"Mental health ultimately means that an individual, through rich emotion affirming encounters with living, has integrated his or her life in such a way that the emergent self-structures, deeply affective, can steer a satisfying, cognitive course through future emotional jungles of lived lives." **– Jaak Panksepp**[1]

CTIN 503 | SPRING 2018 | Section 18411D

Interactive Entertainment, Science & Healthcare

2 Units

Instructor:
Prof. Marientina Gotsis, MFA
gotsis@usc.edu
Office: SCI 201U

Lecture: Tuesdays 4-5:50PM @ SCI 308
Office hours: Tuesdays 6-7pm by appointment

COURSE OVERVIEW

This course will give students an overview of foundational concepts required for design, development and evaluation of interactive entertainment and transmedia-based interventions at the intersection of neuroscience, public health and medicine. Students will develop a unique transdisciplinary perspective of intervention rationale and impact related to wellness, illness and resilience, following a trajectory of critical periods of life and living. They will develop critical reading abilities, writing skills, and experience analysis and synthesis skills.

COURSE OBJECTIVE

The purpose of this course is to prepare students for transdisciplinary collaboration with teams of artists, designers, scientists, health professionals, and engineers, whose mission is to develop and evaluate interventions focused on improving human health and the experience of living. Students will obtain basic mastery of core concepts in the field,

[1] Jaak Panksepp was an affective neuroscientist who studied the emotional systems in animals. He is most known (and ridiculed) for discovering that rats laugh when they are tickled. He explored in depth the importance of play in human development. This quote is from the following book: Panksepp J. Brain Emotional Systems and Qualities of Mental Life: From Animal Models of Affect to Implications for Psychotherapeutics. In: Fosha D, Siegel DJ, Solomon M, eds. The Healing Power of Emotion: Affective Neuroscience, Development & Clinical Practice. New York, New York, USA: W. W. Norton; 2009:368.

including challenges and opportunities. They will acquire necessary skills for analyzing prior art and for proposing future work through a transdisciplinary lens, which will integrate their own skills and experiences. Students will learn how to apply a common philosophical and theoretical framework that underlies intervention design and evaluation. They will practice conducting literature reviews from diverse fields, conducting design analyses, and synthesizing concepts from multiple disciplines. Students will acquire a basic understanding of study design, data collection, and ethics.

Course Requirements & Activities

READINGS/RESOURCES

Assigned readings are listed at the end of the syllabus via GoogleDocs. In addition to readings, resources such as websites, videos, and interactive works will be made available in this document. Such works are not considered optional or supplemental, but are extremely critical for experiential design processes. You will be required to keep a scholarly journal (see later section on this).

% of Grade	
4 written assignments (I=5%, II=10%, III=10% IV=10% | 2-3 pages each)	35
1 take-home exam (3-4 pages)	30
2 group projects (I=10%, II=10%)	20
Scholarly journal	5
Participation	10
TOTAL	**100**

WRITTEN ASSIGNMENTS

Students will be asked to complete 4 key writing assignments (see COURSE SCHEDULE) that will exercise existing knowledge and skills, and incorporate interpretations of readings and experiences. These assignments are meant to sharpen their *critical, analytical, integrative* and *empathic* skills. The types of written assignments represent common types of written documents students will need to prepare for team science, such as sections in grant proposals, internal communications, results report preparation, scholarly publications, and essential documents for research that involves human subjects. Such documents involve basic science writing, technical writing, or translation to lay audience language. Students are required to submit these documents on time in Microsoft Word format in order to be eligible for full credit. Students will be provided with constructive criticism and comments toward final revisions of the documents for assignments II and III and will receive a preliminary grade, which may be improved with a final re-write. All re-writes will be due by the last day of class to be graded. Proper authorship and attribution of creative works is required, including students' own original work. Students are strongly encouraged to use reference management software, such as Endnote, RefWorks, Mendeley** or Zotero and to adhere to a recognized style, such as APA, IEEE, MLA, Chicago, or AMA.

Point Allocation for Individual Written Assignments

- 50% for intellectual merit
- 40% for clarity, style, and organization
- 10% of points for submitting on time

TAKE-HOME EXAM

Students will be assigned questions and short essay topics, in the form of challenges, which will be announced three weeks before the exam is due. In order to respond to the exam, students will have to have reviewed all required and some recommended readings, and are expected to do some additional research on their own. The exam requires a written narrative with links to supplemental materials to illustrate their response to the challenge, such as video, games, art and any other media. Students will be able to choose between multiple challenges and can work together to review works, but each one must make, and document, their unique contribution in their own exam. The exam is expected to stimulate a deeper review and reflection of the chosen challenge area, with an opportunity for the student to exercise their creative, critical, analytical and synthetic skills on-demand. Students will not be judged on their mastery of concepts, as much as their ability to pull things together and guide the reader to see something in a completely new way. The reader must be persuaded on what is interesting, what is valuable, and/or what is worth knowing using both evidence and opinion. Students who receive at least a B- grade on their exam may be provided comments toward a re-write of their exam. Students who receive less than a B- on their exam can choose another challenge topic and submit it with their final re-writes, with a 10% deduction on the exam grade. **The exam response should be between 900-1500 words, not counting figures, tables, and references.**

Sample challenge topics:

- Describe/critique the shortcomings of obesity interventions using games in children and/or adolescents.
- Critique popular design strategies for sound-based feedback in movement disorders.
- Choose a popular off-the-shelf game and explain how its design promotes, enables, discourages or encourages prosocial behavior.
- Describe various parameters of intersubjectivity in a given scenario? Where do the core interactions lie? Who has agency/when? How do the subjects enter, exit and navigate the relationship?

Proper authorship and attribution of creative works is required, including students' own original work. Students are strongly encouraged to use reference management software, such as Endnote, RefWorks, Mendeley** or Zotero and to adhere to a recognized style, such as APA, IEEE, MLA, Chicago, or AMA.

Point Allocation for Take-Home Exam

- 70% for intellectual merit
- 20% for clarity, style and organization
- 10% of points for submitting on time

GROUP PROJECTS

Experience Observation & Analysis Projects

Project A: Students must organize a play a session of The Brain Architecture Game for two teams of 3-4 people each. Students will be asked to obtain participant consent for photo/video documentation release, as well as survey data collection consent for pre/post surveys via Qualtrics. Student team will be asked to provide a 2-page summary of the quantitative data and their observations of the play session.

Project B: Students will be asked to video record one of their classmates using a full-body game title or other interactive entertainment experience (e.g., mixed reality, augmented reality) and to volunteer to be taped for one of their classmates to video record them for their chosen experience. Observers will be asked to code the video using a simple qualitative method supplied by the instructor using Nvivo software and provide a short objective and subjective summary of the

observed experience (1-2 paragraphs). The participant will be asked to do the same for their own video. Both parties should remain blind to each other's coding and analysis. Results will be made available to classmates for review, unless participants experience regret or embarrassment after reviewing their session. Students are expected to treat each other with respect and dignity during this project. Students will also be given a brief survey to rate their Observer.

