & Uren, 2005) and *Once Upon a Time* (Lambert, Rilstone, & Wallis, 1993).

Another benefit of the cards is to differentiate the players' stories. Without the cards, if the first player to speak told a great story, each other player around the table could just repeat the story with minor variation, making the judging more difficult and the storytelling less varied. If a player comes up with a story in their head only to have another player tell a very similar story first,

that puts them in the difficult position of either going ahead with their own story and being thought a copycat or constructing an entirely new story under extreme time pressure. But because everyone has to use their own cards to craft a scenario, the scenarios are likely to differ significantly. Cards serve the same purpose in *Snake Oil* (Ochs, 2010) and *The Big Idea* (Ernest, 2000), where each player pitches their own unique product described by two cards.

Relating Scenarios, and Explanations on the Back

After the 90-second timer expires, each player in turn order tells their scenario to the table while turning up the cards in their hand as they state the words on them. They must use at least three of their cards. They may use more if they wish, but there is no bonus or penalty for doing so (other than possibly impressing the judge). The stories may be humorous or serious; they may be fantastical or plausible. The judge then picks their favorite, through whatever criteria they wish.

On the back of the Case card is an explanation of the actual law that the case was derived from. (For the example card mentioned earlier, "shake it but do not rip it" is in reference to finding and caring for someone else's lost garments; one should shake them to keep them clean and free of dust, but not so vigorously as to rip and damage the fabric.)

Notably, the back of the card is not mentioned as part of the mechanics of the game at all. Through internal design review (non-IRB studies)[2], the design team found that forcing players to look at the card, especially if it was used as a mandated criterion for judging, would reduce the zany fun that would be expected in a party game setting. In an earlier iteration, bonus points were awarded for players who got closest to the actual rationale on the

2. We make this distinction to provide a clear methodological line for the spectrum of readers from designers and educators to learning scientists and other social scientists.

reverse side of the card, but when that criterion was eliminated, players expressed curiosity regarding the back of the card. We will have to further test this with IRB studies, but initial design reviews suggest this is a way forward for curiosity-generation. We theorize that the fun reduction might have come from players being forced to think of plausible scenarios and discard any ideas that played purely on humor. We suspect that if the Cases are vague enough and the stories varied enough, players will have a natural curiosity that pushes them to ask for the "real" answer. This could potentially assist in engendering further discussion about the laws and their origins and purpose, which would satisfy the original design goals of this game. We will need to conduct further study of this game "in the wild" to determine the validity of these hypotheses. As with the strategy game, this game would need to be embedded in curriculum as well in order to work past initial talk practice and into reflection on wider issues. Both games, ideally, could be used in concert.

Despite using the same origin point of the *Mishneh Torah*, the mechanics and visible player experience of the party game vary drastically from that of the strategy game. This suggests that basing core mechanics on desired talk practices can allow a game's design to move in a very different direction from drawing on problem cases as a locus of behavior. We believe each approach can offer a different perspective and experience to players, and that such a shift can assist learning game designers in closing in on essential learning behaviors—those behaviors that move learners closer to the learning goals (Gottlieb, 2017; Gottlieb & Schreiber, in press; Plass, Homer, Kinzer, Frye, & Perlin, 2011).

CONCLUSIONS

The design team on the first two *Lost & Found* games used two different genres to approach the teaching of the prosocial aspects of religious legal systems. The team was guided by the desire

to promote better discourse around religion, and to share the seldom discussed and centuries old religious law contributions for communal governance and cooperation systems. We have developed two games thus far, a strategy game that centers on solving cases drawn from tort law, and a party game designed to elicit player talk practice regarding legal reasoning in tort law. Together, these games, with curriculum, will hopefully provide the springboard and high-fidelity context to discussion of governance, religion, and community sustainability. Central to the passive learning systems in the games are the milieu—the time and locale which provide context for studying religion. Both games are set in 12th century North Africa and provide novel settings, images, and objects for our target players. Seldom, for example, is there discussion of Jews wearing turbans while living in North Africa.

We hope that this setting can help shed misunderstandings about what religious law is or can be. With the forthcoming Islamic law module we plan to explain similarities and differences between the Jewish and Islamic legal systems of the period and even to explore the influence of the two religions and culture on each other. Maimonides was studying Averroes and Al Ghazali and choices in the *Mishneh Torah* are likely influenced by Maimonides' exposure to great Islamic jurisprudence. Likewise, Maimonides himself was influential upon Islamic culture. As we build out both the curriculum and the game system, we hope these games, replete with scenarios drawn from the law, historical content, and context, can help promote community discussion and provide educators with exciting, experiential learning opportunities for a wide variety of learners. While many internal design review and informal playtest sessions have informed play, we are still at early stages of research regarding learning and the game systems, with small numbers of IRB-based play sessions. These play sessions have informed, in particular, the generation of the second game in order to afford a variety of

opportunities to build curriculum. In future research, we intend to expand play, build curriculum and use mixed methods approaches to understanding player discourse. By developing curriculum around the particular opportunities presented by the game systems we hope to maximize opportunities for thought-provoking and informative play experience for learners about the collaborative, cooperative, and sustenance-supporting governance structures critical to religious legal systems. We also aim to encourage players to delve into the historical and geographical contexts in which those systems are situated.

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SKAZKA

Exploring Empathy Through Cooperative Mechanics and Narrative

SARAH A. ABRAHAM

ABSTRACT

Video games like *Journey* (thatgamecompany, 2013), *Shadow of the Colossus* (Team Ico, 2011), and *Undertale* (Fox, 2015) have proven that empathetic experiences can be commercially successful, even as academic studies demonstrate how cooperative play increases empathy. In order to explore play and narrative mechanics that foster cooperation and empathy, I created a game design document for my video game, *Skazka*. *Skazka* is a two-player cooperative and exploration-based game featuring playable characters Katya, a girl, and Volk, a wolf, as they navigate a fairytale Siberian landscape in search of Katya's brother. Over the course of their journey, they overcome the beautiful but treacherous terrain and survive encounters with the animal-like lords of the land. *Skazka*'s design goals are to encourage cooperative problem-solving between players, reward group discovery, and foster empathy between players. Drawing from traditional puzzle and exploration game mechanics as well as cooperative online play, *Skazka* deemphasizes the precision of movement and actions in favor of communication and coordinated effort between players. The puzzle segments and world exploration are designed to foster cognitive empathy, or rational understanding of another person's feelings. The narrative themes of mutual interdependence, loss and grief, and

courage in the face of adversity are intended to foster emotional empathy, or emotional understanding of another person's feelings. As an indie game built on cognitive research, *Skazka* bridges the gap between commercial design and research related to empathy-building.

BACKGROUND

Video games are a widespread entertainment medium within society. In the United States alone 65% of households have at least one member playing video games 3 or more hours a week with a total consumer spending of more than 30 billion dollars (ESA, 2017). The ESA (2017) also reports that 53% of gamers are playing online and multiplayer titles, suggesting games have a profound impact on society and the way people relate to each other. While the most played multiplayer games are divided between the shooter, casual, and action genres, there is a great deal of growth in the independent (indie) game space (Gril, 2008) as well as market interest and recognition of these games.

Games like *Papers, Please* (Pope, 2012), *This War of Mine* (11 Bit Studios, 2015), and *Papo & Yo* (Minority Media, 2012) center around discussion and emotional investment in issues of immigration and bureaucracy, the human cost of war, and domestic abuse respectively. Each takes a non-traditional approach to storytelling and game design to tackle these difficult issues. *Papers, Please* puts the player in the role of an immigration officer who must evaluate the paperwork of immigrants and returning citizens according to a totalitarian state's complex and increasingly arbitrary rules and regulations. *This War of Mine* was inspired by the events of the Siege of Sarajevo during the Bosnian War, but rather than play as a solider, as is the typical video game experience, players are besieged citizens doing their best to survive the chaos. In *Papo & Yo* the player's avatar is a Brazilian boy who escapes his abusive father by entering a dreamlike and magical favela; but, the gentle, helpful monster

the boy befriends turns violent when it eats poisonous frogs (a metaphor for alcoholism).

Player desire for emotionally driven experiences continues to grow, as does an interest in games that feature non-violent mechanics or twists on the usual game mechanics (Donnelly, 2014). In 2013, *Journey* broke PlayStation Network sales and won numerous awards for its wordless retelling of the hero's journey across a desolate landscape with simple, online play (Osborn, 2012). In 2015, *Undertale* received awards, including PC Game of the Year (IGN, 2015), for its subversive story and game mechanics that center around non-violent negotiation with in-game enemies rather than overcoming them with violence.

This interaction between games and violence is also of interest in academic circles, and much research has been done in the area of gameplay and psychology to understand the relationship between violent video games and aggressive tendencies, including the work by Anderson and Bushman (2001). While their study identifies a correlation between video game violence and increased aggression in children, Greitemeyer, Traut-Mattausch, and Osswald (2012) show that the game *Lemmings*, which centers around the player helping a group of creatures reach safety, reduces aggression cognition. While the play of *Lemmings* is not violent it is not necessarily intended to be a prosocial experience. The game features comedic gore and dark humor related to the often-grisly fate of wayward lemmings, but in order to progress players must help (rather than torment) the lemmings. This suggests choices in game mechanics and goals, as well as the framing of a player's role in the game, affect how players behave both during and after play.

This idea of a player's role and how it affects aggressive response is supported by additional research into video game violence within cooperative games. Greitemeyer and Osswald (2012) observed that team-based games increased cooperative behavior

despite violent gameplay. They analyzed player behavior during tit-for-tat games after playing *Halo* (Microsoft, 2001-2007) in the context of direct competition against other players, indirect competition to make more progress than other players, and cooperation to make progress as a team. Playing *Halo* cooperatively led to more cooperative tit-for-tat behaviors in players, despite the violence inherent to *Halo*'s shooter-style gameplay.

EMPATHY

Zaki and Ochsner (2016) define empathy as "the ability and tendency to share and understand others' internal states" (p. 871). As a complex and multifaceted concept, empathy can further be broken down into a cognitive and emotional component (Hodges & Myers, 2007). Hodges and Myers (2007) describe cognitive empathy, or empathetic accuracy, as the ability to understand another person's feelings. Using cognitive empathy a person can predict someone's reaction to those feelings which allows that person to react appropriately. This notably does not require a person to care about another person's welfare, but it does require sensitivity and understanding of emotions.

Emotional empathy is the understanding of another person's feelings on an emotional level. Hodges and Myers (2007) describe emotional empathy as involving three components: "feeling the same emotion as another person (sometimes attributed to emotional contagion) … feelings of distress in response to perceiving another's plight … feeling compassion for another person" (p. 296). While this third component, or empathic concern, is more sophisticated developmentally the first two components help lay the ground work for it.

Given the complexity of empathy as a whole there is much debate over not only what it is but its role in guiding human behavior. Bloom (2014) points out that empathy does not

necessarily lead to better human behavior, particularly on a policy level. Feeling emotional empathy for victims in crisis can be paralyzing, which causes inaction as a person is overwhelmed by another's feelings of pain and distress. Empathy can also be deceptive, as irrational reactions to a situation may soothe a person's own feelings without initiating positive action in the world. High cognitive empathy does not ensure someone will act in (or even care about) another's best interests—only that this person can manage the other's emotional reactions. On the other hand, Zaki (2017) argues that empathy, while flawed and by no means a comprehensive tool for action, can function as an initial guide to moral behavior (a kind of "moral compass") that ultimately leads to prosocial actions and outcomes.

Given this complex space, video games must not only consider how they can foster cognitive and emotional empathy within players but also how these sentiments affect player behavior inside of, and beyond, the game itself. The design of *Skazka* builds on mechanics and narrative of existing games that promote cognitive and emotional empathy; but its deeper goal is to combine these reactions with critical reasoning and a more universal perspective so that player compassion extends beyond the immediate target of empathy to the greater community and world. While this goal may be beyond the scope of a design document, *Skazka* still presents an approach for designing video games that foster prosocial behaviors in players as well as acts a bridge between the academic discussion of empathy and the game development community's creation of positive and entertaining experiences for players.

EMPATHY IN GAMES

Cognitive empathy is an important aspect of multiplayer games, whether competitive or cooperative, as it helps players understand and react to teammate and competitor actions. One genre that features collaborative problem-solving are networked,

team-based shooters such as the *Battlefield* franchise (Electronic Arts, 2016), *Team Fortress 2* (Valve, 2007), and *Overwatch* (Blizzard, 2016). These popular games require multiple players to engage in squad-based combat against an opposing team, where each player takes on a different role to support the mission objective. While all of these games require technical execution, and understanding of game and character mechanics, a player's success also hinges on her ability to understand what teammates and opponents want and need at any given time so she can react accordingly.

While multiplayer games require cognitive empathy, narrative games demonstrate a powerful avenue for fostering emotional empathy. Narrative-centric games have an inherent roleplaying aspect (i.e. taking on the persona of an in-game avatar to complete the game's goals), and the act of roleplaying correlates to higher levels of empathy on Davis's Interpersonal Reactivity Index (Rivers, Wickramasekera II, Pekala, & Rivers, 2016). Since the Interpersonal Reactivity Index includes empathy metrics for perspective-taking, fantasy, empathetic concern, and personal distress this indicates that the act of taking on another role, even in the imaginary context of a game, can lead to significant increases of emotional empathy.

The idea of roleplaying varies between games. Sometimes games provide extensive customization so players can "recreate" themselves, such as in the life simulator *Second Life* (Linden Lab, 2015), while other games allow players to take on the "role" of an existing character. In these games, player choice varies with games like *Mass Effect* (BioWare, 2017) allowing a variety of actions and narrative choices and games like *Final Fantasy* (Square Enix, 2016) presenting the player with a relatively linear narrative but a range of characters with whom to identify. In both of these games, the narrative is dramatic and emotionally driven to elicit empathetic concern from the player for both playable and non-playable characters.

Another way to encourage empathy is by creating a narrative experience centered around companionship. The Amiga/Atari ST puzzle and exploration game, *Another World* (Chahi, 1991) highlights the friendship and dependence between the playable main character and the non-playable alien, Buddy. With its cinematic puzzles and action-packed, but emotionally-driven, story, *Another World* had a profound influence on a number of modern developers and the use of a "companion" AI (Carle, 2014). Similar to *Another World* is the cult-classic *Ico* (Team Ico, 2001) where the player takes on the role of a young boy helping a mysterious princess escape a cursed castle.

In both *Another World* and *Ico* the emotional core is the friendship between the player's avatar and an AI-controlled character. This core creates a moving story dynamic, but these games lack true cooperative mechanics since they are single-player experiences. *Skazka* incorporates the ways these games foster a sense of empathy between player and character and extends them to foster empathy between player and player.

This idea is not unique to *Skazka*. Several single-player games feature cooperative modes as extra stages or levels including *LittleBigPlanet* (Media Molecule, 2014), *Portal 2* (Valve, 2011), and *Never Alone* (Upper One Games, 2014). While *LittleBigPlanet* can be played as a single player game, up to four players can play in any level and certain optional puzzles require multiple players to solve them. *Never Alone* is also a single player game but it allows for a second player to handle the extra character (also a feature in the Japanese release of *Ico*). *Portal 2* has a fully featured cooperative mode in addition to the single player mode, making it one of the only games that emphasizes co-op play as much as single player play.

Portal 2 gameplay centers around complex puzzles that require tight coordination and execution. This makes playing online without voice chat difficult, even if using the game's "emote"

system that lets players communicate non-verbally through character animations. In contrast, *Journey* is designed as a networked experience with fairly simplistic navigation and puzzle-solving that does not require direct cooperation. The matchmaking system seamlessly swaps players into other players' games over the course of a playthrough. Players can only communicate through in-game sound effects, and they don't have access to their companions' information until the end of the game, but this limited network experience emphasizes the world's loneliness and makes every playthrough different but generally positive (Borda, 2013). The sense of companionship and emotional connection comes from the story and aesthetics rather than a core dependency on the other player.

As a hybrid approach of *Portal 2* and *Journey*, *Skazka*'s puzzles require cooperation to solve but the actual technical execution of movement and actions are deemphasized in favor of a more exploratory, narrative-driven experience. This makes the gameplay accessible for networked play between unevenly skilled players and therefore widens the target audience beyond core gamers to reach casual players interested in the game's narrative and social aspects. The goal of *Skazka* is to integrate empathy research into a game designed for commercial release, so *Skazka* also draws on lessons learned from other commercial games centered around empathy. For example, *Journey* was a critical success due to its unique way of promoting connection between online players (Borda, 2013) whereas the reception of *Never Alone* was mixed due to its control issues and lack of satisfying gameplay challenges (Hindes, 2014).

Skazka's design focuses on blending tight, satisfying controls and play experience with core cooperative mechanics and empathy-based narrative.

EMPATHY IN *SKAZKA*

Skazka, which is Russian for "tale," develops the friendship between Katya, a girl without a family, and Volk, a wolf without a pack. Together they navigate the Siberian landscape in search of Katya's brother, who was abducted by the forest. *Skazka*'s game design document proposes the use of cooperative mechanics and design built around both cognitive and emotional empathy. To accomplish this, *Skazka* uses team-based gameplay mechanics within the context of the narrative and exploratory-based game genres. This is intended to create a play experience that focuses on critical-reasoning and puzzle-solving in the context of an emotional and dramatic narrative.

Skazka's model of play is similar to *Portal 2*, which uses purely cooperative mechanics in the puzzle genre. In *Portal 2* the co-op mode requires both players to work together in order to navigate a research facility. The two playable characters have the same abilities, which makes the game mechanics and play symmetric between teammates. *Skazka* blends this style of play with the style of squad-based games by featuring puzzles that require asymmetric character classes to complete. Since players do not share abilities each puzzle requires different actions from each character. This allows players of differing skill level and play-styles to make progress as a team while remaining reliant on each other.

The idea of reliance ties in to *Skazka*'s story, which is centered around mutual dependence and cooperation between Katya and Volk as well as the inter-connected nature of the world around them. While mutual dependence is the goal, as in any multiplayer experience, it is essential to limit player motivation and ability to "troll," or deliberately provoke/harm the other player. This is particularly difficult when puzzles require direct interaction and coordination between players, so *Skazka* must consider numerous kinds of "defector" behaviors and limit these actions

as much as possible. Some of the ways *Skazka* does this is by featuring in-game mechanics and designs that reward positive interactions between players while omitting mechanisms for one player to harm the other without harming themselves (either in-game or socially).

The play and narrative designs, intended to promote cognitive and emotional empathy while limiting trolling, are: cooperation as a problem-solving mechanic, cooperation as an exploratory mechanic, cognitive empathy through puzzle design, emotional empathy through narrative, and diverse design.

COOPERATION AS A PROBLEM-SOLVING MECHANIC

Skazka has modes for local play and networked play. In both cases players are on a shared screen, rather than a split screen, to emphasize the intrinsic link between characters. Players are therefore always aware of what the other player is doing and they must work in a coordinated effort. By coordinating movement, special actions, and team-up actions the two players overcome obstacles and open new segments within the game's world. Since the puzzle emphasis is on the coordination between players, rather than critical reasoning or skill of each individual player, *Skazka* defines a form of play where mutual interdependence and cooperation are the central game mechanic.

In terms of abilities, Volk can double jump, long jump, ram objects, and dig. Katya's abilities focus on environmental manipulation such as growing plants, breaking objects, and using a vine whip to swing between locations. The divergence in abilities allows players to select a character based on play preference. Action-oriented players may prefer the movement-oriented role of Volk, while more tactical players can strategize using Katya's abilities.