Point Allocation for each Experience Observation and Analysis Project
(includes rating by classmates)

Project A

- 30% data collection rigor/completeness
- 60% for analytical summary insight
- 10% for ethical/professional conduct

Project B

- 30% qualitative coding quality/attention to detail
- 60% for analytical summary insight
- 10% for ethical/professional conduct

SCHOLARLY JOURNAL

One cannot learn to write for a multidisciplinary audience if they do not read from diverse authors. There is no way to acquire the ability to meet others more than 50% in their discipline without reading and experiencing their scholarship. The instructor has curated a small collection of readings and media resources from various disciplines to help with this immersion. Some of the readings may intimidate or confuse, but that should not stop you from trying to read, listen, and ask questions. You will be required to keep a scholarly journal in the medium of your preference, including paper if that is your preferred mode of notetaking. In this journal, you will be asked to keep track of your readings, prior art reflections, media resource impressions, and anything new that you find of interest. Use Slack to share anything you find that may be of interest to others and let us know what you think about that resource. You will be asked to submit the scholarly journal for grading at the end of the semester. If you do it regularly, it *will* improve with time so when you start do not obsess with perfection. Obsess with practice!

Point Allocation for Reading Journal

- 50% for notetaking quality
- 50% for content diversity
- (late submission loses 1% per day)

CLASS PARTICIPATION

Although student physical presence may not always be possible in the class, absenteeism will naturally result in student inability to meet course objectives. If a student can't be there for a class, but can participate virtually, we may be able to connect them via videoconference. Students are encouraged to participate virtually if they have a cold or something that can be transmitted to others. Participation in playing The Brain Architecture game is mandatory and if students cannot make it to that class, they are required to find two people who can play the game with them outside of class during a time convenient to the instructor. Unexcused absences or regular tardiness will affect this portion of student grade and bring down the overall grade. If students have an unavoidable conflict, please contact the instructor via email or phone as far in advance as possible.

Statement on Safe Spaces

The spirit of a successful interventionist requires cognitive flexibility, imagination, curiosity, rigor, openness, compassion, honesty, and courage. This class will encounter and discuss topics and themes that encompass the entire spectrum of the human experience, from life to death and everything in between. You may be challenged emotionally by some of the content by design: the class is meant to push you beyond what is typically comfortable. This class is a safe space for discussion and expression, but is not a safe space from growth. There is no potential for transformative experiences if you are not personally pushed a bit past what you can tolerate, from boredom to excitement. You should feel free to express dissent in a civil manner and express your entire range of emotions in a controlled way. If at any point you need to walk away momentarily from the class, you may do so without penalty from the instructor. Do not fight rhetorical or emotional battles you are not prepared to lose in class. We are all here to learn from each other.

Diversity of Human Experience

The definition of health and happiness varies greatly from individual to individual, family to family, community to community. While considering the design and evaluation of interventions, you will be asked to consider many factors of diversity of the human condition and human experience. This may mean by age, gender, sexual orientation, ethnicity, religion, race, socioeconomic status, location, literacy, ability/disability, health status, access to services, and other variables. While proposing and critiquing your intervention and evaluation, consider how these variables may affect the experience and impact.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/. Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu/ or to the *Department of Public Safety* http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.htmlprovides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* *http://emergency.usc.edu/*will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Disruptive Student Behavior:

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

Syllabus Updates/Groupware:

This syllabus is liable to change up to the beginning of class and possibly over the semester. Please check the posted syllabus regularly, and note all changes that are shared by the instructor in class. We will be using Slack for managing week by week updates.

Incomplete Grade (IN):

Grades of incomplete are given when a student cannot complete the course requirements as a result of a documented illness or an emergency occurring after the twelfth week of the semester. The instructor, the school, the department owning the course, or the student can initiate an Assignment of Final Grade for Completion of IN when the coursework has been completed. No more than one year is allowed for completion of an IN. The end of the twelfth week is the withdrawal deadline from the course.

About the Instructor

Marientina Gotsis, MFA is a Research Assistant Professor of Interactive Media & Games at the USC School of Cinematic Arts, and director and co-founder of the Creative Media & Behavioral Health Center. Gotsis has a broad background in arts, design and engineering with special interest in medicine, public health and health behavior. She and her team have developed several innovative applications using games for health behavior change in topics such as child development, wellness, obesity, nutrition, exercise, autism, PTSD, rehabilitation, and eye disease. Gotsis has developed partnerships and projects with funding by the Robert Wood Johnson Foundation, Norlien Foundation, National Institutes of Health (NIH), US Department of Defense, US Department of Education-NIDRR and the Shafallah Center for Children with Special Needs. Formerly the Media Lab Manager for the Interactive Media Division, Gotsis managed technology infrastructure and contributed to several research projects funded by Electronic Arts, Intel, Microsoft and Nokia. She has taught at USC (School of Cinematic Arts, School of Social Work, Roski School of Fine Arts), Northeastern Illinois University, Columbia College Chicago and Harold Washington College, and she has consulted for small businesses and not-for-profits. Gotsis has 21 years of experience as a designer and technologist. She received a BFA in photography/film/electronic media and an MFA in electronic visualization from the Electronic Visualization Laboratory at the University of Illinois at Chicago.

About the Creative Media & Behavioral Health Center

Founded in 2010 following the success of the USC Games for Health Initiative, the Creative Media & Behavioral Health Center (CM&BHC) is a unique incubator for innovation in the use of entertainment applications at the intersection of behavioral science, medicine and public health. As an organized research unit between the USC School of Cinematic Arts and the Keck School of Medicine of USC, its mission is to increase public awareness of critical issues in mental health and behavioral science, and to provide hands-on creativity-based educational opportunities for health researchers and practitioners. CM&BHC relies on sponsorship from individual, foundation, federal and international organizations to support infrastructure, research and production. As of 2013, CM&BHC members have completed several research milestones, published and disseminated ideas and findings, trained and mentored a remarkably diverse cohort of alumni, and provided consulting to partners locally, nationally and internationally. Our lab space (SCI 308) is affectionately known as *The Garden,* is named to honor the Ancient Greek philosopher Epicurus (341–270 B.C.E.), whose school and community garden were dedicated to the social and emotional welfare of its students and friends. Epicurus' letters include some of

the earliest inquiries into the role of homeostatic balance of pleasure (akin to contemporary concepts of affect regulation), the definition of happiness as the absence of mental and physical suffering (tranquility), and examples of practicing mindfulness in daily living. For more information, visit http://cmbhc.usc.edu.

Notes:
** *I personally have used all of these and prefer Mendeley for my own work for the following reasons: a) you can set up a watch folder and dump all your files in it and it will automatically index them, often correctly if they contain correct bibliographic data; b) it will nicely rename all your files in a format you can quickly sort, such as name, year and title and even organize by folders; c) you can make a new entry by just inserting a doi number.*

Annotated Bibliography

The course schedule contains the recommended bibliography for each week. The following list contains supplemental foundational references with my notes on why they are important. This may be a good place to start for your take home exam research in some cases. More curated references are available here: https://www.mendeley.com/groups/9490631/usc-creative-media-behavioral-health-center/

Pitts-Taylor, V. (2016). *The Brain's Body: Neuroscience and Corporeal Politics*. Durham: Duke University Press Books.

> This book ties together a neurobiological basis for understanding why human interaction is important for our development and health without taking on a deterministic perspective. It is a valuable perspective to own for interventionists who must put human suffering at the forefront.

Fosha, D., Siegel, D. J., & Solomon, M. (Eds.). (2009). *The Healing Power of Emotion: Affective Neuroscience, Development & Clinical Practice (Norton Series on Interpersonal Neurobiology)* (Vol. 16). New York, USA: W. W. Norton. Retrieved from http://books.google.com/books/about/The_Healing_Power_of_Emotion_Affective_N.html?id=6cIv1FMq4HAC&pgis=1

> This is a wonderful selection of chapters by basic scientists and clinicians. The entire Norton Series on Interpersonal Neurobiology is one that is valuable for a fresh perspective on how to think as an interventionist and understand how our neurobiology and behavior are intertwined.

Jerald, J. (2015). *The VR Book: Human-Centered Design for Virtual Reality*. Association for Computing Machinery and Morgan & Claypool Publishers.

> Quite literally THE only book out there that is so complete with checklists on human centered virtual reality. It is an excellent history and reference and an instant classic. An experienced person may not agree with all the recommendations, but it is an excellent foundation for novices and intermediate level VR designers and researchers.

Barnbaum, D. R. (2008). *The Ethics of Autism: Among Them, But Not of Them* (Vol. 7). Bloomington, IN: Indiana University Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=RGgvf7ScEkwC&pgis=1

> Our thinking on autism has advanced much since this book, but what I value about it is how it tries to explain an "otherness" that we may not understand and what the ethical boundaries of intervention should be. Spoiler alert: intervention is not always recommended the older we get in life, especially since serious change can be so traumatic. The reason why is best explained in this NY Times article by John Elder Robison. This rationale extends to all mental and physical health interventions. Change is a type of trauma that we are not all ready to deal with.

Madary, M., & Metzinger, T. K. (2016). Recommendations for Good Scientific Practice and the Consumers of VR-Technology. *Frontiers in Robotics and AI*, *3*(February), 1–23. http://doi.org/10.3389/frobt.2016.00003

The best starting point for ethics in VR, from unanswered questions to evidence we already have. Some of my recommendations for this are also summarized in this working paper.

Epicurus, Inwood, B., & Gerson, L. P. (1994). *The Epicurus Reader: Selected Writings and Testimonia*. Hackett Publishing. Retrieved from http://books.google.com/books?hl=en&lr=&id=NUiYEH3H0S4C&pgis=1

Philosophy is where you should always go when you do not know where to start or you have hit a wall. I favor Epicureanism because I consider Epicurus to be the first humanist/neuroscientist of his era, taking on a practical and compassionate approach to living and understanding the human experience through the lens of suffering (much of which was through his own pain). Marcel Proust's *In Search of Lost Time* is a good follow-up: "The universe is true for us all and dissimilar to each of us."

Vines, J., McNaney, R., & Clarke, R. (2013). Designing for-and with-vulnerable people. *CHI'13 Extended …*, 44–46. Retrieved from http://dl.acm.org/citation.cfm?id=2479654

A valuable perspective on user centered design using various lens to understand what "vulnerability" might mean.

Bayón-Calatayud, M., Peri, E., Nistal, F. F., Duff, M., Nieto-Escámez, F., Lange, B., & Koenig, S. (2016). Virtual Rehabilitation. In *Biosystems & Biorobotics* (Vol. 10, pp. 303–318). http://doi.org/10.1007/978-3-319-24901-8_12

Great foundational chapter on virtual rehab technologies, opportunities and challenges written in a very accessible format. For a more detailed view into specific conditions see the other book chapters here: http://link.springer.com/book/10.1007/978-3-319-24901-8

Thabrew, H., Stasiak, K., Garcia-Hoyos, V., & Merry, S. N. (2016). Game for health: How eHealth approaches might address the psychological needs of children and young people with long-term physical conditions. *Journal of Paediatrics and Child Health*, *52*(11), 1012–1018. http://doi.org/10.1111/jpc.13271

Valuable perspective on why and how games can be situated within healthcare for helping children.

Borsci, S., Macredie, R. D., Martin, J. L., & Young, T. (2014). How many testers are needed to assure the usability of medical devices? *Expert Review of Medical Devices*, *11*(5), 513–25. http://doi.org/10.1586/17434440.2014.940312

This is a classic reference for interventionists who are intimidated by the concept of randomized controlled trials. When it comes to design, putting things in the hands of people asap is most important for both safety and effectiveness and it does not take 100 participants for you to know what you need to know...

Holone, H., & Herstad, J. (2013). Three tensions in participatory design for inclusion. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13* (p. 2903). New York, New York, USA: ACM Press. http://doi.org/10.1145/2470654.2481401

Another valuable guide for designers who may think being participatory is the solution for all design problems. How do you ask users for feedback who do not even know their own heart?

Mummah, S. A., Robinson, T. N., King, A. C., Gardner, C. D., & Sutton, S. (2016). IDEAS (Integrate, Design, Assess, and Share): A Framework and Toolkit of Strategies for the Development of More Effective Digital Interventions to Change Health Behavior. *Journal of Medical Internet Research*, *18*(12), e317. http://doi.org/10.2196/jmir.5927

This article contains a invaluable checklist of steps for designers who wish to become interventionists, but is written from the perspective of clinicians and researchers and is helpful for teaching all the necessary steps in the right order. There is no recipe for being effective, but there are ingredients to be used to make the secret sauce :)

Wixon, D. (2011). Measuring fun, trust, confidence, and other ethereal constructs. *Interactions*, 18(6), 74. http://doi.org/10.1145/2029976.2029995

Just because you cannot agree on what something is, that doesn't mean you cannot measure it…

This American Life Episode #52: "Edge of Sanity", JAN 31, 1997.

Stories about the border between mental health and mental illness.

Jordan-Marsh, M. (2010). *Health Technology Literacy: A Transdisciplinary Framework for Consumer-Oriented Practice*. Jones & Bartlett Publishers.

Award-winning book from nursing and consumer perspective on some of the most innovative ways technology can be used, challenges and opportunities, with emphasis on aging. A big treasure trove of ideas.