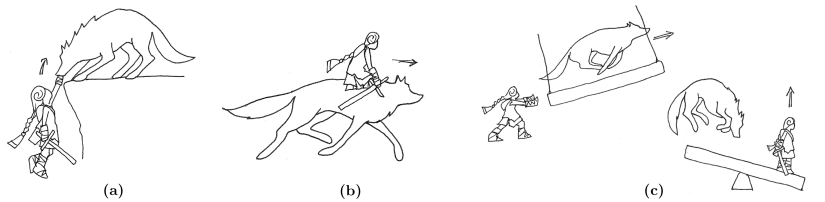

Figure 1. Team-ups require player cooperation and interdependence to find new areas and solve problems based on environmental reasoning. Three of the initial team-ups are (a) Assist, (b) Mount, and (c) Launch.

Beyond each character's unique abilities, *Skazka* has team-up abilities, which require the players to interact and cooperate directly. "Mount" allows Katya to ride on Volk, combining his speed with her magical powers. "Launch" allows opportunities for Katya to push a log swing, or Volk to jump on a teeter-totter, giving the other character a boost toward inaccessible areas. Volk can use "Assist" when Katya is dangling from a ledge to pull her to safety. Later team-ups are introduced as the game progress, but these initial three are illustrated in Figure 1.

Since players must coordinate during team-ups to solve level puzzles, successful cooperation contributes to the level's flow and therefore player sense of accomplishment. For example, during Mount the two players operate as a single unit. Since the duo moves at Volk's higher running speed and can overcome obstacles using Katya's break and grow abilities the speed of progression also increases. This, in turn, increases the pacing of the game, which gives both players a sense of level mastery and further incentive to work together.

Should a player troll by refusing to participate in the puzzle-solving or not assisting the other player, this behavior can be tracked via the networking matchmaker algorithm. This algorithm then tries to pair adversarial players with other adversarial players, so that cooperative players can more easily find cooperative matches. The matchmaker can also seamlessly

swap in new partners at a player's request using similar techniques to *Journey*'s matchmaker.

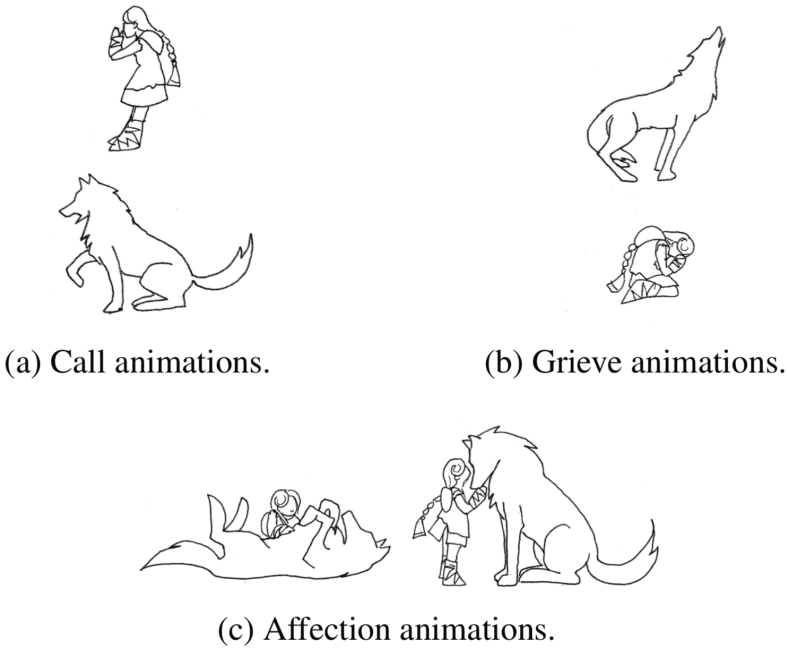

Figure 2. Animation concepts used to reinforce notions of interpersonal dependency and friendship.

Some of the interactions between Katya and Volk incorporate animations (illustrated in Figure 2), which are intended to facilitate communication between players. A player can direct the other player's attention using the "Call" action, while "Affection" triggers non-critical animations that indicate a player's happiness and approval. There is no way to taunt or provide negative feedback using these character animations. The sounds and animations are designed to be cheerful, friendly, and varied so that "spamming" the button, or pushing it repeatedly, will neither annoy the other player nor effectively convey negative sentiment. This is similar to the call mechanic used in

Journey, which gives players a non-verbal way to connect with their partner.

Both Call and Affection are player-controlled, but "Grieve" is triggered upon the other character's death. Death of one character ends the game, re-spawning both playable characters to the previous checkpoint. Although character death does not incur large penalties, in terms of time or affect in-game content (similar to *Portal 2*), it connects the character "life bars" so that performing an action that negatively impacts the other player will in turn negatively impact the player that instigated it.

COOPERATION AS AN EXPLORATORY MECHANIC

To encourage world exploration the levels are designed with side paths that are not readily visible or accessible from the main path. In some cases, one character might easily discover a potential "entrance" to a hidden section of the map but that section may require the other character to access it. In this case, the first player must signal to his partner that she should join him in that region.

In local co-op, where players are in close proximity to each other and share the same physical screen, this is as simple as asking, but communication becomes more challenging in a networked game. Since *Skazka* only allows players to communicate with the other player using in-game actions, Call provides an immediate signal to focus the other player's attention, but the exact steps required to access the new region cannot be conveyed directly. The challenge is therefore related to the communication and cooperation required for accessing additional world sections and narrative interludes.

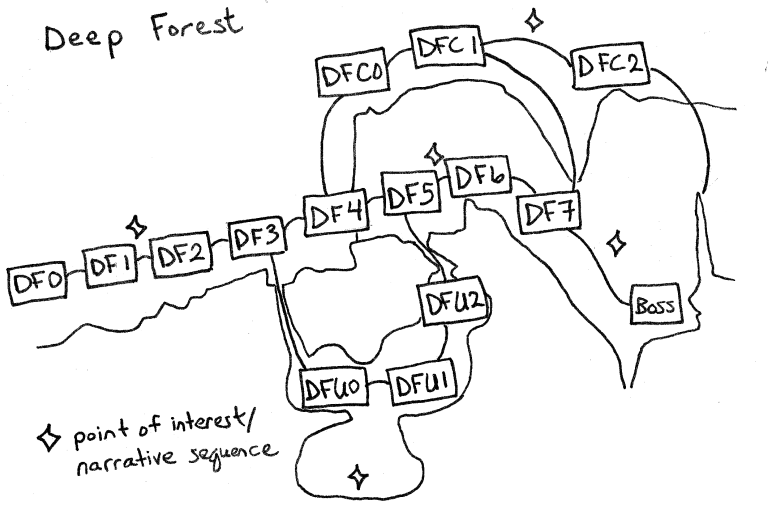

Figure 3. The taiga biome in Skazka consists of eight linear levels with unique puzzle mechanics, as well as two "optional" routes that reward players with in-game cut scene and narrative segments.

The level layout map in Figure 3 shows the different paths and puzzles available based on player decisions and interactions within the taiga (or coniferous forest) levels. Players are given the opportunity to explore different sections of the game, which in turn uncover optional narrative segments. There are also unique visuals in hidden areas as well as collection-based rewards to encourage exploration. *Skazka* takes cues from *Journey* where players can share their own discoveries with new partners to keep each playthrough fresh and exciting, while also encouraging cooperation with, and empathy for, the other player.

COGNITIVE EMPATHY THROUGH PUZZLE DESIGN

As previously discussed, cognitive empathy is the rational understanding of another person's wants or needs. While the cooperative mechanics associated with both problem-solving and exploration require cognitive empathy between players to effectively work as a team, *Skazka* further encourages cognitive

empathy by designing puzzles that expressly require empathetic understanding to complete.

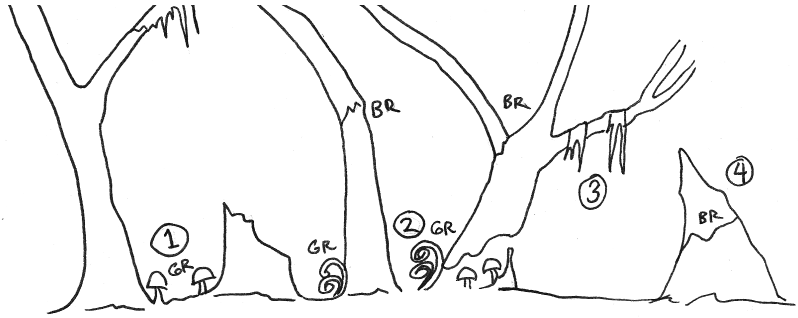

Figure 4. One of the puzzles designed for Skazka. Step 1) Katya grows mushrooms. Volk uses these as bounce pads, while carrying Katya with the Mount team up. Step 2) Katya and Volk split up. Katya grows vines to scale a tree, while Volk enters the tree's hollow and jumps along the mushrooms within it. Step 3) Katya swings along the vines and breaks off the top of a dead tree trunk, which falls to the ground. Katya hangs from the ledge. Volk jumps along the broken tree trunk to reach the top. Step 4) Volk assists Katya before she falls. Together they proceed to the next section.

Skazka does this by utilizing the design flow of other exploratory puzzle games, such as *Shadow of the Colossus* and *Journey*. These games allow a great deal of freedom when exploring the world, but the puzzles themselves adhere to strict guidelines for solving. In *Skazka*'s case, solving a puzzle requires working with the other player. At the beginning of each level players start together, and though they may separate to accomplish their individual tasks, they must both reach the end of the puzzle before the next segment opens. Alternate routes and hidden areas need both players to have accessed them before they unlock (the example puzzle in Figure 4 shows how players must coordinate their actions to open up new levels).

The general flow patterns for puzzle-solving are:

1. Katya action > Volk action > Team action

2. Volk action > Katya action > Team action
3. Team action > Team action > Team action

This ensures that players are either coordinating their actions and movements or providing each other assistance through the level. This means players must analyze how the other player is progressing and potential challenges they may encounter while monitoring their own progress. A direct example of this is the Assist team up, since Volk must position himself to help Katya before she loses her grip, but players can provide assistance in other ways and circumstances.

In all cases it is impossible to leave the other player's character behind and progress without them. This makes understanding of the other player's situation, and likely actions, essential. *Skazka* also de-incentivizes players from actively harming the other player's character. While it is possible to passively harm the other player's character (e.g. not providing assistance at a critical moment or refusing to cooperate with that player), these trolling tactics negatively impact the instigator as much as the victim as both players must restart. As mentioned earlier, data on such behaviors are also collected for future matches these players may have.

EMOTIONAL EMPATHY THROUGH NARRATIVE

The goal of *Skazka* is connection rather than division, but games are often competitive and winning-focused. This can be true even in cooperative games, where points or rewards are given to the "better" player. Mechanics for this include leaderboards, difference in experience distribution, individual player achievements, and other related systems that distinguish players—whether by singling out failures or accomplishments. *Skazka* avoids this by treating Volk and Katya as a unit with rewards distributed evenly between players. Art and design decisions, such as a Grieve animation when the other character

dies, or Affection when one of the characters is pleased, also serve to reinforce this sense of dependency and suggest an emotional response to the players.

Further, the narrative of *Skazka* avoids the "good/evil" dichotomy where the player and her character are depicted as a hero with all adversaries and opponents acting as villains. Most good-versus-evil narrative in video games resolve when the player completes the game, giving him satisfaction at both beating the game and overcoming opponents, who have no redeeming qualities. This is a common trope in first-person shooter games, most notably in World War II games, that works against historic understanding and empathy-building (Fisher, 2012). This sort of narrative might bring together players as a unified team facing a common enemy, but such simplistic story-telling encourages othering, or the act of classifying a group of individuals as something outside of someone's personal identity. In this context, players need not concern themselves with the impact their actions bring on the non-playable (or other) characters.

Some criticisms of empathy as a mechanism for building prosocial behavior are that empathy for an "ingroup" member can promote aggression toward someone in the "outgroup" (Zaki, 2017), and that appealing to emotion can lead to selfish and shortsighted actions (Bloom, 2014). Both of these outcomes are counter to *Skazka*'s greater goals of promoting prosocial behaviors and compassionate actions toward people with whom the player may not immediately identify or recognize as in need.

To address this, *Skazka* adversaries are "boss" characters that players defeat to progress, but these bosses are not evil. Instead they are sentient creatures and spirits. As in *Shadow of the Colossus*, the "enemies" have sympathetic qualities and unique personalities, so as Katya and Volk defeat the land's inhabitants, the victory is bittersweet. Katya gets closer to rescuing her

brother, but the world itself pays the price. Katya is selfless in her quest to save her brother, but selfish in using any means necessary to find him. Volk is selflessly devoted to orphaned Katya, but this leads him to disregard the consequences he has on the creatures of the land.

Rather than only appeal to a player's initial sympathetic feelings toward Katya and Volk, *Skazka* challenges player notions of hero and villain archetypes and raises questions of human impact on the natural world. Players must reconcile their initial emotional reaction to a seemingly simplistic fairytale with thoughts on inevitable conflict between sentient, sympathetic creatures. By portraying the complexities and difficult choices of life, *Skazka* tries to encourage critical thinking and deeper analysis—elements that empathy as a sole tool is often criticized for lacking (Bloom, 2014; Zaki, 2017).

Thus, *Skazka*'s cooperation-based play exists within a subversive narrative that questions standard game mechanics centered around violence. *Skazka* both reaches a wide player audience, who are expecting the usual puzzle/exploration experience, and provides opportunity for discussion and introspection, which is one of the draws of indie games. A widely recognized game that does this in the context of a cover-based shooter is the cult classic *Spec Ops: The Line*, which explores the ethics of military-style games, personal loss and duty, and actions in uncertain moral situations (Pitts, 2012). *Undertale* is an indie game that is similarly subversive in its treatment of violence, but presented within the roleplaying game (RPG) genre.

Skazka's narrative uses similar themes to explore how empathy-driven design can promote self-reflection and a broader view of the world. Not only are these essential qualities for building prosocial behaviors in players, they are important qualities and considerations when discussing how game developers can harness empathy effectively.

DIVERSE DESIGN

Since *Skazka* focuses on a cooperative and empathetic experience, the world and characters within it are designed to be relatable while celebrating diversity. Numerous games assume a Western audience and thus focus on depictions of European characters and setting, but *Skazka* tries to foster an appreciation of cultures and experiences that might differ from the player's own. The goal is to discourage othering while presenting another world view to help broaden player perspective.

Figure 5. Initial concept art capturing the feel of Russian illustrative art and setting Skazka's *tone.*

The chosen setting in *Skazka* is the Siberian countryside that historically is a mix of Western and Eastern cultures and architecture. This setting provides an atmosphere familiar to Western players while potentially exposing them to something outside their area of experience. As Siberia is a vast geologic area with a diverse range of ethnic groups and ecosystems, Katya's journey is intended to encourage interest in, and sensitivity toward, a unique part of the world. Initial art for the world and

game art-style is shown in Figure 5, and the game draws from the mythology and folktales of Siberian peoples including the Russians, the Buryat, and the Tyuvan clans.

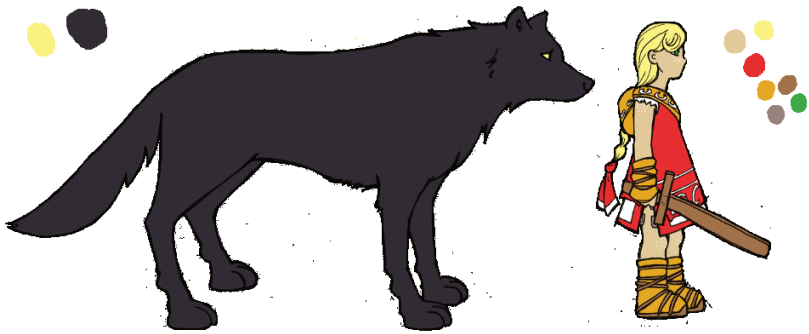

Figure 6. Initial character designs for Katya and Volk.

Katya herself is a girl of mixed Buryat, Turkic, and Russian descent. She is designed as a role model for younger female players as well as biracial players. She possesses the "heroic" qualities of bravery, determination, and loyalty. Volk, her wolf companion, possesses similar qualities, but his design incorporates the fierce power of a wild animal. Initial designs of the characters are shown in Figure 6.

Since players can choose their character, players who might be less inclined to play a female protagonist still have an opportunity to enjoy *Skazka*'s gameplay and narrative. This relates to one of *Skazka*'s secondary goals, which is contributing to the normalization of non-male, non-white protagonists in video games. To accomplish this, *Skazka* tries to overcome potential biases of a "mainstream" audience by presenting something accessible and familiar yet compelling enough to raise awareness.

FUTURE WORK

Skazka is still in development at Akula Games, but once a vertical slice is completed, we will use standard playtest practices developed by companies such as Valve, Bungie, and Epic (Parker, 2012) to analyze its potential for success as a commercial game experience. This process includes recruiting playtesters and recording video and audio data of player reaction and concurrent in-game events during the play session to understand how players interact with the game on a moment by moment basis. While not a formal analysis for measuring empathy levels in players, this data is helpful for understanding parts of the game that promote (and potentially de-incentivize) cooperation, as well as a way to gauge player mood and sentiment as they interact with other players and the levels.

After a play session we will formalize player thoughts and feelings using an exit survey to understand player likes and dislikes and their overall impression of the gameplay and story. We will also use these participants to examine how well *Skazka* succeeds in terms of fostering empathy by comparing player responses to the Toronto Empathy Survey (Spreng, McKinnon, Mar, & Levine, 2009) before and after the play session. Other techniques used for measuring Theory of the Mind, or cognitive empathy, in relation to literary fiction include reading the mind in the eye, diagnostic analysis of non-verbal accuracy, the Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), and the Yoni test (Kidd & Castano, 2013), which is similar to analyzing response to video game narrative and interaction.

CONCLUSIONS

While the game itself is in early phases of development, *Skazka*'s game design document provides a synthesis of commercial game design with academic research incorporating both cognitive and emotional empathy. Both the game design document and the

eventual finished product are intended to spark discussion around the design of prosocial games as well as contribute to the formal techniques game designers use for fostering empathy.

On a more personal note, I believe it is our duty as game developers to think beyond mere entertainment or profits and consider what potential games have, as a play and story-telling medium, for creating positive, powerful experiences in players' lives. As film director Andrei Tarkovsky (1987) said:

> The allotted function of art is not, as is often assumed, to put across ideas, to propagate thoughts, to serve as an example. The aim of art is to prepare a person for death, to plough and harrow his soul, rendering it capable of turning to good. (p. 43)

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GUIDE AND DANGEROUS PLAY

An Empathetic Game About Coping and Resilience

REBECCA GOODINE, JADE A. YHAP, AND JEFFREY T. MUNDEE

ABSTRACT

This paper serves as a design case overview for the project *GUIDE*, a digital game which we here illustrate as invoking empathetic concern in players through its style of "Dangerous Play" for the purposes of introducing positive stress coping strategies. Dangerous Play, a kind of dialogue formed through ludic interactions between players and serious game content, has been explored both in clinical serious games and in more mainstream entertainment works. We first discuss the historical and theoretical contexts that surround *GUIDE* in order to better trace our design rationale for using Dangerous Play as a formative principle for this project. Preliminary exploratory survey results from a small afterschool playtesting exercise are included, as well as a final discussion about future planned directions for *GUIDE* and overall lessons learned about designing for Dangerous Play.