TENTATIVE COURSE SCHEDULE

Dates	Topics/Daily Activities	Deliverable+Due Dates
JAN 10  **Week 1**	**Welcome and course overview; Mendeley tutorial; how to read and how to see** (instructor will be out of the country - session will be conducted via Google+ video conferencing; link will be provided by email for joining session remotely) **READINGS** **Gotsis, M. (2009). Games, virtual reality, and the pursuit of happiness. IEEE Computer Graphics and Applications, 29(5), 14–19. http://doi.org/10.1109/MCG.2009.94** The paper discusses the aspects of games and virtual reality in human happiness.In the past few decades, scientists have focused most of their attention on developing technologies that sharpen only the minds or relieve minds and bodies of certain duties. The people become smarter but incredibly unhealthy. Health games seem to offer one solution to this problem. Entertainment based health interventions have a huge potential to transform healthcare. Most people love games.Play is a fundamental mode of expression, fulfills the human need to connect with the "other," and can even be fun. Serious play is also great exercise for the mind and spirit. The Nintendo Wii was a good start for motivating people to get off the couch. But Wii isn't good enough for virtual reality (VR) fans due to easy sensor cheats, but Wii is the first step toward liberation. For many people, the Wii is as close to VR as they've ever gotten. Health games and sensor based experiences have recently become the new, shiny promise of hope and change in our field. However, an affordable, untethered full body VR experience is still the Holy Grail. Playing Flower game was as close to VR. Liberated from complex controller buttons, the author role played a flower petal by using the controller's tilt sensor to navigate a sublime landscape.It was exhilarating, and for once, appreciated all the special realtime graphics effects that compensated for the absence of head tracking and stereoscopy, luxuries that was always expected from VR. The author concluded that health games is an exciting research area today. It's an opportunity to reuse what learned from decades of CG, VR, and digital game research, merge that with knowledge with other areas, and release new ideas into the world. **Wattanasoontorn, V., Boada, I., García, R., & Sbert, M. (2013). Serious games for health. Entertainment Computing, 4(4), 231–247. http://doi.org/10.1016/j.entcom.2013.09.002** Maintaining and restoring health is a basic aspect of well being. On the other hand, serious games is an emerging technology growing in importance for specialized training, taking advantage of 3D games and game engines in order to improve the realistic experience of users. Thus, according to the advancement of technology and the desire to achieve good health using an interesting and enjoyable way, different serious games for health have been proposed during the last few years. In this paper, we present the core process of serious games and explain their functionalities. Then, we survey more than one hundred serious games for health and propose new classifications in four different aspects. Finally, we use fifteen relevant characteristics to classify all the surveyed games and present them with plenty of graphs and charts with corresponding discussion.	**Take brief online survey** **(not for grade) on class core concepts** **(to be emailed after registration closes because class is in flux)**

Baranowski, T., Blumberg, F., Buday, R., DeSmet, A., Fiellin, L. E., Green, C. S., … Young, K. (2016). Games for Health for Children—Current Status and Needed Research. Games for Health Journal, 5(1), 1–12. http://doi.org/10.1089/g4h.2015.0026

Videogames for health (G4H) offer exciting, innovative, potentially highly effective methods for increasing knowledge, delivering persuasive messages, changing behaviors, and influencing health outcomes. Although early outcome results are promising, additional research is needed to determine the game design and behavior change procedures that best promote G4H effectiveness and to identify and minimize possible adverse effects. Guidelines for ideal use of different types of G4H by children and adolescents should be elucidated to enhance effectiveness and minimize adverse effects. G4H stakeholders include organizational implementers, policy makers, players and their families, researchers, designers, retailers, and publishers. All stakeholders should be involved in G4H development and have a voice in setting goals to capitalize on their insights to enhance effectiveness and use of the game. In the future, multiple targeted G4H should be available to meet a population's diverse health needs in developmentally appropriate ways. Substantial, consistent, and sophisticated research with appropriate levels of funding is needed to realize the benefits of G4H.

Gotsis, M., & Baron, D. A. (2015). The Role of Video Games and Virtual Reality in Psychiatric Treatment. Psychiatry Advisor. Psychiatry Advisor. Retrieved from http://www.psychiatryadvisor.com/the-role-of-video-games-and-virtual-reality-in-psychiatric-treatment/article/408029/

Individuals and families of all ages are consumers of interactive entertainment in many forms. Games have matured as an artistic medium and they now explore emotional experiences that represent a wide spectrum of human emotions.

MEDIA RESOURCES:

- How to (seriously) read a scientific paper
- How To Read a Scholarly Journal Article
- Ways of Seeing by John Berger (Episode 1)

JAN 17

How brains are built and the foundations of lifelong resilience

IN-CLASS EXPERIENCE: The Brain Architecture Game (in teams of 3-4 people)

http://www.thebrainarchitecturegame.com

Week 2

READINGS

O'Neil, M. (2007). Can't I Just Invent My Own Metaphors? Why Research Matters in Developing Metaphorical Models. Washington, DC: FrameWorks Institute. Retrieved from http://www.frameworksinstitute.org/assets/files/eZines/Research_matters_in_developing_metaphorical_models.pdf

For some time, FrameWorks has been developing simplifying models for its projects, identifying this as an important frame element. Simplifying models are brief user-friendly explanations of complex processes or constructs -– sometimes they capture a mechanism, like how global warming is produced or how children develop. In this way, simplifying models allow a lay public to actively engage with the perspectives of experts. The simplifying models that

result from FrameWorks investigations can be shown to further public understanding of a social problem. FrameWorks researchers work with many elements of language to develop simplifying models, but a major research focus has been on metaphors. We work with metaphors in two primary ways. First, we analyze the metaphors that people use to describe, explain and reason about an issue. Second, we propose and test new metaphorical models that advocates might use to communicate with the public about that issue.

MEDIA RESOURCES:

- Brain Architecture
- Serve and Return
- Toxic Stress

JAN 24

Week 3

The impact of timing and quality of early childhood experiences on brain development, toxic stress, executive function

GUEST: Pat Levitt, PhD (confirmed)

READINGS

National Scientific Council on the Developing Child. (2014). Excessive stress disrupts the architecture of the developing brain: Working paper No.3. Retrieved from http://developingchild.harvard.edu/resources/wp3/

This working paper from the National Scientific Council on the Developing Child defines the concept of "toxic stress"—what happens when children experience severe, prolonged adversity without adult support. It discusses how significant adversity early in life can alter a child's capacity to learn and adapt to stressful situations, as well as how sensitive and responsive caregiving can buffer the effects of such stress. The paper also suggests how to create policies that minimize the disruptive impacts of toxic stress on young children.

National Scientific Council on the Developing Child. (2011). Building the brain's "air traffic control" system: How early experiences shape the development of executive function: Working paper No.11. Retrieved from http://developingchild.harvard.edu/resources/building-the-brains-air-traffic-control-system-how-early-experiences-shape-the-development-of-executive-function/

Executive function skills help us plan, focus attention, switch gears, and juggle multiple tasks—much like an air traffic control system at a busy airport. Acquiring the early building blocks of these skills is one of the most important and challenging tasks of the early childhood years. Their strength is critical to healthy development throughout childhood, adolescence, and early adulthood. This working paper from the National Scientific Council on the Developing Child explains how these lifelong skills develop, what can disrupt their development, and how supporting them pays off in school and life.

Prot, S., Anderson, C., Gentile, D., Brown, S., & Swing, E. (2014). The positive and negative effects of video game play. In A. Jordan & D. Romer (Eds.), Children and Media (pp. 109–128). New York: Oxford University Press. Retrieved from

http://www.psychology.iastate.edu/faculty/caa/abstracts/2010-2014/14PAGBS.pdf

(no abstract available)

Christakis, D. A. (2014). Interactive media use at younger than the age of 2 years. JAMA Pediatrics, 168(5), 399. http://doi.org/10.1001/jamapediatrics.2013.5081

In 2011, the American Academy of Pediatrics (AAP) reaffirmed its original statement on infants and media, leaving the 1999 recommendation essentially unchanged stating “we discourage the use of media by children under the age of two.”1 Although published in October 2011, the policy statement had been completed much earlier owing to the lengthy internal review process of the AAP.1,2 The timing is notable because the iPad debuted in April 2010, meaning that the statement was drafted with no knowledge that such a device would ever exist. Now, 3 years later, we still know surprisingly little about how iPads and other interactive media technologies affect children’s cognition—research is simply unable to keep up with the pace of technological advances—and these devices are increasingly popular. The salient question then is whether the discourage media verbiage of the 2011 statement should be applied to them.

Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. Science (New York, N.Y.), 333(6045), 959–64. http://doi.org/10.1126/science.1204529

To be successful takes creativity, flexibility, self-control, and discipline. Central to all those are executive functions, including mentally playing with ideas, giving a considered rather than an impulsive response, and staying focused. Diverse activities have been shown to improve children's executive functions: computerized training, noncomputerized games, aerobics, martial arts, yoga, mindfulness, and school curricula. All successful programs involve repeated practice and progressively increase the challenge to executive functions. Children with worse executive functions benefit most from these activities; thus, early executive-function training may avert widening achievement gaps later. To improve executive functions, focusing narrowly on them may not be as effective as also addressing emotional and social development (as do curricula that improve executive functions) and physical development (shown by positive effects of aerobics, martial arts, and yoga).

Bratton, S. C., Ray, D., Rhine, T., & Jones, L. (2005). The Efficacy of Play Therapy With Children: A Meta-Analytic Review of Treatment Outcomes. Professional Psychology: Research and Practice, 36(4), 376–390. http://doi.org/10.1037/0735-7028.36.4.376

The efficacy of psychological interventions for children has long been debated among mental health professionals; however, only recently has this issue received national attention, with the U.S. Public Health Service (2000) emphasizing the critical need for early intervention and empirically validated treatments tailored to children's maturational needs. Play therapy is a developmentally responsive intervention widely used by child therapists but often criticized for lacking an adequate research base to support its growing practice. A meta-analysis of 93 controlled outcome studies (published 1953-2000) was conducted to assess the overall efficacy of play therapy and to determine factors that might impact its effectiveness. The overall treatment effect for play therapy interventions was 0.80 standard deviations. Further analysis revealed that effects were more positive for humanistic than for nonhumanistic treatments and that using parents in play therapy produced the largest effects. Play therapy appeared equally effective across age, gender, and presenting issue.

MEDIA RESOURCES:

- The role of early childhood experiences on brain development by Judy Cameron
- Sensory Overload

JAN 31

Week 4

From Epicurus to Panksepp: course introduction, philosophical and historical perspective of the field; brief history of interactive entertainment applications for health; heuristic inquiry

WRITTEN ASSIGNMENT I DUE:

Post-play written survey of **The Brain Architecture Game** (will be collected online via Qualtrics)

(postponed until all have completed playing - new date will be posted here)

READINGS

Granic, I., Lobel, A., & Engels, R. C. M. E. (2014). The benefits of playing video games. The American Psychologist, 69(1), 66–78. http://doi.org/10.1037/a0034857

Video games are a ubiquitous part of almost all children's and adolescents' lives, with 97% playing for at least one hour per day in the United States. The vast majority of research by psychologists on the effects of "gaming" has been on its negative impact: the potential harm related to violence, addiction, and depression. We recognize the value of that research; however, we argue that a more balanced perspective is needed, one that considers not only the possible negative effects but also the benefits of playing these games. Considering these potential benefits is important, in part, because the nature of these games has changed dramatically in the last decade, becoming increasingly complex, diverse, realistic, and social in nature. A small but significant body of research has begun to emerge, mostly in the last five years, documenting these benefits. In this article, we summarize the research on the positive effects of playing video games, focusing on four main domains: cognitive, motivational, emotional, and social. By integrating insights from developmental, positive, and social psychology, as well as media psychology, we propose some candidate mechanisms by which playing video games may foster real-world psychosocial benefits. Our aim is to provide strong enough evidence and a theoretical rationale to inspire new programs of research on the largely unexplored mental health benefits of gaming. Finally, we end with a call to intervention researchers and practitioners to test the positive uses of video games, and we suggest several promising directions for doing so.

Vogt, K. M. (2011). All Sense-Perceptions are True : Epicurean responses to skepticism and relativism. In J. Lezra (Ed.), Lucretius and Modernity (pp. 1–23). New York, New York, USA. Retrieved from http://katjavogt.com/pdf/katja_vogt_truth_perception.pdf

Epicurean epistemology is infamous for the claim that all sense-perceptions are true. This is how Lucretius puts it: what is perceived by any of the senses at any given time is true (De rerum natura 4.499). This claim – which I shall call SPT – seems deeply misguided. It appears obvious that sense-perception can err. The plan for this paper is to show that SPT is a sophisticated philosophical proposal and, what is more, a proposal that aims to capture the truth in relativism.

Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. Psychotherapy and Psychosomatics, 83(1), 10–28. http://doi.org/10.1159/000353263

This article reviews research and interventions that have grown up around a model of psychological well-being generated more than two decades ago to address neglected aspects of positive functioning such as purposeful engagement in life, realization of personal talents and capacities, and enlightened self-knowledge. The conceptual origins of this formulation are revisited and scientific products emerging from 6 thematic areas are examined: (1) how well-being changes across adult development and later life; (2) what are the personality correlates of well-being; (3) how well-being is linked with experiences in family life; (4) how

well-being relates to work and other community activities; (5) what are the connections between well-being and health, including biological risk factors, and (6) via clinical and intervention studies, how psychological well-being can be promoted for ever-greater segments of society. Together, these topics illustrate flourishing interest across diverse scientific disciplines in understanding adults as striving, meaning-making, proactive organisms who are actively negotiating the challenges of life. A take-home message is that increasing evidence supports the health protective features of psychological well-being in reducing risk for disease and promoting length of life. A recurrent and increasingly important theme is resilience - the capacity to maintain or regain well-being in the face of adversity. Implications for future research and practice are considered.

Kenny, G. (2012). An introduction to Moustakas's heuristic method. Nurse Researcher, 19(3), 6–11. Retrieved from http://rcnpublishing.com/doi/abs/10.7748/nr2012.04.19.3.6.c9052

This paper is intended to introduce Moustakas's heuristic method to a wider nursing research audience. It is aimed at identifying the main principles that underpin this approach, and outlining the processes and structure that this form of inquiry might take. Heurism is a generic term that encapsulates a way of thinking and exploring that is shared by such diverse disciplines as computer programming, mathematics and philosophy. All these disciplines at some point require an understanding of the process that comprises the experience of discovery that pre-empts the formulation of a hypothesis. Review methods The heuristic method is critically reviewed and its strengths are identified. The discourse offered by post-modernism, which challenges some of the method's main principles, is explored and potential solutions offered. This paper highlights how research questions that are heuristic in origin can create conditions that offer the possibility for change in the researcher. It explores how the internal change that occurs in the researcher can be a catalyst for deeper appreciation of the question under investigation and how this personal transformation can be relevant for practice and research. Conclusion Nursing practice and research are ideally placed to engage with questions that emerge heuristically from our experience. Implications for research/practice Moustakas's method gives practitioners and researchers the opportunity to explore internal and personal questions. It suggests that the personal nature of these questions can contribute to the contexts and environments in which care and research take place.

Djuraskovic, I., & Arthur, N. (2010). Heuristic inquiry: A personal journey of acculturation and identity reconstruction. The Qualitative Report (Vol. 15). Retrieved from http://eric.ed.gov/?id=EJ914023

Heuristic methodology attempts to discover the nature and meaning of phenomenon through internal self-search, exploration, and discovery. Heuristic methodology encourages the researcher to explore and pursue the creative journey that begins inside one's being and ultimately uncovers its direction and meaning through internal discovery (Douglass & Moustakas, 1985). The purpose of this paper is to familiarize readers with using heuristic methodology in research. I (Ivana) share my personal notes of how I decided to use heuristic methodology in my research. In the discussion, I address the nature of heuristic methodology, including its limitations. Finally, I present excerpts from a creative synthesis in the form of three letters to illuminate the final self-reflections about the results of my research.

MEDIA RESOURCES

- Epicureanism (BBC)

FEB 7 Affect regulation, emotional systems, trauma, anxiety, depression, science of psychotherapy

READINGS

Week 5

van Rooij, M., Lobel, A., Harris, O., Smit, N., & Granic, I. (2016). DEEP: A Biofeedback Virtual Reality Game for Children At-risk for Anxiety. In Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '16 (pp. 1989–1997). New York, New York, USA: ACM Press. http://doi.org/10.1145/2851581.2892452

Anxiety disorders are among the most frequently diagnosed mental health problems in children, leading to potentially devastating outcomes on a personal level and high costs for society. Although evidence-based interventions are readily available, their outcomes are often disappointing and variable. In particular, existing interventions are not effective long-term nor tailored to differences in individual responsiveness. We therefore need a new approach to the prevention and treatment of anxiety in children and a commensurate scientific methodology to uncover individual profiles of change. We argue that applied games have a great deal of potential for both. The current paper presents results from a recent pilot study using a biofeedback virtual reality game (DEEP). DEEP integrates established therapeutic principles with an embodied and intuitive learning process towards improved anxiety regulation skills.

Schore, A. N. (2005). Back to basics: Attachment, affect regulation, and the developing right brain: Linking developmental neuroscience to pediatrics. Pediatrics in Review, 26(6), 204–217. http://doi.org/10.1542/pir.26-6-204

We are in the midst of an exciting period for clinical practitioners, one in which the connections between the basic and applied sciences are being more tightly forged. A powerful engine driving this progression of knowledge is the recent remarkable advance in biotechnology, especially imaging technologies. Noninvasive studies of organ systems have increased substantially our understanding of the biologic processes that underlie various diseases of the body. At the same time, neuroimaging research of both psychological functions and psychiatric conditions has generated more complex models of normal and abnormal operations of the human mind. Another catalyst of the continuing dramatic increase in information is the rapid expansion of collaborative interdisciplinary research. Of particular relevance to pediatrics, this same time period has seen an explosion in infant research that integrates neurobiological studies of brain development and psychological studies of emotional, social, and cognitive development. Developmental studies, which span a spectrum of scientific and medical disciplines, now are serving as a convergence point for complex models of structure and function, brain, mind, and body.

Wallace, D. (1998). The depressed person. HARPERS, pp. 57–64. Retrieved from http://harpers.org/wp-content/uploads/HarpersMagazine-1998-01-0059425.pdf

"The Depressed Person" relays the life of a woman who, though shallow and unlikeable, struggles through a familiar brand of depression with her therapist and her few relatively supportive friends. Independent of the woman's grating personality (which gathered a fair amount of criticism upon publication), her grapple with depression should resonate with those who have encountered it ourselves. The shame the depressed person experiences when calling members of her support system results in an all too recognisable sense of inadequacy at the formidable challenge of verbalising her anguish. Wallace neatly describes her drama with prescription medications as well as her complicated relationship with her therapist." (Review by Kathleen Elise)

Berkman, E. T., Graham, A. M., & Fisher, P. a. (2012). Training self-control: A domain-general translational neuroscience approach. Child Development Perspectives, 6(4), 374–384. http://doi.org/10.1111/j.1750-8606.2012.00248.x

Self-control plays an important role in healthy development and has been shown to be amenable to intervention. This article presents a theoretical framework for the emerging area of "brain-training" interventions that includes both laboratory-based direct training methods and

TAKE-HOME EXAM:

topics will be announced by email

ecologically valid school-, family-, and community-based interventions. Although these approaches have proliferated in recent years, evidence supporting them is just beginning to emerge, and conceptual models underlying many of the techniques they employ tend to be underspecified and imprecise. Identifying the neural systems responsible for improvements in self-control may be of tremendous benefit not only for overall intervention efficacy but also for basic science issues related to underlying shared biological mechanisms of psychopathology. This article reviews the neurodevelopment of self-control and explores its implications for theory, intervention, and prevention. It then presents a neurally informed framework for understanding self-control development and change and discusses how this framework may inform future intervention strategies for individuals suffering with psychopathology or drug abuse/dependence, or for young children with delays in cognitive or emotional functioning.

Bevington, D., Fuggle, P., Fonagy, P., Target, M., & Asen, E. (2013). Innovations in practice: Adolescent mentalization-based integrative therapy (AMBIT) – a new integrated approach to working with the most hard to reach adolescents with severe complex mental health needs. Child and Adolescent Mental Health, 18(1), 46–51.
http://doi.org/10.1111/j.1475-3588.2012.00666.x

Background: 'Hard to reach' young people are associated by virtue of their serious, multiple, and complex needs, the difficulty of delivering effective help to them, and their poor long-term outcomes. There is a lack of published evidence relating to the effectiveness of interventions directed at this group. Method: We review these concerns and the options available to service commissioners and clinicians seeking, if not an evidence- based approach then at least an evidence-oriented one. A mentalization-based multimodal intervention (AMBIT) is briefly described, proposing a new kind of specialist practitioner and taking a radically different approach to treatment manualization. Results: A brief description is given of the different settings in which AMBIT is currently being developed, deployed, and evaluated, and of lessons learned. Conclusions: AMBIT offers promise as an evolving 'open source' framework supporting development of evidence-based local practice in chaotic complex settings.

Ceranoglu, T. A. (2010). Star Wars in psychotherapy: video games in the office. Academic Psychiatry : The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry, 34(3), 233–6.
http://doi.org/10.1176/appi.ap.34.3.233

Background: Video games (VGs) are increasingly becoming the pastime of choice for American youth. Recent US surveys indicate that up to 99% of adolescents play VGs regularly. Caregivers and clinicians are appropriately concerned about the effects of VGs on children's well being. Adolescents'; play habits may expose them to negative effects associated with VG play on sleep. Methods: This article selectively reviews the literature documenting effects of video game play on sleep. A search of medical literature was carried out by using the keywords "video games" "computer games," "sleep," "mental health" and "adolescents." Results: There is a small but growing body of literature examining the extent of VG play effects on sleep. Timing and duration of VG play are among the most significant circumstances that are associated with changes in sleep onset latency, total sleep duration and sleep efficiency. Findings on effects on sleep architecture are less consistent. Conclusions: VG play at night may lead to delay of sleep onset and interfere with sleep duration and efficiency. These effects appear to be particularly robust in children and young adolescents. Caregiver supervision is crucial in ensuring the appropriate use of VGs. Clinicians have a valuable opportunity to inform the public about these effects of VG play. More research focusing on mechanisms of these effects is needed.