GUIDE AND EMPATHY

GUIDE is a 2D puzzle platformer video game designed to promote understanding and coping skills awareness for social anxiety among children and youth. The origins of the project were in the 2016 iThrive and Games4Health Empathy Challenge,

an international "game jam" design event aimed at incentivizing aspiring student game developers to create either a design concept or working prototype of a digital game for the purposes of bettering adolescent health (iThrive, 2016). The rationale for using empathy as a vehicle for wellness is linked to positive scientific findings, ranging from the ability to decrease distress in the undeniably strenuous life phase of late childhood and early adolescence to reaching an audience that may have higher neuroplasticity and predisposition for positive change than their adult counterparts (Bluth & Blanton, 2014; Goldstein & Winner, 2012). In addition to the overall potential of video games to help explore emotions, puzzle games like *GUIDE* have been found to help reduce stress and anxiety (Granic, Lobel, & Engels, 2014). And, unlike static mediums like film or literature, games' inherent immersion-inducing properties through simulation arguably make them a natural fit for empathetic exercises of understanding (Darvasi, 2016).

Interest in using empathy from a specifically cognitive behavioral perspective is the idea that "novel and potentially profitable ways to view one's difficulties, will facilitate schema work and change in schema belief" (Hoffart, Versland, & Sexton, 2002). In social anxiety disorder, maladaptive cognitions are beliefs about oneself and others that make innocuous interactions seem overwhelmingly negative. Recognizing and challenging these distortions by replacing them with more realistic ones through methods like Cognitive Behavior Therapy is believed to help treat them (Boden et al., 2012). This relationship between empathy for the self and for others, and the practice of challenging maladaptive cognitions, ultimately proved to be the inspiration for the iThrive *GUIDE* prototype. Our vision was for a game where the protagonist would initially display a reactive and socially anxious personality trapped by a set of distorted thinking patterns. In a process not unlike that used in Cognitive Behavior Therapy, we envisioned that players

would begin to defy these thoughts in order to bring about an observable change in the character.

In the contest development phases of the prototype, much of the direction of *GUIDE*'s design was drawn from members' personal emotional experiences with the condition of social anxiety. Empathy is generally understood as having two dimensions, *emotional* and *cognitive* (Davis, 1983), and the game's prototype phase generally worked to establish emotional empathy for players through aesthetic visual design. A greater implementation of cognitive empathy would later be incorporated as the design became more fully realized (see Table 1). In *GUIDE*'s first iteration, the player used arrow keys to lead a baby bird down a dark forest pathway surrounded by jagged trees and shadowy silhouettes. Simple 2D graphics were used to give the piece a storybook aesthetic, and minimal player agency was intended to give a feeling of dread to the short experience. In the nearly two years since this prototyping phase, continued development has expanded the project towards the vision that has been described in the synopsis section of this article.

WHY "DANGEROUS PLAY?"

"Dangerous Play" as a term in game studies has been previously used by McGonigal (2006) to indicate a "dangerous (level of) immersion" in the concept of alternate reality games (p. 328). Stenros (2015) makes a similar, if more hazardous, definition for the term, describing Dangerous Play as "Play where there is a sizeable risk to the player's life, reputation, or resources… Play that has potentially a very large impact on the player's everyday life" (p. 95). The Dangerous Play of *GUIDE* is also similar to one of the properties of Reflective Game Design as proposed by Khaled, which is the "privileging of disruption over comfort" (2014). In this understanding, Dangerous Play is a transactional interaction between player and "dangerous" play content. A Dangerous Play experience is therefore like a reflection of the

stresses of real life, yet also made distinct and malleable through exploration and negotiation with the limits of a given game experience. For the purposes of our case study, we have taken this element of Reflective Game Design to refine Dangerous Play as *the design of play involving a non-insignificant threat, vulnerability, and / or required amount of player openness*.

Danger and *threat* are no strangers to storytelling; action and horror genres in both film and games rely on it centrally. Yet far from only taking agency away from a player, as is generally what occurs in designs intending to elicit horror, Dangerous Play as we mean it allows for the design of situations that are stressful but that also promote resilience in the face of adversity. As a Dangerous Play experience, *GUIDE* is an exercise in applying coping skills for the sake of building psychological resilience. Coping is defined by Compas, Connor-Smith, Saltzman, Thomsen, and Wadsworth (2001) as a process of adaptation that promotes a state of resilience in the person using these coping skills. Not all coping efforts are done successfully, something that *GUIDE*'s opening sequence illustrates clearly. However, building a personal storage of positive coping strategies particularly when faced with the cognitive distortions of social anxiety can be monumentally empowering. The empathetic and actionable agency afforded by the digital game medium is essential in both creating and taking the danger out of Dangerous Play.

Within mainstream game design, Telltale Games (2012) *The Walking Dead: Season One* is one Dangerous Play title that Smethurst & Craps (2015) describe as "playing with trauma." Game players embody Lee, a man who without warning is thrust into a fresh and deadly zombie apocalypse world and tasked with caring for an orphaned girl named Clementine. Yet rather than relying on gore or shock for the sake of horror as might be expected from such a scenario, it is a combination of empathic characters, game choices with appropriately dire consequences, and moments where agency is involved which combine to create

a deeply reflective and moving piece. *That Dragon, Cancer* (Numinous Games, 2016) similarly deals with intense themes of trauma through the retelling of a loss of a child to cancer. Metaphoric 3D imagery frequently juxtaposes with real audio and narrative recordings from parents Ryan and Amy Green, setting up a world where sorrow and pain for the loss of their son Joel also live alongside hope and faith. Minimal interaction abilities with the game world make occasions to "play" with the painful and dangerous memory sequences monumentally powerful exercises of working through grief. Schott (2017) has noted that in addition to being a form of coping, the game is a refreshing counter narrative to the dominant way in which death is often trivialized in mainstream game design practice.

While wildly varied in their subjects, both titles introduce a kind of Dangerous Play that ultimately explore psychological coping abilities to provide player resolution. With such potential, Dangerous Play is unsurprisingly an appealing strategy for an increasing number of psychology informed game design projects. *MindLight* (GainPlay Studio, 2014) is a neurofeedback game that empowers children to better grapple with their anxiety based physical symptoms. As Dangerous Play, discomfort was intentionally introduced through ongoing surprises of the game's ghostly world, "shock events" that prompted children to practice self-regulating their emotional states. As the authors note, an interdisciplinary design approach allowed them to move beyond traditional psychoeducation products to become one "that trained children, playfully" (Schoneveld et al., 2016, p. 322). Within its approach to Dangerous Play, *GUIDE* similarly seeks to have its players explore their fears through the empowering abilities of applied play.

As Table 1 illustrates, the game's play journey corresponds with cognitive schema reframing that becomes more self-accepting as the experience reaches its midway point. Some maladaptive cognitions are explicitly stated in-game, while others are

intended to be observed and discussed after play in consultation with a parent or teacher. In this gradual way of designing *GUIDE*'s Dangerous Play, we have intended that its reflective reveal is only one of many combined reflective learning moments. Players learn to foster empathy towards important characters, then themselves, and then the "other," building upon literature that links the role of empathy and perspective taking in conflict resolution (Darvasi, 2016).

SYNOPSIS: CASTING LIGHT ON THE SHADOW WITH FIA'S JOURNEY

GUIDE begins with an introductory animation sequence set to music. A phoenix faces a bright and rising sun, spreads its wings, and is engulfed in flames. From her ashes, a phoenix chick emerges, blinking into the early morning light. The joyous tone of the creation of new life turns to dread as a storm closes in on the lone chick. Clouds darken the sky. Lightning flashes, striking the tree and setting it ablaze, knocking the chick out of her nest. The final animation frame shows the baby bird, lying unconscious on the forest floor. After this introduction active gameplay begins, with the player assuming the role of the previously introduced phoenix chick Fia (Figure 1). The player finds themselves alone and surrounded by darkness at the base of the still burning trunk of Fia's tree, when a glowing orb figure (the "Guide") emerges from the nighttime shadows and promises to help find an escape (Figure 2). This tutorial level introduces ominous looking Eye characters, who watch the pair intently as they pass by. It also delivers the first onscreen appearance of the Shadow, which flickers in front of Fia as lightning illuminates the sky. This prompts the Guide to shout "Run!" and to urge Fia to make a harrowing jump to freedom. Instead, she falls short and tumbles down into the next level.

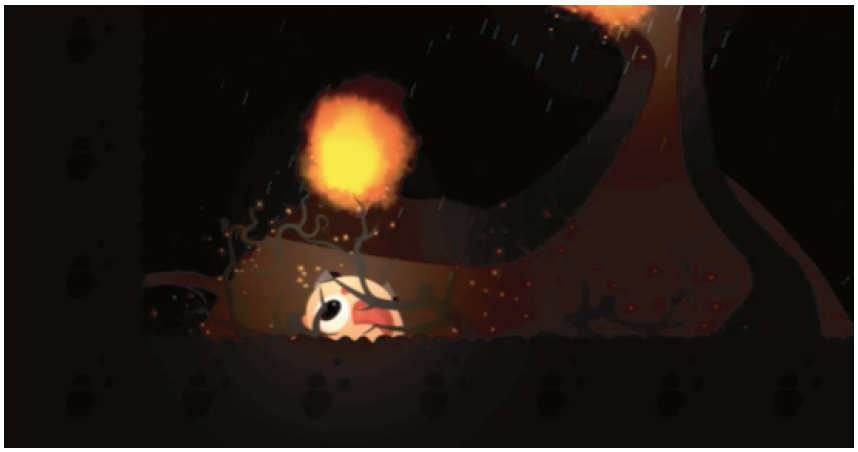


Figure 1. Fia fallen from her nest, directly after the opening cinematic.

Figure 2. Fia is approached by the Guide.

The remaining progression of play continues in a fairly linear path. Fia's abilities include "Jumping," "Gliding," and "Burning" (Figure 3) abilities which become unlocked in succession as levels become more complex. Puzzles often heavily rely on the use of time where the game's maze-like terrain must be navigated and re-navigated to determine the quickest route to unlock certain

switches before time runs out. Such navigation is made even more difficult by the aforementioned Eye enemies which will shoot projectiles at Fia, temporarily stunning her if they connect (Figure 4). Each in-game level also features a different location that helps to visually reflect a hero's journey of ascension, with the player passing through caves, grottoes, forests, and finally, a sort of clearing that sets the scene for the final confrontation between Fia and the Shadow. Throughout the game interactions between Fia and the Guide at first purvey a sense of dread for this inevitable final meeting, before gradually shifting towards optimism, and finally, confidence, as they brace to face the shared source of their fears.

Figure 3. Finding an ash pile, Fia remembers her inner fire abilities.

Figure 4. Maladaptive cognitions like the one above confront Fia throughout the game.

After navigating a wall of Eye enemies in this final level, Fia and the Guide step forward to face the Shadow – but for the first time during the game, the Guide does not actually advance as Fia makes her way into uncertainty alone (Figure 5). What she finds there is not at all the terrifying enemy from before, but another baby bird who looks much like herself. When Fia's Guide does float towards her, it casts behind this new bird the familiar, terrifying, Shadow apparition. Further still, this stranger bird also has a "guide" of its own, which casts a similar looking presence behind Fia as it emerges. The final game's frame is of the two birds facing each other, eyes wide, with their respective, projected fears trailing behind them (Figure 6).

Figure 5. Confronting the source of her fears.

Figure 6. Fia realizes she is not alone in having a guide.

PRELIMINARY EXPLORATORY PLAYTESTING

Our first formal testing of *GUIDE* was held with an afterschool group of 14 students participating in the *SchoolsPlus* program.

SchoolsPlus is a collaborative interagency based in the province of Nova Scotia, Canada that provides outreach and community services for parents and children (Nova Scotia, 2018). Mentoring programs, mental health services, nutritional classes, youth groups, and parenting support are some examples of the wellness and development oriented initiatives that the agency has been involved with in the past. Our development team was approached by one after-school program facilitator who, upon hearing about *GUIDE*'s relationship with empathy based game design for social anxiety, was interested in helping to playtest the game with some of their students. We accordingly worked to develop a playtesting questionnaire and a supplementary curriculum discussion package (see Figure 7) that would benefit both our internal development team and the child developmental goals of the *SchoolsPlus* program.

	Danger	In-Game Dialogue	Distortion	Play	Empathetic Reframing
1	Fia falls	*"Run!"*	*"I can't trust my intuition"*	Fall transitions to next level	*"A fall is not a fail, but a mis-step"*
2	The Shadow appears	*"Shadows everywhere"*	*"Life is uncertain"*	Health collection, burning, and gliding abilities learned	*"Life might have uncertainty, but I can still take independent actions to help my situation"*
3	Eye enemies now active threats	*"More! They keep hurting us"*	*"Others will hurt me"*	Firefly sprites help Fia through timed puzzles	*"I may have had bad experiences with others in the past, but that does not mean it will happen in the future"*
4	Looping levels make it hard to avoid enemies	*"Maybe we can leave this trap"*		Multiple puzzles to navigate that rely on past experiences	*"Finding a positive in a difficult situation can help me get through it"*
5	Shadow appears	*"Do you think we can change this?"*		Levels force Fia to walk past shadow and eyes directly	*"My difficult feelings are valid, but not proofs of my fears"*
6	Large number of eye enemies	*"We can still turn around"*		The player overcomes the wall of eye enemies to face the final "boss"	*"Facing my fears vs. avoiding them helps reduce my fear; I am not alone in my fears"*

Table 1. Relationship between cognitive distortions and reframing through Dangerous Play

As a form of exploratory research, the questionnaire component of this collaboration sought to "help forge an empathetic sense of the people targeted by the design work" through being purposefully flexible in its approach (Martin & Hanington, 2012, p. 84). We asked short and general demographic questions (age, gender, game playing habits, preferred game genres) as well as longer form questions from the participating children (see Figure 8) that they could respond to however they saw best. Overall playtime per child was finally recorded by the facilitator post-play in order to help quantify subjective play difficulty. From the quantitative component of the work, we recorded that the *SchoolsPlus* group was between the ages of nine and 16 with a median age of 12, and overwhelmingly (93%) male with a self-reported amount of personal gameplay averaging to 22.43 hours

a week. Most of the children identified themselves with traditionally "hardcore" game genres like FPS, with half saying that they regularly played platformers like *GUIDE*.

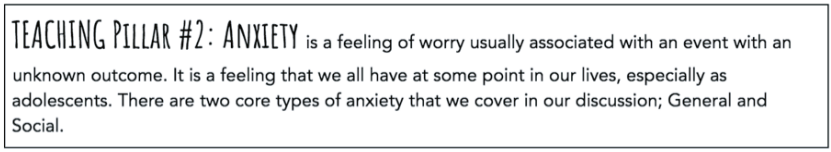


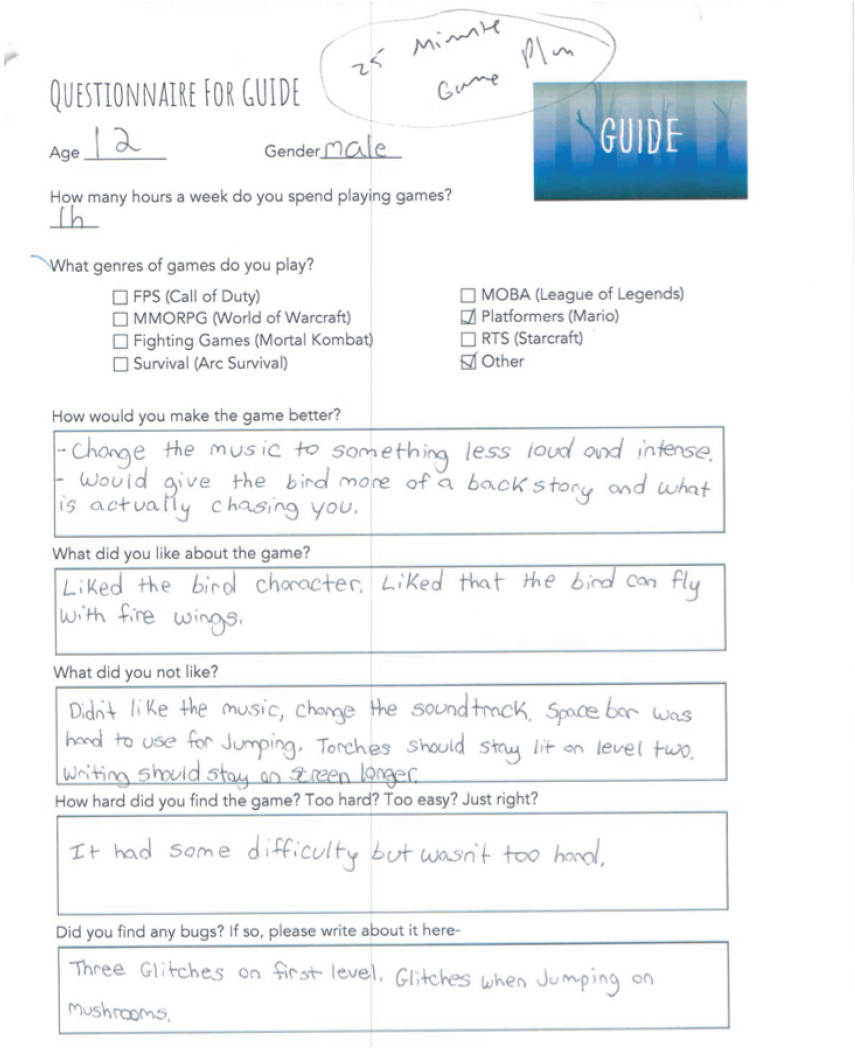
Figure 7. Excerpt from The SchoolsPlus Package

The comments from this session intentionally helped us to gain a more narrowed focus on where the game's current practical design successes and difficulties lay. We found that of the platforming experienced respondents the game generally tended to be played more easily and more quickly. In choosing to test the game at a pre-beta stage of development bugs could become detracting to the overall aesthetic experience. Difficulty was generally appropriate, although three of the players described it as "too hard." Beyond these technical design directions however, the comments were most useful in helping to refine where best we were achieving our design goal of Dangerous Play. By far our most successful element in this regard was through Fia herself, as opposed to only the "danger" she faced. She and her fire ability were universally enjoyed even when other elements of the game were not by the same responding player: *"I liked how you could play as a baby bird that could start fires just by flapping its wings...Liked fire powers...I love how you added phoenix's... I liked that you could glide, I liked the fire..."*.

To us, this suggests that emotional empathy is as important as cognitive empathy in the game's current design. The positive response to Fia and the general pleasure in helping her overcome the game's obstacles corresponds to Isbister's (2016) assertion that "there is something deeply satisfying and bonding about overcoming a challenging mental and physical situation with

someone else" (p. 45). Emotional empathy towards Fia's struggle carries much of the game's affective impact, as does her visual design. Madigan (2012) has noted that Lee's emotive design in *The Walking Dead* likely instills emotional empathy by affecting motor neurons in players, or parts of the body that tell one to react after viewing the expressions of another. Like Lee, Fia has wide and emotive eyes that share with the player her fear.

In future playtesting sessions with a larger sample size we will be seeking to gain a better understanding of how players respond specifically to the cognitive based empathy used in game. From our surveys we found the dialogue and game instructions to be a challenge for some of our youngest players. Continuing to refine and contribute to the work's story and dialogue system is one way in which we think this may prove to be particularly fruitful. However, given that we apply a combined ludic and narrative structure to the work's empathetic design, it may also be that emotional empathy can help "catch" some of these gaps in relation to cognitive empathy. By continuing to refine our game to match the reflective and empathetic capabilities of players – be it more or less cognitive or emotional – we hope in the future to improve our design and broaden who might be able to learn from this Dangerous Play experience.


QUESTIONNAIRE FOR GUIDE

25 Minute Game Play

GUIDE

Age 12 Gender male

How many hours a week do you spend playing games?

1h

What genres of games do you play?

- ☐ FPS (Call of Duty)
- ☐ MMORPG (World of Warcraft)
- ☐ Fighting Games (Mortal Kombat)
- ☐ Survival (Arc Survival)
- ☐ MOBA (League of Legends)
- ☑ Platformers (Mario)
- ☐ RTS (Starcraft)
- ☑ Other

How would you make the game better?

- Change the music to something less loud and intense.
- Would give the bird more of a back story and what is actually chasing you.

What did you like about the game?

Liked the bird character. Liked that the bird can fly with fire wings.

What did you not like?

Didn't like the music, change the soundtrack. Space bar was hard to use for Jumping. Torches should stay lit on level two. Writing should stay on screen longer.

How hard did you find the game? Too hard? Too easy? Just right?

It had some difficulty but wasn't too hard.

Did you find any bugs? If so, please write about it here-

Three Glitches on first level. Glitches when Jumping on mushrooms.

Figure 8. One of the completed surveys.

CONCLUSIONS

With its unique origins in student game design and independent development, *GUIDE* has been in a fortunate position to explore elements of both serious and entertainment games. Grounding the project within the "Dangerous Play" framework has also proven to be a flexible enough approach to encapsulate the

multifaceted dimensions of both empathetic game design and social anxiety schema work. As introduced through the *SchoolsPlus* exploratory research, emergent correlations constructed by the player between ludic metaphor and cognitive schema work appears to be one way to engage in active, multi modal, empathetic player participation. Further refinement of audience to most appropriate empathetic approach will better help in contextualizing these serious topics for future players. As a Dangerous Play story for resilience and empathy, we believe that the ultimate reward of *GUIDE* comes from not only what is won in the game, but what the game can help the player win in their own lives.

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BUTTERFLY LOVERS

Design Rationale of a Cooperative Virtual Reality Game for Promoting Compassion in Multigenerational Families

JESSICA CHENG, SYDNEY RUBIN, CHRISTINA LELON, XIAN LU, JEFFREY DOAN, PATRICK BENDER, ASHLEY YU-CHIH, BRENDA CHEN, NATHAN LIM, GABRIELLE KANELLOS, KELSEY RICE, MARYALICE JORDAN-MARSH, & MARIENTINA GOTSIS

> 'We don't stop playing because we grow old; we grow old because we stop playing' – George Bernard Shaw, 1856-1950

PROSOCIAL PLAY AND EMOTIONAL SKILL DEVELOPMENT

Starting in early childhood and continuing through adolescence, play is an important tool for young people to develop interpersonal skills and to self-manage emotions. Recently, investigators found that dramatic pretend play uniquely helped preschoolers with emotional control, the foundation of other interpersonal and emotional skills (Goldstein & Lerner, 2017). Other investigators have found correlations between moderate video game play and better mental health, including lower prevalence of depression and higher self-esteem, compared to those who have never played games or who played excessively (Johnson, Jones, Scholes, & Carras, 2013). "Moderate" video gameplay is associated with higher levels of adolescent social well-being in middle school compared to adolescents who did not play games (Allahverdipour, Bazargan, Farhadinasab, &

Moeini, 2010). Many young people use video games for relaxation and stress relief, or to forget problems and manage their mood (Granic, Lobel, & Engels, 2014; Lobel, 2016). Therefore, video game play may positively affect psychological resilience (Johnson et al., 2013).

Adults can also experience the emotion-management benefit of playing games. Although the research is limited, an emerging consensus is that "playfulness in later life improves cognitive, emotional, social, and psychological functioning and healthy aging overall" (Chesam, Wyss, Müri, Mosimann, Nef, 2017; Yarnal & Qian, 2011, p. 53). In one survey of participants aged 63 to 92, 60% reported playing video games either regularly (at least once a week) or occasionally (at least once a month); this group presented with slightly better emotional well-being, including lower negative affect and depression, compared to non-gamers (Allaire et al., 2013). In moderation, playing video games can be an important contributor to emotional skill development in early life and help stabilize emotional well-being in adulthood.

The emergence of Virtual Reality (VR) technologies has provided a new way for people to experience games. VR can evoke an incredibly strong sense of *presence* through perceptual immersion and other kinds of engagement. There are different types of presence, including both physical presence and self-presence. Physical presence is the sensation of having your own body literally inside a virtual world, but there is also *self-presence* where you feel that you are "inhabiting" a virtual character (Lee, 2004). VR designers can capitalize on *self-presence* to construct experiences that accurately represent diverse perspectives. Feeling closer to or more identified with certain groups after understanding another's perspective can inspire compassion towards individuals in that group and motivate prosocial behavior. For instance, in one study, participants experienced color-blindness in a virtual environment; after the experience, they were more willing to help color-blind people in the real

world compared to participants who only imagined what it would be like to be color-blind (Ahn, Le, & Bailenson, 2013). VR can also encourage prosocial behavior through the embodiment of prosocial characters. For example, in one VR experience, players occupied superhero avatars and helped others in a virtual environment. Over the following three to four months, experimenters found that players were more likely to exercise prosocial behavior in the real world after having embodied a helpful virtual character (Rosenberg, Baughman, & Bailenson, 2013). Such perspective-taking experiences can lay the foundation for empathy, compassion, and prosocial behaviors towards other persons or groups.

Prosocial play can also encourage healthy intergenerational relationships with family members. Video gaming is equally accessible to people of all ages, and children are often welcoming of older family members in their games; in one questionnaire, 42% percent of youth participants reported that they played with mature adults including those in their grandparents' generation. 69% of participants played with generations that were different from their own (Voida & Greenberg, 2012). Intergenerational console gaming has been a method for generations to gather and play while learning from each other's experiences. By building mutually respectful relationships across generations, gaming experiences are an opportunity to generate familiarity and help build codependent family networks.

The Impact Potential of Prosocial Intervention: Preventing Elder Abuse As an Example

Failure to build codependent networks creates potential intergenerational stress and frustration. The Family Caregiver Alliance (2016) reported 42% of caregivers are taking care of at least one parent, 14% care for a child, and 7% for a grandparent. Elder abuse or neglect, which comes in many forms, is often associated with non-malicious behavior (World Health

Organization, 2017). Yet, there are few interventions that are focused on improving the relationship between the caregiver and the older adult. One such intervention, The Eliciting Changes in At-Risk Elders (ECARE) program, focused on a "community-based" approach that involves "building alliances with the elders and the family members" (Mariam, McClure, Robinson, & Yang, 2015, p. 19). ECARE emphasized developing older adults' sense of autonomy and giving them a voice so that they could raise any concerns to prevent future elder abuse. This intervention did show decreased risk factors in Economic and Housing, and Social and Community functions and there was less dependency and isolation detected in these older adults. When older adults feel a sense of dependency and isolation, they may be at risk for elder abuse because they feel like they have no voice or means to prevent it (Pillemer, Burnes, Riffin, & Lachs., 2016). Thus, it is important to empower the older adult, because the older adult's attitude towards the caregiver can impact the relationship and the perceived caregiving burden (on both sides). When the older adult feels independent, they also perceive less of a burden placed on his or her caregiver. For the caregiver, when an older adult is willing to voice his or her concern there is an open communication system which helps to lessen the perception of the caregiving burden. By promoting prosocial play, issues of isolation may be combated to build a positive mindset in older adults to foster their confidence and autonomy.

INTERACTIVE ENTERTAINMENT AND RESILIENCE-BUILDING

It has been proposed that technology designed to target affiliative physiological systems and emotions, including compassion, can help users cultivate resilience and well-being (Calvo & Peters, 2014). We are more likely to respond with compassion when we feel a personal connection to a subject. This connection can facilitate empathizing with that person as well as gaining a better understanding of their thoughts and

feelings. That understanding can strengthen social support systems, which are crucial for resilience and well-being. Through building a supportive network, reciprocal communication can be built. Technology can be used as a tool for users to build awareness as well as know how to effectively express their emotions and needs.

Virtual Reality, Empathy, and Compassion

VR is a potential tool for practicing compassionate communication while problem-solving across generations or other differences. VR interactions can tune us into the personal experiences of others through compelling narratives. Strong feelings of presence in a virtual environment can lead to feeling highly similar or "at one" with the embodied group member or character. In some situations, this can indeed result in positive affiliative feelings, development in understanding, "empathy," and even prosocial behavior (Ahn, Le, & Bailenson, 2013). However, the construction of VR as an "empathy machine" or cure all is a mechanistic model that misses the potential to develop compassionate behavior based on meaningful connections (Bloom, 2017, para. 2). There are numerous reasons to reconsider the idea that VR is a silver-bullet solution for empathy, which can also help reframe how we can use the medium most effectively.

Virtual environments that are intended to promote empathy are not always effective. Poor design in simulation-based training for nursing was shown to risk developing "pity" and aversion to those who need help, rather than developing a drive to help (Kenny, 2016, p. 161). Furthermore, attempts to recreate real-world social experiments in VR have shown that people sometimes react differently to virtual avatars than to actual people given the same type of task (Bohil, Alicea, & Biocca, 2011). If the virtual world created does not offer a high enough "tracking level" or high-fidelity enough embodied interaction,

then overall feelings of presence may be compromised (Cummings & Bailenson, 2016, p. 7). The VR experience is skewed and can dangerously alter the users' sense of reality. Additionally, some experiences designed to inspire empathy through VR are unsuccessful or even backfire by *increasing* biases against an outgroup (Bloom, 2017; Groom, Bailenson, & Nass, 2009).

Finally, it is important to recognize that empathy is not inherently good, positive, or moral. Singer and Klimecki (2014) define empathy as "the capacity to share the feelings of others" (p. 875), regardless of whether those emotions are positive or negative. We can imagine an "empathy machine" that captures and replicates perfect distillations of negative experiences, which would be undesirable and harmful (Robertson, 2017, para. 2). Even a goal of increasing empathic skill is ambiguous because not all empathic responses to people who are suffering are constructive.

There are two kinds of responses in that situation: compassion and empathic distress. Each has distinct neural correlations and different effects on well-being. Compassion is "characterized by feelings of warmth, concern and care for the other" (Singer & Klimecki, 2014, p. 875), whereas empathic distress occurs if you share in the sufferer's negative affect. If we experience empathic distress, our motivations can transform from other-focused to self-focused, and we may withdraw from the situation to manage our own stress instead of helping someone else. When repeated over time, empathic distress can lead to burnout (Singer & Klimecki, 2014). Therefore, when we empathize with others, it is not desirable to try to "step out" of ourselves and "become" the other person, or "step into their shoes," as is sometimes promised in VR experiences.

Retaining self-other distinction is crucial for the accuracy of both cognitive and emotional empathy, and over-identifying

with a subject's negative emotions puts people at risk for empathic distress (Singer & Klimecki, 2014). On the other hand, when we respond to someone's suffering with compassion, we are more likely to experience positive emotions and be motivated to help that person. Therefore, a compassionate response leads to better outcomes for both the sufferer and the observer/helper (Singer & Klimecki, 2014). Importantly, the way we respond to someone in need of help is not fixed. It is possible to "train" our compassionate response, and even one day of compassion training has been shown to increase prosocial behavior (Leiberg, Klimecki, & Singer, 2011). Compassion trainings are one potential source of inspiration for VR designers interested in these constructs.

VR does not promote compassion, enhance perspective, or foster prosocial behavior by virtue of its format alone, but properly designed VR experiences can make these outcomes possible. Unique qualities of VR—the ease with which VR creates strong feelings of perceptual and self-presence (Lee, 2004)—can be harnessed by designers towards empathic, compassionate, and prosocial ends if designed with informed sensitivity to the complexity of these systems.

Development of Butterfly Lovers VR

Our exploratory research informs the design brief rationale for a cooperative VR game prototype titled "Butterfly Lovers VR" (BLVR) using a museum as the game setting. We hypothesized that a VR game with interchangeable roles that required accomplishing a shared task could be leveraged as a prevention tool to promote compassionate behavior in potentially stressful relationships. In BLVR, we have designed a shared experience tackling a particular task to generate a new appreciation for the perspective of the other person. We were intent on creating an experience that can help build communication between a dyad and highlight possible related difficulties in motor control that

may be experienced with aging. In our focus group work, older adults reported exasperation with their motor difficulties often leading to frustration and impatience from caregivers. We were careful to avoid triggering any traumatizing experience of elder abuse in an overt manner when developing an embodiment of a limited motor capacity. We anticipate that this experience will trigger the development of compassionate action, which can reduce the risks of abuse and neglect. Such experiences could help preserve and increase the resilience of multigenerational families that are currently affected by age-related impairments, or that may be affected in the future. Although issues of elder abuse were the catalyst for the creation of BLVR, much of its core design could be applied to a variety of other problems that could be alleviated through improved empathic skill, perspective taking, and compassionate communication and actions.

Overview of Game Concept – Story

Butterfly Lovers is the legend of Liang Shanbo and Zhu Yingtai, with its origins at least as early as the Song Dynasty (960-1278 AD). It is arguably the most popular and widespread story of tragic romance in traditional China (Idema, 2010) and is also found in other traditions—see Romeo and Juliet. The narrative is a classic tragic folk or fairy tale where social circumstances force the parent to reject the unsuitable partner. Our adaptation of *Butterfly Lovers* offers players an opportunity to rescue the couple from the tragic fate of the original Chinese story by providing a possible alternative ending. In this alternate, lover empowered version, the parent and daughter [or son] cooperate to solve a puzzle involving an ancient artifact that will establish an acceptable lineage that gives the daughter wealth and freedom to marry as she chooses.

In the current concept, the game takes place in a museum. Players are thrown back across time into ancient China. They must cooperatively solve puzzles to find proof of lineage that will

permit uniting the two lovers. The player in VR would roleplay as one of the lovers' elderly parents, closely assisted by a player outside of the VR in augmented reality (AR). The AR player will role play as the daughter [or son] and help direct the parent towards task completion. The team conceptualized the challenges of the person playing as the elderly parent in VR across a spectrum of "disability" that can impair vision, hearing, mobility, or other senses that are critical to problem-solving in the game challenge. These roles model an intergenerational caretaking relationship and its related challenges in perspective taking and communication.

An earlier proof-of-concept (*BabyView*) developed for Children's Hospital Los Angeles explored asymmetrical play between two different VR experiences in a child safety education game, which was found to be promising in internal playtesting. The underlying game mechanics of having two different VR experiences from *BabyView* were adapted for Butterfly Lovers VR. With each player being presented with different information from the two different modes, players are required improve their communication skills and work patiently together to solve the game puzzle. The intent is that players would select a role (older adult or "caregiver") independent of their real-life circumstances. They would be encouraged to play again in the alternate role.

Gameplay and Prototype Description

The game mechanics would utilize HTC Vive for a virtual environment and a tablet for augmented reality. The VR person role playing the elderly parent wears an HTC Vive headset and the AR person role playing the daughter [or son] is given a tablet and sensors (augmented reality; AR). Within their two respective environments, players will need to interact to accomplish a series of staged tasks throughout the narrative game. The stages in the game are displayed in Figure 1.

In our current prototype, the player in the VR environment suffers from an intermittent hand tremor, which results in some difficulty with grabbing items. This may cause the player to drop things, making it challenging to complete the task of holding a set of nesting bowls that must be found and arranged properly. With this obstacle, the AR player is forced to be patient and accommodate speed and method of navigation for the VR player.

The VR environment is hazy, and the VR player needs to look around the environment in order to find clues. The augmented reality (AR) player can help to "clear away" the haze, making the VR player's memories clearer through exploring the environment set up in the museum. Then, the AR player has to find the bowls for the VR player, but the VR player being immersed in the virtual environment cannot see the bowls in the museum that the AR player can. When the AR player finds the bowls, they are required to place them in a particular spot so that they appear in the virtual environment for the VR player. The VR player is tasked to stack the bowls. With the completion of that task, a clue will appear about the path to their final destination. The VR player then must bring the (virtually) stacked bowls to their final location without dropping them. The final location displays the item that they're looking for, both in AR and VR.

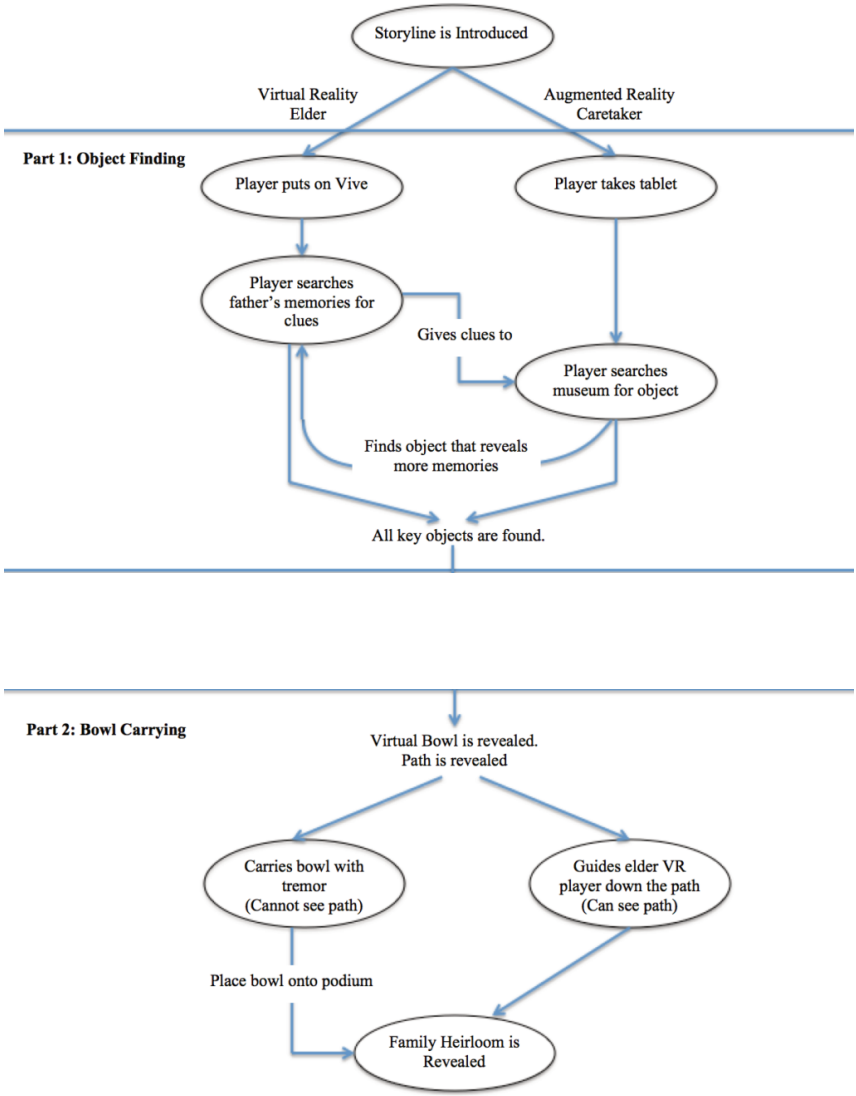

Figure 1. Current Gameplay Flowchart.

Virtual Environment for Butterfly Lovers. We developed a paper prototype of the gameplay experience and a virtual environment that includes a color-blocked sketch of an interior

space with museum-style podiums on which objects can be placed and moved around. Technical infrastructure is being developed for the communication between the VR and AR players before interaction design can take place. The first task to be tackled is the appropriate modeling of hand tremors, anticipating any compensatory behaviors of dropping objects and how one may use one's own body to prevent drops. In modeling hand tremors, we hope to accomplish user embodiment of a common affliction among the elderly. Being set in a museum of ancient China, we are careful to have the VR environment designed so that it is true to the historical time period. In addition to the technical challenges and cultural sensitivity concerns associated with this goal, embodiment in a virtual environment is not guaranteed:

> Seeing one's own body has been reported to have analgesic properties (modulating pain). Analgesia has also been described when seeing an embodied virtual body co-located with the real one. However, there is controversy regarding whether this effect holds true when seeing an illusory-owned body part (Nierula, Martini, Matamala-Gomez, Slater, & Sanchez-Vives, 2017, p. 645).