Kumar, A. (2013). The play is now reality: affective turns, narrative struggles, and theorizing emotion as practical experience. Culture, Medicine and Psychiatry, 37(4), 711–36.
http://doi.org/10.1007/s11013-013-9333-z

Discursive approaches to subjectivity have been critiqued most recently for its dismissal of a living body that moves and senses. While identity as performative has proven invaluable to contemporary cultural theory for its dynamic conceptualization of power in everyday practice, the emergence of what some scholars have named an "affective turn" has prompted calls for configuring the body as more than a complex set of significations, but also a vibrant energy field in perpetual emergence. Centered on an enacted story created by two clinical therapists and two South Asian immigrant domestic violence survivors during a therapeutic support group session, this paper brings the affective turn into dialog with narrative theory. I juxtapose two different readings of this clinical "performance." One interpretation recognizes affect theory's value for highlighting sensation and the virtual in moments of transformation. Nonetheless I argue it overlooks a lived history. Thus, using a specifically dramatistic approach to narrative, the second analysis stresses the importance of personal experience and meaning-making in strengthening the link between affect and subjectivity. In doing so, the case study also argues for emotion's critical link to practical and moral experience.

Beck, A. T., & Bredemeier, K. (2016). A Unified Model of Depression: Integrating Clinical, Cognitive, Biological, and Evolutionary Perspectives. Clinical Psychological Science, 2167702616628523. http://doi.org/10.1177/2167702616628523

We propose that depression can be viewed as an adaptation to conserve energy after the perceived loss of an investment in a vital resource such as a relationship, group identity, or personal asset. Tendencies to process information negatively and experience strong biological reactions to stress (resulting from genes, trauma, or both) can lead to depressogenic beliefs about the self, world, and future. These tendencies are mediated by alterations in brain areas/networks involved in cognition and emotion regulation. Depressogenic beliefs predispose individuals to make cognitive appraisals that amplify perceptions of loss, typically in response to stressors that impact available resources. Clinical features of severe depression (e.g., anhedonia, anergia) result from these appraisals and biological reactions that they trigger (e.g., autonomic, immune, neurochemical). These symptoms were presumably adaptive in our evolutionary history, but are maladaptive in contemporary times. Thus, severe depression can be considered an anachronistic manifestation of an evolutionarily based "program."

MEDIA RESOURCES:

- The Origin of Emotions (Brain Science Podcast)
- Despicable Me 2 Fire Alarm Scene
- Keynote lecture "It is all in the game" by Isabela Granic
- "Medical Virtual Reality" by Skip Rizzo

PRIOR ART: Nevermind, Mindlight, DEEP

FEB 14

Week 6

Theory of mind, mentalization, mindfulness, presence, empathy

READINGS

Carlson, S. M., Koenig, M. A., & Harms, M. B. (2013). Theory of mind. Wiley Interdisciplinary Reviews: Cognitive Science, 4(4), 391–402. http://doi.org/10.1002/wcs.1232

Theory of mind and its development has been a significantly important—and challenging—topic of research in cognitive science for three decades. This review summarizes our knowledge of when and how children come to understand their own and others' minds, including the developmental timetable, old and new measures, and foundational skills in infancy. We review recent research on theory-of-mind (ToM) and learning, that is, ways in which children's understanding of other minds informs how they learn about the world, as well

as evidence for an important role of domain-general cognitive skills (executive function) in the development of ToM, and the neural networks that are most strongly implicated. Finally, we propose future directions for research in this vast and growing field.

Focquaert, F. (2014). Mandatory neurotechnological treatment: ethical issues. Theoretical Medicine and Bioethics, 35(1), 59–72. http://doi.org/10.1007/s11017-014-9276-6

What if neurofeedback or other types of neurotechnological treatment, by itself or in combination with behavioral treatment, could achieve a successful "rewiring" of the psychopath's brain? Imagine that such treatments exist and that they provide a better long-term risk-minimizing strategy compared to imprisonment. Would it be ethical to offer such treatments as a condition of probation, parole, or (early) prison release? In this paper, I argue that it can be ethical to offer effective, non-invasive neurotechnological treatments to offenders as a condition of probation, parole, or (early) prison release provided that: (1) the status quo is in no way cruel, inhuman, degrading, or in some other way wrong, (2) the treatment option is in no way cruel, inhuman, degrading, or in some other way wrong, (3) the treatment is in the best interests of the offender, and (4) the offender gives his/her informed consent.

Gallagher, S. (2014). In your face: transcendence in embodied interaction. Frontiers in Human Neuroscience, 8, 495. http://doi.org/10.3389/fnhum.2014.00495

In cognitive psychology, studies concerning the face tend to focus on questions about face recognition, theory of mind (ToM) and empathy. Questions about the face, however, also fit into a very different set of issues that are central to ethics. Based especially on the work of Levinas, philosophers have come to see that reference to the face of another person can anchor conceptions of moral responsibility and ethical demand. Levinas points to a certain irreducibility and transcendence implicit in the face of the other. In this paper I argue that the notion of transcendence involved in this kind of analysis can be given a naturalistic interpretation by drawing on recent interactive approaches to social cognition found in developmental psychology, phenomenology, and the study of autism.

Kandalaft, M. R., Didehbani, N., Krawczyk, D. C., Allen, T. T., & Chapman, S. B. (2013). Virtual reality social cognition training for young adults with high-functioning autism. Journal of Autism and Developmental Disorders, 43, 34–44. http://doi.org/10.1007/s10803-012-1544-6

Few evidence-based social interventions exist for young adults with high-functioning autism, many of whom encounter significant challenges during the transition into adulthood. The current study investigated the feasibility of an engaging Virtual Reality Social Cognition Training intervention focused on enhancing social skills, social cognition, and social functioning. Eight young adults diagnosed with high-functioning autism completed 10 sessions across 5 weeks. Significant increases on social cognitive measures of theory of mind and emotion recognition, as well as in real life social and occupational functioning were found post-training. These findings suggest that the virtual reality platform is a promising tool for improving social skills, cognition, and functioning in autism.

Gotsis, M., Piggot, J., Hughes, D., & Stone, W. (2010). SMART-Games: A Video Game Intervention for Children with Autism Spectrum Disorders. In Proceedings of IDC 2010, The 9th International Conference on Interaction Design and Children (pp. 194–197). Barcelona, Spain: ACM Press. http://doi.org/10.1145/1810543.1810569

In this paper, we describe the design of a preliminary prototype and pilot results of the SMART-Games suite, a video game intervention for children with Autism Spectrum Disorders (ASDs). The prototype, consisting of a stuffed animal game controller with an on-screen video game, emphasizes empathy and related social skills. The proposed design aims to

accommodate users across the autism spectrum through adaptive modules focused on core deficits: sensory and motor skills, imitation and turn-taking, joint attention and theory of mind. Response from the preliminary pilot suggests that the application appeals to the target audience and further development is underway.