For the purposes of BLVR, it is important to see how hand ownership will be taken and whether the person will experience analgesia as they take on an embodied virtual body—yet within the person's own body. Achieving virtual body ownership of an accurately depicted hand tremor will continue to be an obstacle in building the virtual experience and must be prototyped further prior to complex game design and virtual environment modeling. The design focus is to develop a functional platform for two-player interaction that can foster the basic desired behaviors even without much structured gameplay. If this can be mastered, we will proceed with proposed game development.

ETHICAL DESIGN CHALLENGES OF VR GAMES AS PROSOCIAL INTERVENTION

VR is a powerful technological medium that is still quite new

experientially to most consumers. It is therefore worth exploring some of the ethical and practical challenges of developing experiences with the medium. Firstly, VR comes in many flavors and the technology through which it is delivered dictates safety regarding ergonomics and repetitive or prolonged use (Gent, 2016). At the time this paper is being written, most VR technology companies and digital interaction experts (Gotsis, cited in Gent, 2016; Gotsis, 2016) do not recommend that their devices be used by children under 12 because little research has been done on the effects of prolonged VR use with children.

At a practical level, many higher-end VR devices have poor ergonomic fit for smaller heads and developing eyes. Dilemmas of aging vision have not been explored. The specific platform and technology chosen can limit or promote prosocial behavior, but some creative design of the content and interaction can circumvent this phenomenon. Projection-based VR is inherently more social because the head is not enclosed. If using a head-mounted display instead, people of any age should not be left alone because they are blind to their environment and therefore at risk for injury.

The necessity of a "bystander" who is not in VR themselves is underutilized in interaction design and can be leveraged to promote social play. For example, in the game *Black Hat Cooperative* (Team Future LLC, 2016), one player is in VR trying to collect treasure. The other player is on the computer with full access to the map of the virtual environment. In such case, the bystander is not only looking over the VR player, but is also able to contribute to the goal of the game. This is a cooperative game in which both players have a role, so that the "bystander" can contribute to the game play and have equal role importance between the two players. BLVR is being designed with this perspective.

Technology issues aside, the strongly embodied nature of VR

necessitates caution when designed for users with limited or less developed cognitive or motor capacities, such as children with developmental delays or adults with degenerative disorders, or for any individual with emotion dysregulation problems (Madary & Metzinger, 2016). Certain experiences could negatively impact people with untreated severe trauma in unexpected ways (Madary & Metzinger, 2016). Obtaining consent for exposure to certain thematically challenging experiences as a prelude to interactive entertainment can itself model acts of compassion. This team advocates an intentional prosocial approach to the design of experiences, including careful consideration of context, audience, and what happens before and after the experience. We are careful to ensure that while the intermittent hand tremor is realistic to the experience that many older adults face, the disability is not designed to be a "trigger alert" reminding of past trauma. Lastly, since prolonged exposure to VR can manipulate the self-model and our perceptions of others and the world, it is imperative that the design of "empathic" and "compassionate" experiences are considered through the lens of ethical research and participant beneficence (Madary & Metzinger, 2016).

A final consideration for the design of role-playing interventions is the concept of empathy as a "risky strength" that one has to learn to regulate (Tone & Tully, 2014, p. 1547). Tone and Tully (2014) explain that "patterns of empathic responding" (empathy and emotion regulation that are context-sensitive) developed in childhood remain stable in later periods. Although perspective-taking may increase in adolescence, findings in adulthood are mixed.

Adolescence is known to be a sensitive period for strengthening skills acquired in previous years because the brain undergoes a process known as "synaptic pruning" (Huttenlocher & Dabholkar, 1997, p. 26). Adolescents who have rich and meaningful social experiences during that period are likely to

increase their resilience. This perspective comes from a more constructivist developmental framework that unifies both typical and atypical development into a continuum of theories for all children and adolescents on their path to adulthood (Arsalidou & Pascual-Leone, 2016). The up swell of interest in engaging older adults in digital interactions has not been matched by exploration of any developmental considerations. Under this framework, we advocate for thoughtful design of experiences that leverage such game play and VR to promote prosocial behavior and, emotional skill development, which in turn can increase individuals' and families' resilience.

MEASUREMENT CHALLENGES FOR INTERVENTION IMPACT

Experiences such as BLVR may be short, but could be powerful in sparking and sustaining conversations in public and private settings. Measuring the impact of these experiences, both positive and negative, presents a challenging evaluation task for efficacy, safety, and effectiveness. Our research lab has some experience with measuring short-term and long-term impact of interventions for behavior change. Most of the research literature combines measures of impact for usability, feasibility, knowledge, attitudes, and behavior. Usability is often measured through the Intrinsic Motivation Inventory (IMI) Likert scale (Ryan & Deci, 2000). At minimum, we prefer to use the interest/enjoyment, value/usefulness, and perceived competence subscales, which we have found to have excellent internal consistency and reliability across heterogeneous populations, settings, and interventions. An overall score can be calculated for comparisons between interventions, but in this prototype evaluation, we set a goal of expecting at least 70% of participants to score the experience above the scale's average in order to gauge entertainment efficacy.

From the standpoint of ethical, practical, and pleasurable design,

leveraging the strengths of interactive entertainment means aiming for better than average overall experience than other interventions (e.g., slide presentations, online education, brochures). For immersive experiences, we have experience using the ITC-SOPI, which measures presence across multiple psychophysiological constructs, including side effects, and is widely used in VR research (Lessiter, Freeman, Keogh, & Davidoff, 2001). In our most recent studies, we found great value in using the IMI and ITC-SOPI together, as they reveal a much more nuanced understanding of overall player experience than a standardized and more generic usability rating, such as the SUS (Brooke, 1996).

Our recent study of a mixed-reality shoulder exercise game (in review) also showed great interactions between IMI and ITC-SOPI and psychosocial measures. Thus, even for public-facing interventions, we recommend brief non-clinically-oriented instruments for measuring quality of life, depression-happiness, and anxiety in order to gain a better understanding of participant impact (Joseph, Linley, Harwood, Lewis, & McCollam, 2004; World Health Organiztion, 2004). For BLVR, it is likely that a scale related to caregiving experience and attitudes should be used to establish a baseline understanding of participants, and could be re-administered after play or at a future follow-up to see whether any attitudes have shifted.

For this type of intervention, one may focus on measuring magnitude of changes across scale items, for example, items related to helplessness or frailty. A mix of desirable and undesirable attitudes must be included in order to properly evaluate impact. Lastly, one could also administer a (desirable and undesirable) behavior inventory pre-intervention, and then conduct a later follow-up to gain a better understanding of the impact of such experiences (Jordan-Marsh et al., 2013). This can include specific acts of compassion, conversations about

compassionate action, and expressions of desire to change things in a positive direction.

Measuring empathy proves to be a difficult task. We use the definition of empathy that conceives it as a capacity to share another's emotions, be they pleasant or unpleasant. Empathy is a cognitive skill that may not necessarily lead to an observable action. Compassion is a type of empathic response towards someone who is suffering which often motivates us to help. Feeling compassion for another person is not equivalent to experiencing their emotions directly, but compassion can still inspire care and prosocial behavior. Compassionate behavior can be actively observed as it is performed as a reaction of prosocial skills. Empathy and compassion are separable on the psychological and neurological level, but they often work together in social situations (Preckel, Kanske, & Singer, 2018).

Empathy is difficult to measure biometrically because it is a cognitive skill that can be difficult to observe. To start, we can try to measure how players feel about each other during a play experience. One can arguably observe and measure a series of prosocial behaviors based on a scale, which may determine the range of empathy based on compassionate actions. However, there is a clear distinction between empathy as a personality trait and compassion as observable actions performed to help others. One could tape the interaction between participants and analyze helpful behavior both qualitatively and quantitatively. This is expensive and time-consuming research that nonetheless should be undertaken by experiments that aim to influence such behaviors.

Empathy is difficult to measure because of its many components and the standard of instruments are often based on a series of questionnaires subject to one's biased self-assessment. To detect if there are any improvements of empathy based on an intervention, it is imperative to take the questionnaire pre- and

post- intervention. Yet, instruments and surveys are not effective for measuring empathy change, but they are used to compare baseline empathy levels in populations. The Empathy Quotient (EQ) is a Likert-style questionnaire used to compare empathy levels across populations on the autistic spectrum (Allison, Baron-Cohen, Wheelwright, Stone, & Muncer, 2011). This instrument is one dimensional, trying to measure empathy as a whole. Alternatively, the Empathetic Assessment Index (EAI) analyzes components that were thought to be pertinent to empathy development: affective response (AR), perspective taking (PT), self-awareness (SA), emotion regulation (ER), and empathic attitudes (EA) (Gerdes, Lietz, & Segal, 2011). The test was repeated a week after to see if there were any changes. This scale addressed both the internal mindset as well as the outward expression. Another scale also utilized different prosocial skills to measure empathy development. The Balanced Emotional Empathy Scale (BEES) was a 30-item instrument for measuring the extent to which participants identify with another's emotions (Mehrabian, 1996). Such instruments that can measure possible changes in empathy scores after an intervention are most relevant for this and similar projects.

Advantage of Real World Setting in VR: Museum As an Example

The origin of this project can be traced to the culmination of work by members of the USC Suzanne Dworak-Peck School of Social Work Arts Incubator, convened after a 2-day workshop hosted by the University of Michigan in July 2014. The committee included members from the USC Pacific Asia Museum and USC School of Cinematic Arts as well as Social Work faculty. One of the challenges that emerged from this committee was concern for elder abuse and neglect and what could be done to prevent it. A transdisciplinary team at the USC Creative Media & Behavioral Health Center led by Jordan-Marsh and Gotsis decided to investigate the possibility of producing a

public art exhibit for the USC Pacific Asia Museum that used virtual reality to explore this topic. A large team of student and faculty scholars, artists, and researchers was convened and met weekly over the course of two years to conduct formative research in the field, prototype ideas, organize field trips, and evaluate technologies.

The USC Pacific Asia Museum has a concentration in Asian art, so this *Butterfly Lovers* narrative is suitable for the audience and expertise of the museum. Museums and public exhibits have a long tradition of uniting families toward pleasurable learning opportunities, with and without technology, and across many subjects and themes (Borun, Cleghom, & Garfield, 1995). Play, engagement and learning have been studied extensively in these settings, with researchers investigating both the relationship of individuals and technology (or object), and the interactions between people as they engage with museum experiences and objects (De Kort & Ijsselsteijn, 2008; Pavik & Bridges, 2013). Museum visitors engage in experiences through their interests in a specific subject, theme, object, or technology, but are also led by natural curiosity through curated spaces and stories. The museum setting predisposes visitors to a mindset of openness and can introduce new and unknown topics or reframe old ones through a new lens.

De Kort and Ijsselsteijn (2008) note that with "the introduction of embodied interaction devices in games, suddenly in-game actions become directly visible and transparent to the public" (p. 18:8). The authors hypothesize that positive effects of embodied play occur because humans naturally experience their environments in a social and kinesthetic manner. The authors take a position that digital gaming is an "activity that is embedded within a socially meaningful context of co-players and spectators, embodied through increasingly natural gaming interfaces," (p. 8). Therefore, the combination of a museum setting and technological gaming provides an engaging

combination that can foster open learning. The evolution of low-cost walking VR and augmented reality will contribute to the proliferation of these technologies in public settings, especially museums. We hypothesize that this platform is a natural expansion for museums to cultivate positive conversations and intergenerational experiences.

Limitations and Prospects

BLVR is a very brief experience and is not focused on significantly developing empathy. Empathy is a complex skill that cannot simply be gained through one intervention, but there can be positive changes in prosocial behavior to help foster compassionate actions. The proposed BLVR museum-based intervention offers a five-minute virtual reality experience which can allow for the development of perspective-taking as a building block toward empathetic communication.

Looking forward, biometrics can also be an instrument to measure levels of stress. High levels of stress are strongly correlated with an increased sense of caregiving burden, thus leading to an increased risk for elder abuse. If stress indicators such as the galvanic skin response were used to measure stress levels, then we would be able to detect the stress threshold and see if this is related to challenges in players' communication. We would also be able to more accurately measure when there is a possible risk for a trigger alert to ensure a safe experience. The ability to monitor the stress threshold will allow us to identify aspects that exacerbate the caregiver burden and challenge communication. This may lend itself to a post-play debrief that can provide closure and learning through the experience.

CONCLUSION

The formative research stage of the project has fostered the exploration of research and preliminary VR applications. This includes how play can be used to promote prosocial behavior and

emotional skill development in children and adolescents, and how interactive entertainment can be used as an intervention to increase resilience in intergenerational families. A powerful application of this research can be an intervention aimed at changing the conversation about elder abuse and neglect through a public exhibit in a museum setting. This speculative design in-progress is an example of how one can bridge multiple disciplines to develop a covert intervention that serves multiple stakeholders. The team is continuing research, design, and proof of concept development through small grants until we feel confident we are ready to pursue production funding.

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KISIMA INŊITCHUŊA (NEVER ALONE) AS CULTURAL SURVIVANCE

The Potential of Video Games to Support Indigenous Well-being

JENNIFER C. STONE

Like many places, Alaska has a difficult history in which Indigenous cultures, communities, languages, and belief systems have been disrupted by colonial forces. As part of the ongoing struggle for sovereignty and cultural revitalization, Alaska Native communities have been working to reclaim the knowledges and ways of being that have been threatened by Western economies, educational systems, religious beliefs, media, and language practices. As I discuss elsewhere, new media and digital texts like *Kisima Inŋitchuŋa (Never Alone)* have the potential to support linguistic and cultural revitalization as parts of larger networks of resources and experiences (Stone, 2018).

In *Kisima Inŋitchuŋa* (2014), a girl named Nuna and a fox search for the source of a blizzard that threatens the well-being of their village. Along the way they learn about spirit helpers, the dangers of the Arctic, and the values and beliefs that have supported strong communities in the north for over 10,000 years. Players progress through the indie side-scrolling adventure game by figuring out how to use Nuna's and Fox's abilities to solve problems rooted in the narrative and natural world around them. As player-characters move through the game, they unlock a series of "cultural insights" where elders and other Iñupiat

culture bearers explain the significance of various aspects of the game (see Massanari, 2015, for a detailed overview of the game). *Kisima Inŋitchuŋa*, which has won numerous awards, has been lauded as the first of a new genre of "world games" that use video games to revitalize cultural knowledge, create positive representations of Indigenous people, and resist stereotypes (E-line Media, 2016). In short, *Kisima Inŋitchuŋa* illustrates the potential of video games for supporting Indigenous well-being.

Below, I unpack how the *Kisima Inŋitchuŋa* game (2014) and the *Never Alone: Foxtales* expansion (2015) incorporate traditional Iñupiat values and literacy practices into a contemporary video game format. Although the notion of "thriving through gameplay" examined in this issue evokes ideas of individual well-being, I argue that *Kisima Inŋitchuŋa* represents a significant attempt to engage Iñupiat young people, Alaskans, and the broader game-playing community in a form of collective cultural well-being that exceeds any individual player. Within the Iñupiaq community *Kisima Inŋitchuŋa* supports the transmission of culture and language from one generation to the next, while outside of the Iñupiaq community *Kisima Inŋitchuŋa* promotes intercultural communication and appreciation for Iñupiaq culture. In so doing, the game responds to a series of longstanding historical traumas by engaging players in Iñupiat stories of resilience in the face of adversity.

HISTORICAL TRAUMA

The roots of contemporary, widespread historical trauma among Alaska Natives can be traced to the development of an (American) English educational system in the 1880s. After the purchase of Alaska, missionaries became interested in the project of "civilizing" the inhabitants of the area. Informed by national movements toward English-only and enforced Western education, missionary educators began the process of eradicating local languages and knowledge systems from Indigenous

communities. Indeed, the original organizers of American education in Alaska sought to replace Indigenous languages and belief systems with English and Western Christianity. The early infrastructure developed by missionaries formed the basis for widespread cultural disruption in the region (Williams, 2009).

The educational attempt at cultural genocide was exacerbated by widespread epidemics of influenza, tuberculosis, and other diseases in the early 1900s that killed about 60% of Alaska Native people (Napolean, 1996). As Napolean (1996) explained, the Great Death upended traditional belief systems, created opportunities for expanded Christian and Western intervention, and resulted in widespread historical trauma. Although Napolean's work discussed Yup'ik communities, his observations are relevant to other Alaska Native communities that experienced similar trauma, including the Iñupiat people of the northernmost regions of Alaska. Napolean argued that the trauma created by the Great Death can explain many of the problems faced by contemporary Alaska Native communities.

The overlapping forces of destructive educational practices along with the destabilization of families, communities, and belief systems by the Great Death set the stage for two generations of widespread cultural disruption through boarding schools and homes. During this time, as described by Easley, Kanaqlak, LaBelle, and Smith (2005), children as young as five years old were either forcibly removed from their homes or taken in as orphans to government-run boarding schools sponsored by the Bureau of Indian Affairs and the U.S. Department of the Interior. Widespread testimony from students at the boarding homes and schools described physical and sexual abuse, as well as denial of access to family, language, and community ties (Easley et al., 2005). In short, boarding schools served as a mechanism for widespread cultural reprogramming.

Although forced boarding schools ended with the settlement of

the *Tobeluk v. Lind* case in 1976 (see Cotton, 1984), and many of the overtly colonial educational practices are no longer acceptable, legacies of cultural assimilation continue to affect people's lives today. As Easley et al. (2005) described, trauma from the Great Death, educational practices, and related abuses has resulted in high rates of alcoholism and substance abuse, domestic violence, murder, and suicide; patterns of trauma have been passed on to later generations. While legacies of historical trauma do not figure directly into the gameplay of *Kisima Inŋitchuŋa*, they provide a catalyst and context for the game. Indeed, the game responds to these legacies; and many of the profiles of elders and culture bearers who contributed to the game include discussions of traumatic experiences and their results, while also framing the game project as a way to pass cultural knowledge on to younger generations and teach the world about the Iñupiaq culture.

SURVIVANCE

In response to contemporary trauma-based issues that are rooted in colonial legacies, scholars of Indigenous theory have begun to think about how to move forward with projects of cultural healing and reclamation, both internationally and within Alaska. Work on Indigenous well-being, along with the broader Indigenous intellectual movement, has emphasized "a (re)focus on traditional knowledge systems—as providing a critical foundation for contemporary application of Indigenous approaches to self-determination" (Galla, Kawai'ae'a, & Nicholas, 2014, p. 194, para. 1). The shift toward traditional knowledge provides a backdrop for conceptualizing games as a potential source of "thriving through gameplay" as explored in this issue.

One productive theoretical approach to Indigenous well-being comes from Vizenor's concept of "survivance" (2008). Although a number of scholars have used survivance in various ways, Vizenor and subsequent Indigenous scholars have used

survivance to understand how communities resist narratives of dominance, absence, and victimhood. Survivance asserts Indigenous communities as an active sense of presence, where stories, world views, languages, and cultural knowledge resist colonial legacies. Here, I use survivance to understand the significance of the *Kisima Inŋitchuŋa* game. Although the game has reached a global market, its real power lies in how it engages Iñupiat young people in traditional learning, how it educates other Alaskans about Iñupiaq culture, and how it promotes games as a medium for cultural survivance to a global audience.

It is important to recognize that *Kisima Inŋitchuŋa* was created out of a participatory game design model as described by Massanari (2015). The game was developed collaboratively between Iñupiat community members, game developers, and the Cook Inlet Tribal Council. As such, the game is an example of "responsible" game design that aligns with "Indigenous ways of being, knowing, and doing" as proposed by Kirkness and Barnhardt (2001) and further developed by Carjuzaa and Fenimore-Smith (2010) and Galla et al. (2014). The game production process as well as the game itself provides direction for communities and developers concerned with Indigenous well-being.

TRADITIONAL IÑUPIAT VALUES AND LITERACY PRACTICES IN *KISIMA INŊITCHUŊA*

The larger project of cultural survivance among Alaska Native communities has involved identifying cultural values for each major cultural group. In the 1980s, each of the major cultural groups in Alaska identified traditional values to emphasize (Alaska Native Knowledge Network, 2006). Iñupiat Ilitquisiat (wisdom and lessons of the Iñupiat people) attempted to "assert and validate Iñupiat ethnic identity, reactivate and preserve Iñupiat skills, and solve pressing social problems" (McNabb, 1991, p. 65). The values are regularly used to guide the work

of institutions such as schools, corporations, and other organizations (Stern, 2010). For example, when I attended a land use and language camp a few years ago through a tribal college in Utqiaġvik, the Iñupiat values were stressed throughout the experience. The values are also woven into the Iñupiaq education program in the North Slope Borough School District (2015). In short, the values provide a foundation for cultural survivance in Alaska and are reflected in *Kisima Inŋitchuŋa*. While many other Iñupiat values are embedded in the game, values related to language, cooperation, spirituality, respect for nature, and humility play central roles in various aspects of *Kisima Inŋitchuŋa* and the *Foxtales* expansion, including the gameplay mechanics, puzzles, storylines, narration, graphics, reward structure, and supplemental media.

Iñupiuraallaniq (Knowledge of Language)

Iñupiuraallaniq (knowledge of language) is a central value expressed in *Kisima Inŋitchuŋa*. The main stories of the game and expansion are told entirely in Iñupiatun, which is incredibly significant. As of 2007, there were 2,144 speakers of Iñupiatun out of a population of 15,700 Iñupiat people living in Alaska, most of whom were over the age of 40 (Krauss, 2007). That number has continued to decrease over the past decade. The language is classified as "threatened" on the Expanded Graded Intergenerational Disruption Scale (Simons & Fennig, 2017b, para. 7). According to Simons & Fennig (2017a, para. 11), in threatened language communities, "intergenerational transmission is in the process of being broken, but the child-bearing generation can still use the language…Since parents can still use the language, it is not too late to restore natural intergenerational transmission in the home." Throughout Alaska, intensive work is being done to revitalize languages and increase numbers of speakers.

James Mumiġan Nageak, an elder who grew up in Kaktovik, AK,

narrates the story of Nuna and Fox. Subtitles are available in multiple languages, including English, but the central language of the game is Iñupiatun. As such, players are immersed in the sounds, words, and grammar of the language, which can provide exposure and encouragement for learning the language. As Nageak states in his profile, "I believe that through this game, somebody might get interested in the language. It could give them a spark of the possibilities in the Iñupiaq language" (E-line Media, 2014, para. 5).

Other parts of the game, including quotes between chapters and "cultural insights" that are unlocked throughout the game, are primarily in English. However, significant Iñupiat words are woven into these segments in instances of "translanguaging" (Garcia & Wei, 2014). In the game, Iñupiat words are incorporated strategically into the flow of English to (1) express ideas that would be impossible to express otherwise, (2) emphasize the persistence of Iñupiatun, and (3) assert Iñupiat values. For example, in the cultural insight, "Siḷa has a Soul," the Iñupiaq word siḷa is explained but not translated. It is a complex concept that incorporates the outside, weather, and atmosphere with the spiritual connectedness between all living creatures and the land. In another instance, Ronald Aniqsuaq explains that in the winter, people would build temporary shelters out of snow. He states, "In Canada, they call them igloo, but here in Alaska, we call them apuyyaq." His use of apuyyaq not only maintains an Iñupiaq word but also corrects a common misconception about Alaska. As these instances of translanguaging illustrate, Iñupiatun can be used as a powerful language resource and can promote the cultural value of knowledge of language, even in the flow of a primarily English-language text.

Paamaaåigñiq (Cooperation)

Another Iñupiaq value centers around paamaaåigñiq, or cooperation. In small communities with some of the harshest

climates in the world, cooperation is critical to survival. *Kisima Inŋitchuŋa* requires players to cooperate as part of the Nuna-Fox team. Nuna has abilities that Fox does not have, such as moving objects, throwing a bola, and paddling an umiak, whereas Fox has abilities that Nuna lacks, such as crawling into small places, jumping higher, scrambling up vertical surfaces, and guiding spirit helpers. Together, Nuna and Fox must cooperate to be successful. Two players can choose to play together in local co-op mode or a single player can switch between controlling Nuna and Fox. Either way, the value of cooperation is built directly into the game's mechanics.

For example, Fox is first introduced when Nuna is chased by a polar bear. As she runs from the terrifying creature, a fox-shaped wisp follows her until she is trapped by a cliff that is too tall for her to climb. At that point, players can enter co-op mode or switch back and forth between characters as a single player. Fox lures the polar bear away from Nuna to nearby thin ice where it collapses, and Nuna and Fox are able to escape. As the storyteller states, "She would have died had she been alone." The connection between Nuna and Fox is perhaps most deeply felt whenever one of them dies. Although the characters quickly respawn at the nearest save point, the cries of Nuna and Fox when they lose each other are heartbreaking and indicate their closeness and reliance on each other.

The cooperation between Nuna and Fox culminates in two difficult boss battles in the original game and an additional battle in the expansion. First, they must defeat the Manslayer who destroyed Nuna's village. Nuna and Fox must work together to avoid getting hit with the Manslayer's fireballs and use the abilities of the bola to drop a branch, breaking the ice and sending the Manslayer into the frozen waters below. As the narrator explains afterward, "using everything they had learned, the girl and Fox had finally defeated the terrible one." Then Nuna and Fox locate the source of the blizzards—a giant man who

is knocking snow off a mountain and shoveling it into the air. The pair must steal and break the giant man's adze to stop the blizzard. Here again, Nuna and Fox must engage in complex coordination as they climb the giant man, avoid getting crushed by his movements, and steal his adze. In the *Foxtales* expansion, Nuna and Fox must work together to defeat a giant mouse that lives in a lake near Noatak and kills all who enter the lake. In the story, "The good swimmer [Fox] distracted the giant mouse, and then the good fighter [Nuna] grabbed it by its tail." Neither could have defeated the giant mouse alone. As these examples illustrate, the value of cooperation is woven throughout the narrative and mechanical structures of the game.

Ukpiqqutiqaåniq (Spirituality) and Qiksiksrautiqaåniq Iñuuniaåvigmun (Respect for Nature)

The related values of ukpiqqutiqaåniq (spirituality) and qiksiksrautiqaåniq iñuuniaåvigmun (respect for nature) are also deeply embedded in the game. As the polar bear chase scene illustrates, humans are not hierarchically above nature. Like all living beings, humans are at risk from the dangerous environment and are equal to all living things. Deep crevasses, open water, high winds, the aurora borealis, and polar bears threaten the lives of Nuna and Fox as they attempt to find the source of the blizzard in the original game. Similarly, players must learn to read the movement of ice floes and currents in the water in the *Foxtales* expansion. To succeed, players need to respond in careful and respectful ways to natural obstacles—jumping over open water, ducking under high winds, and running from hungry polar bears.

The *Foxtales* expansion is based on a central story about the implications of disrespecting nature. In their excitement for the end of winter, Nuna and Fox forget to respect nature and chase a mouse into the sea. They lose track of the mouse and finally make their way to the mouth of the Noatak River, where they

remember a story about a giant mouse in a lake off the river that would eat everyone who went into the lake. Nuna and Fox venture to the lake, where the giant mouse tries to kill them. Nuna and Fox must learn to use the guidance of the spirit helpers to change the water currents and knock down the bank of the lake to bury the giant mouse. Returning home, they find that their mouse friend has survived and they learn an important lesson about respect for animals.

The game also illustrates the related spiritual belief that all things in nature are alive. As Amy Fredeen explains in the cultural insight, "Siḷa has a Soul," "It's not one way of seeing things, it's one way of knowing you're connected to everything." Throughout the game, players interact with and learn about their interconnected relationship with siḷa. As a visual manifestation of this, spirit helpers in many forms assist Nuna and Fox traverse dangerous situations. One of Fox's abilities points out and guides spirit helpers to Nuna, whereas Nuna can activate spirit helpers with her bola. Each type of spirit helper provides different assistance to Nuna and Fox. For example, the salmon helpers jump from open water to provide safe passage over otherwise deadly areas, whereas the loon spirit helpers can lift and move Nuna and Fox up steep cliffs.

Additionally, the game illustrates how animal spirit helpers may reveal themselves in human forms. For instance, after Nuna finds her village destroyed, an owl follows her and Fox as they look for the source of the blizzard. He reveals himself to her in human form and asks her to help him find his drum. Nuna and Fox traverse a network of underground passages and outsmart the little people who have stolen the owl-man's drum. In return for recovering the drum, he gives Nuna a magical bola to help on their journey. Later in the game, after Fox is killed, he reveals himself in human form to Nuna and continues to help her on the journey. This ability of animals to shapeshift and reveal themselves as helpers is common in many Iñupiat stories.

Qiñuiññiq (Humility)

A final Iñupiat value that is embedded in the game is qiñuiññiq or humility. According to the North Slope Borough School District (2006):

> Prior to Christian influence humility was believed to be essential for success and survival because all of nature's forces (weather, animals, and earth) responded positively to a person's humble attitude. If a person was prideful the animals would not give themselves to him. If a person was prideful the weather would show forth its greater power. Iñupiaq people recognized their dependence on forces outside of their control. (p. 3)

Humbleness is also incorporated into Nuna's role in the narrative of the game, as she stands up as a humble person against the Manslayer, the source of the blizzard, and the giant mouse.

As explained in the cultural insight about "The Manslayer," his character represents threats to community. In the game, the Manslayer chases Nuna and Fox, throws fireballs and tries to kill them, and endangers Nuna as an individual as well as her entire community. Ishmael Angaluuk Hope explains that, "What this humble person will represent who faces that Manslayer is a return to order, a return to true living in the community. And it just takes that one person." In this case, Nuna is the one humble person who stands up to the Manslayer— as well as the source of the blizzard and the giant mouse—and restores order to her community. When she returns to her family, they are happy to see her, but she is not hailed as a hero, nor is she boastful about her accomplishments.

Iñupiat Literacies

In addition to reflecting a number of Iñupiat cultural values, *Kisima Inŋitchuŋa* also foregrounds several important Iñupiat literacies, including scrimshaw carving, drumming, and

storytelling. The role of scrimshaw for documenting cultural histories is reflected in the aesthetic of the narrative cut-scenes throughout the game. As the storyteller speaks, scrimshaw-style images complement their verbal detail. As explained in the cultural insight, "Scrimshaw," the traditional art form used etchings on baleen or ivory to record stories, which could then be read by future generations. The reflection of scrimshaw style in the graphics of the game integrates the traditional literacy of scrimshaw carving into the contemporary game medium.

The importance of drumming (in addition to related activities of singing and dancing) also is embedded in the game. In the scene with the owl-man, the drum is foregrounded as a key material object. The cultural insight, "The Heartbeat of the Community," explains the symbolism of the drum as the life, vitality, and heartbeat of a community. The scene with the owl in the main game and the cultural insight include small excerpts of a much larger drum-based and song-based literacy. Also, the video shows several people engaging in dances. Each song and related dance tells a story that is encoded in the rhythms, words, and movements of the activity; there are many different types of story-songs that are used for various purposes and events (Pulu, Johnston, Sampson, & Newlin, 1979).

Finally, *Kisima Inŋitchuŋa* highlights the centrality of storytelling as an Iñupiaq literacy and engages players with several common stories. The main storyline for the game is based on the story "Kunuuksaayuka" told by Robert Nasruk Cleveland, where a young man leaves his village to find the source of blizzards that are interfering with his ability to feed his community. The game incorporates several other favorite Iñupiat stories, including the little people, the Manslayer, the aurora borealis, and the giant mouse. The little people, who show up in the mythologies of several Alaska Native groups, are tiny but extraordinarily strong humans who sometimes cause mischief, as in the case of stealing the owl-man's drum. The Manslayer stories reinforce the value

of community. The aurora borealis is described in traditional stories as the souls of dead children who are playing in the sky. If people do not wear their hats and the northern lights get too close it is said that they will play ball with your head. And the giant mouse is a story of teamwork in the face of adversity. Each of these stories and others are woven into *Kisima Inŋitchuŋa* and the *Foxtales* expansion.

These and other stories are not just part of the narrative cut-scenes that frame each chapter of the game, but they also shape the action of Nuna and Fox's adventure. For example, players must figure out how to trick the mischievous little people to get the owl-man's drum back. When Nuna and Fox find the little people playing the drum in the underground tunnels, they start throwing rocks. Players must solve a puzzle to use the rocks to tip a platform up to reach the little people and recover the drum they took from the owl-man. The Manslayer provides heart-pounding chase scenes where Nuna and Fox must escape him and his deadly fireballs. The aurora spirits also appear several times in the game, swooping fancifully through the sky. Players must duck to avoid contact with the aurora or they are killed. In the *Foxtales* expansion, Nuna and Fox must engage in teamwork that builds on each character's strengths to defeat the giant mouse. As these examples illustrate, the game allows players not only to hear traditional stories, but also to participate in and learn from the lessons in the stories. Stories in Iñupiat and other Alaska Native communities provide an important vehicle for education about beliefs, values, and practices in traditional communities (Ongtooguk, 2000). They often include lessons that are entertaining as well as useful to listeners.

KISIMA INŊITCHUŊA AS CULTURAL SURVIVANCE

By looking carefully at how *Kisima Inŋitchuŋa* engages players with Iñupiat values of language, cooperation, spirituality, respect for nature, and humility, as well as with specific Iñupiat literacy

practices related to scrimshaw carving, drumming, and storytelling, the game becomes much more than just a successful commercial game. Rather, it becomes clear that *Kisima Inŋitchuŋa* engages players in a game-based activity of survivance that challenges stories of victimhood, dominance, misrepresentation, or outright omission of Indigenous people. Nuna and Fox guide players through stories and challenges that build a positive and nuanced picture of Iñupiaq identity. Such acts of survivance are critical for the projects of sovereignty and cultural revitalization.

Kisima Inŋitchuŋa engages in survivance in relation to both internal and external audiences. The primary purpose for the game project grew out of the desire to harness the power of video games for young Iñupiat people. From the standpoint of internal Iñupiat cultural revitalization, *Kisima Inŋitchuŋa* provides a powerful mechanism for sharing Iñupiat values and literacy practices with younger generations. Although discourse in language revitalization communities often frames new media like video games as tools for further colonization that are antithetical to cultural reclamation, *Kisima Inŋitchuŋa* illustrates the potential for video games to support the transmission of language and culture to future generations and to address the lingering trauma of colonial practices. In the words of Tlingit elder Khaajakhwtí Walter Soboleff, "When people know who they are, they don't kill themselves" (Twitchell, 2013, para. 6). As I have argued elsewhere, a single video game or other new-media text will not stem the tide of several generations of colonial practices; however, a game like *Kisima Inŋitchuŋa*, when used alongside culturally sustaining curricula in schools, community language classes, immersion opportunities, and other new-media interactions, can play a key role in cultural survivance (Stone, 2018).

Externally, the game engages in important cultural work, as well, by cultivating appreciation and understanding of Iñupiaq culture within Alaska and on national and global scales. In the first

cultural insight, Amy Fredeen states that, "one of the things I think a lot of people need to understand is, we aren't a museum piece. The Iñupiat people are a living people and a living culture." As the circumpolar north continues to be central to discussions on climate change and increasingly accessible through seaways, understandings of living Iñupiat cultures will be necessary for the continued survivance of Iñupiat people. Within Alaska, *Kisima Inŋitchuŋa* provides an accessible and engaging way to learn about the history of people who have lived in our region for thousands of years and to develop cultural competence in relation to local Indigenous populations. The game also reaches a global audience and illustrates the potential of video games for engaging in acts of survivance in other contexts, and provides a model for how such games can be produced in respectful and responsible ways. Together, the internal and external focus on cultural survivance in *Kisima Inŋitchuŋa* provides guidance for how games might support "thriving through gameplay" with Indigenous communities.

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BEYOND EMPATHY

Games to Foster Teens' Social and Emotional Skills

KELLI N. DUNLAP & SUSAN E. RIVERS

INTRODUCTION

Game designers are masters at creating engaging experiences that fuel creativity and drive problem-solving. One area in need of game designers' expertise is creating games that advance teens' social and emotional skills. Social and emotional skills are critical for success in academics, relationships, and work (Gallop, 2013; Jones, Greenberg, & Crowley, 2015). These skills can be taught, as shown by evaluations of evidence-based social and emotional learning (SEL) programs integrated into elementary, middle, and high schools (Belfield et al., 2015; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Taylor, Oberle, Durlak, & Weissberg, 2017). One study reports that every dollar invested in SEL programming yields an 11 dollar return for participating students (Belfield et al, 2015). Despite these positive outcomes, programs that contribute to social and emotional skill development have not been widely implemented in U.S. schools (Dusenbury, Weissberg, Goren, & Domitrovich, 2014; Rieber, 1996), especially high schools (Williamson, Modecki, & Guerra, 2015). These challenges create a ripe opportunity for games.

The connection between games and learning is well established (Botturi & Loh, 2008) and modern research has shown game-based learning to be an effective teaching tool for core academic

subjects (Din, Calao, Ward, Chiong, & Shuler, 2001; Ke & Grabowski, 2007; Moreno & Mayer, 2005; Yip & Kwan, 2006) as well as 21st-century skills (Qian & Clark, 2016) such as innovation, collaboration, and communication (P21, 2017). However, there is little research on game-based learning for social and emotional skills and even fewer games designed intentionally to build those skills. Digital games offer promise for disseminating at scale immersive learning environments for social and emotional skill practice for teens. Teens spend more and more time in virtual worlds (Twenge, 2017) and meeting them where they are offers a significant opportunity to engage them in their own development.

In this article, we explore the potential for teen players to develop social and emotional skills through gameplay. By identifying areas of overlap between best practices in game design and SEL programming, we propose a framework for analyzing existing SEL games and guiding the development of new ones. Our goal is to improve the quality and quantity of games wherein teens advance their social and emotional skills.

BEST PRACTICES IN GAME DESIGN AND SEL PROGRAMMING

In this section, we first identify specific elements that contribute to well-designed learning games and appeal to the needs and interests of teen players. Next, we delve into best practices that have emerged from SEL programming for teens.

Best Practices in Designing Learning Games for Teens

During adolescence, teens undergo significant biological, psychological, social, and cognitive changes that distinguish them from all other age groups (Steinberg, 2014). Teens' developmental needs include identity exploration, establishing independence, finding their place within the community, and social acceptance (Erikson, 1993). Embracing the developmental

needs of teens means creating games specifically designed to address their goals and interests. It is insufficient to "repackage" game content originally designed for younger audiences by modifying content to include "teen-friendly" language, imagery, or examples. Furthermore, such "aging up" of experiences designed for younger children may come across as patronizing or controlling to increasingly independent teens (Yeager, 2017).

With the developmental needs of teens in mind (e.g., identity exploration), we researched best practices for designing learning games (see Figure 1). Our review produced four general game design practices and three teen-specific strategies for developing well-designed learning games.

General Game Design Practices. First, a learning game must actually be a game. We ascribe to Salen and Zimmerman's (2003) definition of a game as, "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome" (p. 11). System exploration—the cyclical feedback process of learning rules and relationships in the game world (Squire, 2011)—is cited frequently as a core component in well-designed learning games (Bogost, 2008; de Castel & Jensen, 2003; Gee, 2005; Leites, 2015; Rawitsch, 2017; Squire, 2011). Second, players should be both autonomous—able to make informed decisions (Brown, 2016)—and active agents (Gee, 2005)—feeling like their choices matter (Leites, 2015; Rawitsch, 2017). Third, games should present well-ordered problems which feel challenging but solvable (Gee, 2005). Fourth, failure in a game must be presented as a normal part of the experience that offers an opportunity to learn through feedback (Gee, 2008; Leites, 2015).

Teen-Specific Strategies. Three additional design strategies are critical for teen audiences. First, creating social spaces around and within learning games will foster and deepen learning (de Castel & Jenson, 2003; Leites, 2015; Rawitsch, 2017; Squire,

2011). Second, game spaces should address issues of pressing importance to teen players; specifically, they should allow for identity and role experimentation (de Castel & Jenson, 2003; Squire, 2011). Third, when designing for teens, games should allow for multiple ways to solve a problem or complete a challenge (de Castel & Jenson, 2003; Leites, 2015), not merely a linear pathway that lacks opportunity for exploration or player choice.

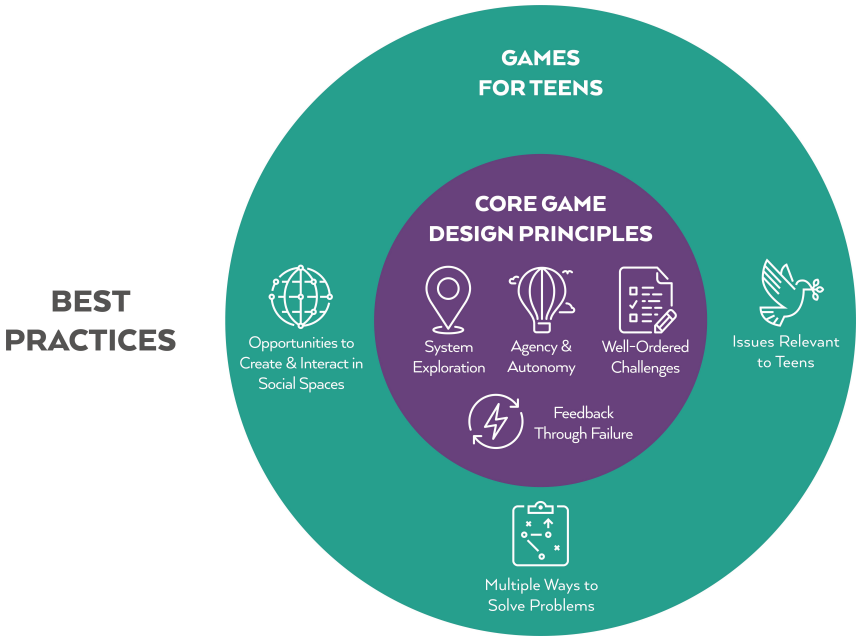

Figure 1. General Game Design Best Practices for Teen Players

BEST PRACTICES IN SOCIAL AND EMOTIONAL LEARNING

Social and emotional learning (SEL) refers to the cultivation of competencies critical to success in school, work, and life, beyond traditional academic learning (Smith, McGovern, Larson, Hillaker, B., & Peck, 2016). The five core social and emotional competencies that youth need to thrive in and beyond school are: 1) *self-awareness*: recognizing one's own thoughts and emotions

and their influence on behavior; 2) *self-management*: successfully managing one's own thoughts, emotions, and behaviors; 3) *social awareness*: perspective-taking, empathizing with others, and valuing diversity; 4) *relationship skills*: establishing and maintaining healthy relationships with others; and 5) *responsible decision-making*: making constructive choices around social interactions and personal behavior informed by ethical standards, social norms, and safety considerations (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2018). Figure 2 illustrates these competencies.

Figure 2. The Five Social and Emotional Competencies (adapted from www.CASEL.org)

There are a few notable programs that effectively teach SEL and have shown positive outcomes for teens. Examining the common features of those programs provides a useful framework for designing settings that promote teens' development of their social and emotional competencies. Features of successful SEL programs include: 1) project-based learning, 2) sequenced SEL content, and 3) a safe, and nurturing environment with caring and supportive adults (Smith, McGovern, Larson, et al., 2016).

Project-Based Learning. Project-based learning is a teaching model which organizes learning around real-world, hands-on projects that have a long-term, complex, and challenging goal to achieve (Thomas, 2000). At the start of a project, teens learn basic skills needed to reach the goal and practice and build upon these

skills throughout the project's duration. For example, a project may have the goal of building a boat for communities located in flood-prone areas. Teens might first learn about flood-prone communities using research tools on the internet and use that foundation to write survey questions in advance of collecting data from community members. Before building the boat, they also would learn about safety procedures in a woodworking studio and how to use the tools in the studio. Experimentation is encouraged as teens test out different models in different conditions to ensure the models perform as needed (e.g., in this case, that the boat will float in flood waters). Developing each skill lays the foundation for completing the next part of the project, and prepares teens for later projects. Sequencing project-based content in this way enables repeated practice of skills in multiple contexts, provides interesting and complex challenges, and fosters teens' sense of ownership as they actively shape how the project progresses. Project-based learning curricula typically are designed so that teens transition from the private space of the program to public spaces where they demonstrate their skills through community engagement.

SEL Content Sequencing. Effective SEL programs draw from evidence-based practices and the science of emotions to inform the social and emotional content and skills that teens learn and practice. The sequencing of SEL content begins with basic skills and builds to more complex challenges. For example, teens learn the basics of effective communication (e.g., active listening, asking open-ended questions) before advancing to conflict resolution. The SEL content sequence is integrated into a larger project-based learning sequence and aligned with project milestones where SEL-related challenges, such as or frustration or stress, are likely to occur. Presentation of SEL content is coupled with intensive co-regulation with a mentor, a practice where adult mentors provide nurturance and support to the teen while simultaneously acting as a buffer between the teen and

environmental stressors (Smith, McGovern, Peck, Larson, Hillaker, & Roy, 2016). As the project-based content transitions into community engagement, teens develop a sense of how others perceive them and cultivate a perspective where they view themselves as skilled and as valuable members of a community. Through meaningful relationships with mentors and peers, and with validation from the community, teens are able to recognize their own mastery of social and emotional skills.

Safe, Supportive Spaces. Effective SEL programs feature safe spaces that provide opportunities for mentors and teens to develop positive relationships. Spaces are designed to foster regular check-ins with mentors that facilitate teens' sharing of thoughts and emotions, experimenting with roles and identity, and engaging in novel experiences which have a high probability for failure (e.g., testing the effectiveness of different boat models in the above example). Mentors address challenging social or emotional situations in real-time, allowing them to provide constructive feedback to teens when it is most salient. The high probability of failure provided by novelty creates frustration or stress, which helps teens gain experience in regulating strong emotions with support from a trusted adult. Embracing failure as a learning experience shifts the typical emotional reaction to failure and normalizes support-seeking behavior. The relationship is the foundation from which mentors model, facilitate, scaffold, and coach teens in responding productively to difficult situations. The relationship also serves as a safe space for teens to practice giving and receiving feedback to and from mentors.

MAPPING SEL BEST PRACTICES TO GAME DESIGN PRACTICES

Drawing from the previous section, we identify areas where game design and SEL program design overlap. We describe our analysis in detail here; the Appendix includes a summary table

of the analysis. The goal of this analysis is to create a framework which combines both areas of practice with an emphasis on embracing the developmental needs of teens.

Project-Based Learning and Game Design

The processes that comprise project-based learning are integral to effective game design. At the beginning of a game, the player is exposed to the mechanics (i.e., skills) fundamental to gameplay (i.e., run, jump, shoot, etc.). Mastery of these mechanics (skills) is required to progress in the game. Over time, these skills become more complex (i.e. double jump, sprinting, etc.) allowing for iterative practice of skills across multiple contexts. Games present the player with tasks that are challenging, complex, and interesting enough to elicit voluntary effort (Juul, 2010), often over a sustained period of time. Most games require players to exert both agency (the capacity to choose and a sense of control in the game world) and autonomy (the ability to make meaningful, informed decisions; Brown, 2016), both of which enable players to shape their game experience, even if the end-goal is predetermined. For example, the goal of *Halo 3* (Bungie, 2007) is always to save Earth from destruction by aliens, but decisions about what path to take and which enemies to kill are up to the player. In these ways, well-designed games and SEL programs both provide interesting, appropriately complex challenges which require agentic and autonomous engagement from the user and mastery and repetition of skills. The move from private space to community engagement also is reflected in communities that form outside of games. Most newcomers to an online community start out as readers and consumers of content; over time, they transition into more complex roles such as contributors, collaborators, and leaders (Velasquez, Wash, Lampe, & Bjornrud, 2014.

SEL Content Sequence and Game Design

Games, even single-player ones, are social spaces and can provide opportunities to practice social and emotional skills. Games like *Star Wars: Knights of the Old Republic* (Bioware, 2003) and *The Walking Dead* (Telltale Games, 2012) can create memorable moments which spur passionate social discussion (Leites, 2015) around morality and ethics. Games also can integrate social and emotional skills, such as communication and cooperation, into gameplay by giving players different access to information (Leites, 2015). For example, in *Keep Talking and Nobody Explodes* (Steel Crate Games, 2015) two players must work together to disarm a ticking time bomb. The catch is that only player one has access to the bomb while player two is the only one with access to the instruction manual. To figure out how to decipher the correct disarm procedure and win the game, each player needs to understand the other player's perspective and how to efficiently and effectively provide useful information before the bomb explodes. Games also provide opportunities for practicing social and emotional skills by being a shared point of interest around which players can gather outside of the game. For example, social sharing and connection can occur via online forums, live-streaming of gameplay, player-created tutorial videos, fan art or fanfiction, and the creation of custom content. Players can engage with the larger gaming community to share their performances, creations, and accomplishments and receive valuable feedback and validation from peers.

Safe, Supportive Spaces and Game Design

Games provide safe spaces for experimentation and risk-taking without fear of significant real-world consequences. When playing a game, players fail 80% of the time (McGonigal, 2011). In fact, games celebrate failure. Failing in good games is more than a lack of success; it often produces something extra (Leites, 2015). For example, failing to clear all the orange pegs in the game

Peggle (PopCap Games, 2007) results in over-the-top animations and playfully ridiculous music. Failing in *Peggle* can make players laugh. In other games, failure is an opportunity for improvement. In *Halo 4* multiplayer (343 Industries, 2012), for example, players see a "kill cam" after they die that shows where they were killed and how. Players respawn in a matter of seconds, and the information from the kill cam can be used to inform a player's next tactic or allow a player to communicate information about the enemy to her team. Kill cams are a common game design feature and the kind of constructive feedback they provide is both timely and useful, and reframes failure into a confidence-building experience.

Games in isolation do not provide the type of in-depth emotional bonding between teens and mentors characteristic of successful SEL programs. However, they can serve to facilitate relationships and provide additional engaging opportunities for constructive feedback. For example, bonding over a shared gameplay experience is a powerful social and emotional connector. Seventy-six percent of parents say they play video games with their children because it is a way to socialize and interact with them (Entertainment Software Association, 2016). Games are also a significant part of developing and maintaining teen peer relationships. Seventy-eight percent of teens report feeling a stronger sense of friendship and connectedness when playing online games with friends (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015).

Streaming platforms like Twitch, YouTube, and Mixer foster the formation of participatory online communities (Hamilton, Gerretson, & Kerne, 2014), public spaces designed for "voluntary, informal, and happily anticipated" social gatherings (Oldenburg, 1999 p. 16). These social gatherings can range from a dozen viewers watching a single person play to millions of fans tuning in to cheer for their favorite player or team. Thirty-six million people watched the League of Legends World Finals in 2015,

about five million more than watched the 2016 NBA finals (Walker, 2016). During streams, viewers are actively participating by interacting with the streamer or other viewers through a chat interface, they are not merely passively watching events unfold. In fact, feeling connected to a community and experiencing a sense of belonging is the most significant motivator for live-stream viewership (Sjőblom & Hamari, 2016).

Summary

Both game design and effective SEL program design offer teens the opportunity to learn by doing. They each have the potential (in the best cases) to provide a supportive, responsive environment, give consistent and constructive feedback, and facilitate meaningful relationships (although this is not always the case; Busch, Bordeaux, & Consalvo, 2016, have written extensively about toxic game culture). These structures promote experimentation, exploration, socialization, and self-improvement. The parallel design practices for games and SEL programs create the foundation for our Game-Based SEL Framework.

GAME-BASED SEL INTERVENTIONS FOR TEENS

To gain a deeper understanding of how SEL content and themes are converted into rule-based game systems, we scanned the field for games that integrated evidence-based, teen-focused SEL practices and analyzed them through the lens of our framework. Because we only found two examples of evidence-based SEL games, we expanded our search to include games that addressed SEL concepts but may not have intentionally been designed to incorporate best practices in SEL. In this section we first analyze the two evidence-based SEL games and then a set of games that offered SEL growth opportunities for teens.

Evidence-based SEL Intervention Games

Ripple Effects. *Ripple Effects* is a digital online platform designed to teach teens social and emotional skills through evidence-based behavioral interventions using videos, vignettes, motion graphics, collectibles, and achievements (Ripple Effects, n.d.). Its interactive design and teen-specific focus have been researched rigorously. Efficacy studies show that after using *Ripple Effects*, teens' grades improved as did their empathy and problem-solving skills (De Long-Cotty, 2008). Our review of *Ripple Effects* using the Game-Based SEL Framework led us to conclude that despite its breadth and inclusion of gameful elements, it does not meet several basic characteristics of games (see Table 1). Instead of a system with conflict, challenge, and complexity, *Ripple Effects* provides teens with a collection of interactive apps. Although it proved to be effective as an intervention, *Ripple Effects* fails as a game.

Zoo U. In contrast to *Ripple Effects*, *Zoo U* (Centervention, 2014) provides a legitimate game structure. 3C Institute's *Zoo U* was designed for children aged seven to 12 years. It is an online, flash-based game that uses 2D cartoon graphics and takes place in a school for aspiring zookeepers. It integrates evidence-based SEL content (DeRosier & Thomas, 2017) into its subject matter and gameplay, including the five social and emotional competencies (CASEL, 2018) and effective program features (Smith, McGovern, Larson, et al., 2016a). Studies of *Zoo U* demonstrate its ability to improve children's social skills and enhance social knowledge, functioning, and self-confidence (Craig, DeRsoier, & Watanabe, 2015).

Zoo U offers a series of scenes that players must complete, beginning with lower-level scenes that unlock higher-level scenes. Each scene presents a stand-alone challenge the player must navigate, such as how to interact with a bully or discovering the food preferences of an elephant, using a point-and-click

interface and through the selection of presented narrative options. The scenes serve as an initial assessment of the 6 skills *Zoo U* aims to teach and measure: emotion regulation, impulse control, communication, empathy, cooperation, and social initiation. Players are encouraged to solve the problems in *Zoo U* "just like you would if they happened at your real school" (Centervention, 2017, page 2).

Overall, *Zoo U* meets several criteria of the Game-Based SEL Framework, especially when compared to *Ripple Effects* (see Table 1). The game is designed to develop players' skills by presenting increasingly challenging obstacles across a variety of contexts. The SEL content is integrated into the game's mechanics enabling players to practice skills and learn from their mistakes without fear of real-world consequences. Players are able to choose how to interact with the world and what skills they want to focus on, allowing the player a moderate amount of autonomy to shape their learning experience. However, because players are instructed to interact in the game based on what they would do "at your real school" the playfulness of the game is removed. It no longer is a safe space that encourages and supports failure. Moreover, *Zoo U* is not appropriate for teen audiences. The zoo theme and animal characters are childish, the content is best suited for elementary school scenarios, and the game's purpose is obvious (learn these skills, do what you would do in the real world). These characteristics of the game, even with "aged up" content, likely would feel patronizing to teen players.

Other Games With SEL Growth Opportunities for Teens

Given the lack of evidenced-based SEL intervention games appropriate for teen audiences, we broadened our scope to include less rigorously researched games intended to provide teens with social and emotional growth opportunities. These types of games are often classified as "empathy games." Vander Caballero, founder of Minority Media and creator of *Papo & Yo*

(Minority Media, 2012), defined empathy games as those "…in which conflict resolution is not achieved through power-up mechanics" (Bartleson, August 7, 2014, p. 20). In his 2014 GDC talk, Cabellero cited games such as *Gone Home* (Fullbright Company & Majesco Entertainment, 2013), *Papers, Please* (Pope, 2013), and *Brothers: A Tale of Two Sons* (Starbreeze Studios, 2013), as core examples of the presence, power, and profitability of empathy games. Other recent examples include *Beyond Eyes* (Tiger and Squid, 2015), *That Dragon, Cancer* (Numinous Games, 2016), and *Life is Strange* (Dontnod Entertainment, 2015).

Empathy games are an invitation to experience thoughts, feelings, and worldviews which are different from one's own, and rely on many components of SEL outlined in Figure 2. Practicing this kind of perspective-taking is crucial to developing more complex skills like empathy and social awareness, but whether or not empathy games teach or develop these kinds of skills is unclear. We sought to identify games whose goal was to teach and develop social and emotional skills in teens, but may not be promoted publicly as SEL games. We consulted the Games for Change website (Games for Change, 2018) to identify games that might fall into this category and, from the 48 educational games listed, we identified *SuperSight* (Preloaded, 2012) and *Tracking Ida* (Tracking Ida Team, 2017) as games that address one or more components of SEL. We analyzed each using the Game-Based SEL Framework.

SuperSight. *SuperSight* is a browser and mobile game for teaching resilience, self-control, and self-determination to teens aged 14-19 years. Players play as a masked avatar journeying through "Mount Wrong," where each enemy represents a different negative thought or emotion: anxiety, inflexibility, worry, isolation, and hopelessness. The goal of the game is for the player to vanquish these inner demons by destroying waves of enemies through attacking, charging, or using special abilities. If a player completes a level, the guiding NPC, Wise Guy, shares a

piece of wisdom related to the monsters the player just defeated; for example, "Agility of the mind triumphs over Stronghorn stupidity," where Stronghorn refers to the enemy representing inflexibility. If the player loses, the message "You were overwhelmed" appears on the screen, followed by gameplay tips presented as supportive wisdom from Wise Guy: "Dash at these troubles to break them up. And use your special powers, my apprentice."

The underlying learning goal of the game is to teach teens skills for regulating thoughts, emotions, and behaviors. Our framework analysis suggests that *SuperSight* falls short for several reasons (see Table 1). First, *SuperSight* delivers SEL content almost entirely through narrative statements provided by Wise Guy rather than being integrated into the gameplay itself. SEL content is limited to a few sentences presented to players about the importance of mindfulness or reflection. For example, after defeating multiple waves of Fearlines, feline-like creatures that represent anxiety, Wise Guy says, "Apprentice. You have learned the hard way that fear is like a cat: it thinks it's the boss but it won't get fat unless you open the tins. …". Enemies represent maladaptive strategies and power-ups reflect coping strategies, but there is no inherent or intuitive connection between what the player *does* and what the player *learns*. After completing the game, the player has only learned to identify specific enemies, select the most effective power-ups to battle each one, and click (or tap) the enemies in a strategic order to defeat them. Further, the message that some emotions are "wrong" while others are "right" perpetuates destructive stereotypes about emotions, which have the potential to cause real harm (see Kindlon &Thompson, 1999, for the dire consequences of hiding real feelings due to social pressures, judgement, and stereotypes).

Tracking Ida. *Tracking Ida* is an alternate reality game (ARG) for high school students based on the life of pioneering investigative journalist Ida B. Wells. Because the game is an ARG, it was

reviewed based upon available game documents and video recordings of gameplay. The premise is that Ida secured in a large wooden trunk important information about lynchings in Memphis. Players must unlock the trunk and each of its inside compartments to uncover the documents and solve the case. *Tracking Ida* does more than just present players with puzzles to solve; it challenges players to start an investigation of their own where they explore, problem-solve, and interview sources.

ANALYSIS OF GAMES USING THE GAME-BASED SEL FRAMEWORK

✗ MINIMAL OR NON-EXISTENT ✓ PRESENT ✓ FEATURED

COMPONENT	RIPPLE EFFECTS R	ZOO U Z	SUPERSIGHT S	TRACKING IDA T
Designed for a teen audience	✓	✗	✓	✓
Integrates evidence-based SEL content accurately	✓	✓	✗	✗
Is a complex system comprised of interesting, meaningful choices (Complexity)	✗	✓	✓	✓
Players are active, influential agents within the game space (Autonomy & Agency)	✗	✓	✓	✓
Players start with basic mechanics or knowledge which scale in difficulty and complexity in response to actions (Challenge)	✗	✓	✓	✓
Skills are practiced and revisited across multiple contexts (Iteration)	✗	✓	✓	✓
Social and emotional content is embedded within gameplay via mechanics, narrative, cut scenes, etc. (Integration)	✓	✓	✓	✓
Challenges faced can provide opportunities for social and emotional growth experiences within and around the game (Identity)	✓	✓	✓	✓
Provides opportunities to connect and learn from more experienced players (Mastery)	✓	✓	✓	✓
Supports and encourages sharing of personal accomplishments, performances (Supported Sharing)	✓	✗	✓	✓
Facilitates social interaction and meaningful relationships (Connection)	✓	✓	✗	✓
Provides an environment where the process of learning from mistakes is valued and supported by the group (Productive Failure)	✗	✓	✓	✓
Feedback is timely, consistent, constructive, and accurate (Constructive Feedback)	✗	✓	✓	✓

Table 1. Analysis of Games Using the Game-Based SEL Framework

Although not specifically labeled an SEL game, *Tracking Ida* stands up very well on the Game-Based SEL Framework. It provides a series of challenges that allow players to build up the skills required to overcome them. SEL content is integrated seamlessly into project-based goals. The game requires extensive problem-solving, cooperation, communication, and teamwork to unlock Ida's secrets, drawing on relationship skills and

responsible decision-making. The game includes community and performative sharing as players explore their surroundings and conduct and film interviews with role-playing volunteers. Players connect and bond with one another through the shared experience of overcoming a complex and interesting challenge.

SUMMARY AND FUTURE DIRECTIONS

Social and emotional skills are critical to teen thriving, yet teens' access to social and emotional learning opportunities is limited. Games are a popular and widespread medium for teen engagement and have been found to be effective as learning tools. By examining best practices for designing learning games and key features of successful teen SEL programs, we propose the Game-Based SEL Framework for including and evaluating social and emotional skill development and growth opportunities in games for teens.

Our exploration of the SEL game space yielded several interesting findings. First, there was a significant amount of overlap between SEL best practices and established game design practices. Some commonalities, such as learners/players being active agents pursuing a goal, were expected. Other similarities were less obvious, such as social and emotional content being embedded directly into both game and SEL program designs. Instances where SEL practices and game design did not align illuminated areas where SEL best practices could improve SEL game experiences. For example, the deep, meaningful relationships developed between teens and mentors in SEL programs underpin the effectiveness of modeling behavior change. Games and the spaces around them can be highly social and facilitate the development of deep relationships, but the component of having a trained mentor to model adaptive behaviors is missing. In fact, none of the SEL games we analyzed provided this feature. For developers interested in creating SEL

games, meaningful interactions should be integral to the design process.

Second, games developed intentionally to be evidence-based SEL interventions embodied fewer core game-based social and emotional practices compared to the other learning games we evaluated. In fact, *Tracking Ida* met the most criteria on our Game-Based SEL Framework, while the evidenced-based teen intervention (*Ripple Effects*) met the fewest. This may reflect the tension between making a great intervention and making a great game. The SEL intervention games we reviewed used standardized SEL content and were designed to capture data proving that the learner achieved the specified standards. Capturing outcomes were key; game components, such as mechanics or narrative, were molded to meet those outcomes. Conversely, the two other learning games featuring SEL content were not beholden to standards nor outcome measures proving that the game successfully effected change in the player. Instead, they focused on experiential features and used game components that emphasized playful engagement. In short, the goal of the game—evaluation versus experience—guided the prioritization of game content.

Games are expensive to make and development costs increase when additional goals, such as learning goals, are introduced. This is especially true for games designed to assess player behavior or learning. Introduction of assessment can fundamentally change the way games are designed and how players interact with them, creating another area of tension between evaluative goals and game design best practices. In general, games are a safe space where players can and will experiment, test boundaries, and even intentionally fail; none of which are behaviors desired during traditional evaluation. Two strategies that have been used to address this problem are 1) letting players know they are entering a context with expectations different from normal gameplay, or 2) picking

specific game mechanics and tying them to learning objectives so the claim can be made that a player completing X task is correlated to X standard (White & Javornik, 2017). Both strategies have their drawbacks, however. By informing players that they should actually avoid play behaviors, such as experimentation and boundary testing, the first strategy calls into question whether or not the experience continues to be a game (a challenge we observed in our analysis of *Zoo U*). With the second strategy, there is a level of abstraction between what the player does in the game and how that action relates to learning objectives which may weaken claims made about the relationship between gameplay and learner outcomes.

The Game-Based SEL Framework provides guidance in analyzing the strengths and weaknesses of games for helping teens develop social and emotional competencies. Using the framework revealed specific elements which could be improved upon to increase engagement with, and practice of, social and emotional skills. For example, if a teen version of *Zoo U* were to be developed, players' ability to explore the system, to fail along the way for learning, and to share accomplishments should be considered. In planning new games, we propose that the framework can serve as an evidence-based checklist for game designers and experts in SEL interested in developing SEL-related games.

One important limitation of the Game-Based SEL Framework is that it lacks input from teens, the very group we aim to serve. Next important steps are to get on the ground to work with, listen to, and design with teens to devise a (perhaps) complementary framework for the criteria they believe to be essential for learning, exploring, and building their social and emotional skills. If we are not designing with teens, how can we design for them? Toward that end, we are focused on creating user-centered designs by working with teens to learn what they believe to be meaningful game-based experiences—those

moments of discovery and insight that lead to growth in self-awareness, self-management, social awareness, relationships, and decision making. Learnings will be paired with the evidenced-based framework presented here to further a shared understanding of how to design games for teens' social and emotional learning.

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APPENDIX

Analysis of SEL and Game Design Best Practices

	Opportunities Offered to Teens in Effective SEL Programs	Common Feature	What Games Offer to Players
Project-Based Content Sequencing	● Work on complex, interesting, and appropriately challenging goals	Complexity	● Explore a complex systems comprised of interesting choices directed toward a goal
	● Choose how to achieve project goals	Agency & Autonomy	● Be active, influential agents within the game space
	● Build on existing knowledge and skills, engaging in more complex challenges over time	Challenge	● Develop knowledge and skills over time through increasingly complex challenges
	● Practice skills across multiple contexts with many opportunities to embrace failure and experimentation	Iteration & Feedback	● Test developing skills frequently, using failure as an opportunity to learn, improve, and try again
SEL Content Sequencing	● Build on existing social and emotional knowledge and skills and engage in more complex challenges over time	Integration	● Engage in social discussion spurred by memorable moments, differential access to information, or differentiated expertise
	● Practice social and emotional skills within the context of projects and in the community	Identity	● Play in multiple ways to allow for experimentation with various identities in a group, encouraging the set up and negotiation of social structures as part of play
	● Confront social and emotional difficulties while adults model and teach use of social and emotional skills, developing mastery	Mastery	● Connect with other players in a variety of spaces to showcase progress
Safe, Supportive Spaces	● Learn to trust and express thoughts, feelings, and experiences in a safe place provided by mentors	Socialization and Sharing	● Engage in social interaction and develop meaningful relationships through the social affordances within and around the game
	● Develop deep relationships with mentors who provide modeling, coaching, facilitation, and scaffolding	Connection	● Create a sense of community and belongingness through the online communities that form within and around the game, especially those which encourage players to learn from one another
	● Embrace failure and experimentation with support from peers and mentors	Support-Seeking	● Derive meaning and value from mistakes by rewarding effort and incremental progress toward goals
	● Provide and receive constructive feedback with peers and mentors, which is critical for personal growth, skill development, and forming mutually supportive relationships	Constructive Feedback	● Receive feedback that is timely, useful, and builds confidence

ABOUT THE AUTHORS

Sarah A. Abraham
Department of Computer Science
University of Texas at Austin
Austin, TX, 78712
USA
theshark@cs.utexas.edu

Patrick Bender
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Brenda Chen
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Jessica Cheng
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007

USA
chen604@usc.edu

Jeffrey Doan
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Kelli N. Dunlap
iThrive Games
Clinton, NY 13323
USA
dunlappsyd@gmail.com

Rebecca Goodine
TAG Lab, Concordia University
1455 De Maisonneuve Blvd. West, EV11.435
Montreal, QC H5G 1M8
CA
contact@rebeccagoodine.com

Marientina Gotsis
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Owen Gottlieb
School of Interactive Games and Media
Rochester Institute of Technology
152 Lomb Memorial Drive.
Bldg. 70-2145
Rochester, NY 14623

USA
oagigm@rit.edu

Maryalice Jordan-Marsh
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Gabrielle Kanellos
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Christina Lelon
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Nathan Lim
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Xian Lu
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Jeffrey T. Mundee
University of New Brunswick
New Brunswick
CANADA

Kelsey Rice
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Susan E. Rivers
iThrive Games
Newton, MA 02464
USA
susan.rivers@ithrivegames.org

Sydney Rubin
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

Ian Schreiber
School of Interactive Games and Media
Rochester Institute of Technology
152 Lomb Memorial Drive.
Bldg. 70-2145
Rochester, NY 14623
USA

Jennifer C. Stone
University of Alaska Anchorage
ADM 101J
3211 Providence Dr.

Anchorage, AK 99508
jstone32@alaska.edu

Jade A. Yhap
University of New Brunswick
New Brunswick
CANADA

Ashley Yu-Chih
USC Dana and David Dornsife College of Letters, Arts and Sciences
University of Southern California
Los Angeles, CA 90007
USA

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We are pleased to present you with a peer-reviewed volume of *Well Played.* Here are the individuals who generously donated their time and effort to ensuring the quality of this book.

Dr. Luke Dicken is Chair of the IGDA Foundation, a charity for game developers, by game developers, and currently works as Director of Central and Strategic Analytics at Zynga Inc. He holds degrees in computer science, artificial intelligence and bioinformatics as well as a PhD in AI specifically for games. Luke has written articles on a wide range of topics and given sessions at conferences around the world, as well collaborating on a number of game projects. Luke has been passionate about AI since playing *Creatures* as a teenager, and is a member of the AI Game Programmers Guild. He was named as one of *Develop* magazine's "30 Under 30" for 2013, but hasn't yet found a subtle way to work that into a bio.

Dr. Kelli Dunlap is a psychologist and game designer. She has collaboratively developed games for organizations including the National Institute for Mental Health, VOX Media, and The Knight Foundation. She has been recognized nationally for her work on mental health and video games, and has received awards including the Game Developers Conference 2016 Top 50 Speaker award, the Microsoft and Xbox Most Valuable Professional Award, and a $100,000 fellowship for game design at American University's Game Lab. In May 2017, Kelli was

recognized as one of 15 Early Career Games and Learning Scholars by the Games and Learning Early Career Network. She has been researching the intersection of digital games and mental health for over 10 years. She has trained licensed mental health professionals in the therapeutic use of video games, including using games with adolescent populations with social or emotional disturbances. She has designed games for educational and social-impact purposes, one of which was featured at Games for Change 2017 in the Civics and Social Issues track. She is the Mental Health and Games Specialist at iThrive Games.

Heidi McDonald is the Senior Creative Director for iThrive Games, where she directs iThrive's developer outreach activities and provides creative direction on game development projects. She leads retreats, workshops, game jams, and conference events designed to engage top industry and academic professionals in conceptualizing, creating, and testing games to support teen thriving. Drawing on her experience as a game designer and writer (including 9 titles for Schell Games), she translates iThrive Games' teen thriving concepts into actionable design resources for game developers and offers developer consults for designers making games with social and emotional learning outcomes. Heidi was honored with Women in Gaming's Rising Star Award in 2013, and her work has won awards from entities including Serious Play, the Pittsburgh Technology Council, and the IGF. Author and editor of *Digital Love: Romance and Sexuality in Games*, Heidi has published and lectured extensively on romance and sexuality in games and how they relate to players' emotional engagement. She is also known for her collection of magnificent hats and for popping up places dressed as her pirate alter-ego, Lizzie Bones. She has dedicated her career to the idea that games can do amazing things for human beings.

Dr. Gabriela T. Richard is an Assistant Professor in the Learning, Design, and Technology program at Penn State. She has conducted research on the ways that diverse youth and adults

engage in learning, collaboration, identity formation, and self-efficacy with gaming, livestreaming, makerspaces and computing. She explores ways that technologies can be culturally-situated and inclusive, and employs intersectionality as a frame for understanding complex sociocultural relationships across gender, race/ethnicity, sexuality and dis/ability in media and design.

Dr. Susan Rivers is Executive Director and Chief Scientist at iThrive Games, the nonprofit that aims to intentionally use and design games in the best interests of teens, to support their thriving. She uses her expertise in emotional intelligence to enhance the social and emotional well-being of adolescents by accelerating the development and widespread adoption of interactive, evidence-based digital products. Susan earned her doctorate at Yale University where she later served on the research faculty in the Department of Psychology and co-founded the Yale Center for Emotional Intelligence. She has published extensively in scholarly journals and books, is co-author of several curricula for embedding social and emotional learning into academic instruction, and speaks at national and international conferences and events. Susan is a Fellow with the Billions Institute's Leadership for Large-Scale Social Change, and she lives and plays games in Newton, MA with her husband and three children.

Dr. Doris C. Rusch is a game designer, researcher, play aficionado and holds a position as associate professor at DePaul University where she founded the *Deep Games Laboratory*. Before that she did post-doctoral work at GAMBIT Game Lab, MIT and Vienna University of Technology (Austria). Rusch's work is focused on the theory and practice of game design, particularly in regard to games that model the "human experience" and focus on mental health issues. She was the lead designer and vision holder of award winning and featured projects such as *Zombie Yoga* for Kinect, *Elude*, a metaphorical game on depression, *For the*

Records, an interactive documentary that deals with young adults and mental disorders such as OCD, ADD, eating disorder and bipolar disorder and *Soteria – Dreams as Currency*, a game to teach strategies to overcome anxiety disorders. Her reflective practice and game design research also manifested in the book *Making Deep Games – Designing Games with Meaning and Purpose* (Taylor & Francis 2017). Her games have won numerous *International Serious Play* awards and have been showcased at eclectic festivals such as *IndieCade* and *Tokyo Game Show*. She has been a keynote speaker and presenter at venues including *Clash of Realities*, *DiGRA*, *Game Developers Conference, Meaningful Play*, *Nordic Game Conference, FDG* and *TEDx.* Having completed studies in Literature, Philosophy, Comparative Media Studies and English at Vienna University, she received her Ph.D. in Applied Linguistics and Interactive Systems. Rusch is currently working towards a graduate degree in clinical and mental health counseling at the College of Education, DePaul University.

Dr. David Simkins is an Assistant Professor in the School of Interactive Games and Media at the Rochester Institute of Technology (RIT). As well as sitting on the advisory board of ETC Press, he is an affiliate of RIT's MAGIC Center, a founding member and steering committee member of the International Game Developers Association special interest group on Learning and Educational Games, and an active member of the Higher Education Video Games Alliance. He joined RIT in 2011, shortly after earning his PhD in Curriculum and Development from the University of Wisconsin-Madison. While there he was a founding member of the Games, Learning and Society group as well as a co-chair for the games+learning+society conference. David is a researcher and developer of role-playing games, and his work focuses on the intersections of role-play, ethics, and learning, including both digital and face-to-face forms of role-play. David's research methods range from mixed-methods approaches to more strictly qualitative research and analyses

including discourse analysis and ethnography. His role-playing games development projects tend to offer participants play within complex ethical contexts, creating opportunities to learn and to explore new perspectives on familiar challenges in environments with mitigated consequences. Some of his larger projects include *MarsU,* a statistics learning game for use in introductory college history classrooms, and *A Rebel's Guide to History*, a world history curriculum covering topics from the dawn of humanity to 1500 where students rescue historical artifacts and analysis from an Orwellian regime seeking to erase historical study. His ethnographic book, *The Arts of LARP: Design, Literacy, Learning and Community in Live-Action Role Play*, is a player and designer-oriented analysis of one extended role-play community highlighting fundamental elements of role play.

Dr. Michael Sutton demonstrates his thought leadership skills in his roles as a Game-Based Learning Innovator & Architect and Edupreneur. His current applied research focuses upon architecting and delivering gamification environments using serious games, immersive learning environments, and simulations that leverage increased learning and performance for: employee engagement, creativity, and innovation; design thinking; leadership, teamship, followship, communityship, and intrepreneurship/entrepreneurship; and knowledge acquisition, production, sharing, and diffusion (knowledge mobilization). Michael has established his consulting services firm, FUNIFICATION, in order to provide advice to local and international entrepreneurs, higher education faculty institutes, public sector organizations, and enterprises. His evolving presence in the fields of Gamification, Serious Games, Simulations, and Immersive Learning Environments has been recognized internationally. Michael has been teaching at the executive education, community college, undergraduate, graduate and doctoral levels in higher education for many

decades, and instills his learners with the passion for life that he has acquired through arduous and challenging life experiences.

Dr. Moses Wolfenstein is a Senior Interaction Developer with the Media Team at the University of Wisconsin-Extension's division of Continuing Education Outreach and eLearning (CEOEL), and operating program manager for the University Learning Store. Moses holds a PhD in Educational Leadership & Policy Analysis from the University of Wisconsin-Madison where he worked with the Games, Learning, & Society research group studying and designing games for learning. Prior to returning to work in higher education, Moses worked for two years as Creative Director for a small Madison startup company focused primarily on developing games for adult and professional learning. In his work at CEOEL, Moses has worked across programs leading design and development on a variety of interactive learning tools, and helping to improve the user experience for UW learners both inside and outside of the instructional setting. In his role working on the University Learning Store, he is managing the development of the catalog and institutional partnerships for this novel micro-credentialing platform.

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ABOUT ITHRIVE GAMES

The non-profit iThrive Games is committed to using and designing technology in the best interest of teens, to support their thriving. We work to ensure that technology, and games in particular, empowers teens to build their strengths and cultivate the social and emotional resources they need to navigate adolescence and make a healthy transition to adulthood. To learn more, visit ithrivegames.org.

ABOUT ETC PRESS

The ETC Press was founded in 2005 under the direction of Dr. Drew Davidson, the Director of Carnegie Mellon University's Entertainment Technology Center (ETC), as an academic, digital-first (but not digital only), open access publishing imprint.

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The ETC Press publishes academic and trade books and singles, textbooks, academic journals, and conference proceedings that focus on issues revolving around entertainment technologies as they are applied across a variety of fields. Our authors come from a range of fields. Some are traditional academics. Some are practitioners. And some work in between. What ties them all together is their ability to write about the impact of emerging technologies and its significance in society.

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