Pickering, G., & Gibson, S. (2015). Pain, emotion and cognition: A complex nexus. Pain, Emotion and Cognition: A Complex Nexus, 1–247. http://doi.org/10.1007/978-3-319-12033-1

First-person pain (the subjective sensory and affective experiences that we associate with tissue damage) motivates changes in the sufferer's behavior that communicate the experience to others. The ability to infer features of another person's pain by observing a sufferer's behavior can be characterized as third-person pain. This chapter reviews research into the nature and determinants of third-person pain, focusing primarily on studies of the interpretation of facial expressions. Existing communication frameworks that attempt to organize thinking in this area are reviewed. Emerging conceptions of empathy and its role in third-person pain processes are described, including neuroimaging studies suggesting that fi rst- person and third-person pain share common features of processing. Based on a review of the existing literature, a new organizing framework focused on the link between encoding of a pain signal by the sufferer and its decoding by the observer is developed. Components of this framework include preattentive processing, detection and registration, evaluation, differential responding (including the fact that the behavioral response to a sufferer may not necessarily be prosocial), and effects upon the observer. Finally, clinical implications of work in this field are considered.

PRIOR ART: Pluff

MEDIA RESOURCES:

- This American Life Episode #188: Kid Logic
- Smarties and Sally-Anne Test
- Being There (1979)
- Interacting with Autism
- "What is mentalization?" by Peter Fonagy

FEB 21

Week 7

The Halo game as a case study on emotion, behavior and large-scale usability testing

GUEST LECTURE: Dennis Wixon, PhD (confirmed)

Wixon, D. (2007). The design of emotionally engaging products. Interactions, 14(5), 22-23. http://doi.org/10.1145/1288515.1288531

This is a column for Interactions Magazine. First, a brief overview of the James-Lange Theory of emotions is presented. Next the column discusses the advantages of applying this approach to games:

- it is aligned with the way many game designers think about games,
- it avoids the confusion of explanation with cause
- it is consistent with some modern cybernetic approaches
- it leads designers and researchers to think in concrete terms, regarding the desired emotional outcomes in the game and aspects of the design that entice the player to perform the actions that are likely to lead to those outcomes

The column closes with a brief discussion of some other products that incorporate such an approach and the relation of this approach to the MDA (mechanics-dynamics-aesthetics) theory of game design.

Kim, J. Gunn, D.V., Schuh, E. Phillips, B.C., Pagulayan, R. J., & Wixon, D. (2008) Tracking Real-Time User Experience (TRUE): A

comprehensive instrumentation solution for complex interaction systems. CHI 2008 Proceedings, April 5-10, 442-451. **http://doi.org/10.1145/1357054.1357126**

The paper describes a method for automatic recording and analyzing user initiated-events(UIE). It is important to note that these UIE are not behavior per-se. Instead they are system events that are triggered by user behavior. Recoding of UIEs has a long tradition in Psychology dating back to the early work of Skinner (the cumulative record) and Thorndike (the puzzle box). Modern technology greatly simplifies the recording of UIEs. UIEs can be automatically written to data files as the user interacts with the system. These data files can be consolidated and analyzed by powerful statistical programs and/or displayed for visualization. Data can be collected remotely and consolidated over a network and the data collection system can be designed so as that its operation is virtually invisible to the user. Ironically the power and flexibility of such systems makes their design more complex. The complexity stems from a matrix of interdependent decisions that researchers must make. These decisions are about the type of variables to collect, the frequency of collection, and associated data (e.g. time stamps). It is relatively easy to collect so much data that the result is impossible to understand and analyze in any meaningful and timely way. In addition, even an "ideal" selection of UIEs would only show the system states over time. In other words, they could be a complete record of how the system responded to user actions but by themselves they would not measure the users' reactions to these system states. Importantly the TRUE system also integrates these data streams (UIEs and user reaction) with time-stamped videos of the user's screen while she interacts with the system. Thus, the TRUE system provides a holistic look at the users' interaction with and reaction to the system with the goal of providing meaningful, i.e. design-relevant information to an engineering/design team in a timely way. Design-relevant means information that designers can use to change system actions and feedback to better achieve their (the designers') overall goals. Timely means that TRUE is tailored to fit into the development/design cycle of active product teams. The paper outlines the architecture of the data collection, storage and reporting of the TRUE system. The application of the TRUE system is illustrated with two case studies which describe the application of TRUE to the design of two successful products: Halo 2 and Shadowrun.

Pagulayan, R., Keeker, K, Wixon, D. Romero, R. Fuller, T. (2002). User Centered Design in Games. In Handbook for Human Computer Interaction in Systems. Mahwah, NJ. Lawrence Erlbaum Associates. Inc. 217-266. Available in Science Library USC

Also available here:
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.3810&rep=rep1&type=pdf

The chapter reviews several user-centered research techniques that have been applied to video games and presents some case studies of their application. Games differ from productivity applications in that by definition games are played for enjoyment, while productivity applications are used to accomplish a task. While many of the methods that are used to evaluate and improve the usability of productivity applications are applied to games, the goals and challenges of applying these methods differ for games. One of the major challenges for conducting research in games is that the goal of most games is to engender an emotional or aesthetic feeling. Thus, one important goal of research is to identify design elements that detract from these goals. Another is to assess the degree to which these goals are achieved. In both cases, actionable research findings will point to design elements that detract from or contribute to the designer's goal. Designer's goals can be complex and changing. For example, when a player begins a game they may need to configure the system (e.g. choose a vehicle, select its properties and appearance, and load its weapons). Making this stage artificially challenging detracts from a pleasurable experience of a game. On the other hand, once the system is configured the designer's goal may be to introduce new challenges and increase difficulty progressively. These different goals will require different research methods. The first being more like a traditional usability problem, i.e. design the system so the player completes the configuration task as quickly as possible with the least number of errors. The second requires more subtle and empirical techniques to assess what the player understands at each stage of game and what elements of the design will contribute or detract from that understanding. Overall research methods can be grouped according to whether they focus on behavior or on user attitudes/evaluation. In other words, does the method focus on what users

do or what they think and feel. When the focus is on behavioral methods, such as direct observation, data-logging, and video recording techniques are used. When the focus is on user evaluation, questionnaires, structured and unstructured interviews, and open-ended questions are used. In most cases these methods are combined so that the research can match both the question at hand and the overall development process being used to create the game. Five case studies are presented. These examples involve the use and combination of multiple techniques. All of them are taken directly from the development of commercial games which enjoyed relatively high degrees of success both critically and financially.

Wixon, D. (1995). Qualitative research methods in design and development. Interactions, 2(4), 19–26. http://doi.org/10.1145/225362.225365

This paper briefly reviews qualitative research methods and describes a set of set of dimensions which can be used to organize and reflect on research methods. The methods considered involve both data collection and data analysis This approach differs from those that categorize methods. Instead the methods are placed on continuous dimensions. These dimensions are

- Filtering vs. Reflection
- Comprehension vs. Action
- Discovery vs. Decision
- Classifying elements vs. Generating relationships

In filtering data elements are included or excluded from consideration. All measurement involves filtering in the sense that measurement focusses on some aspect of a phenomenon while ignoring others (e.g. measuring length involves ignoring color). In contrast reflection involves considering a phenomenon as presented from a vantage point. This process allows for emergent properties of the phenomenon to be considered. Comprehension involves understanding a phenomenon by describing it and placing it in a broader narrative or theoretical context. The result of this comprehension often has immediate practical implications. Alternatively, “action” means just that. A phenomenon is considered solely in terms of its implications for action. In this case, action means re-design or improvement. A leaky faucet requires action, i.e. fix it and not comprehension of the nature of the leak. Discovery is the apprehension of a phenomenon that is outside one’s normal frame of reference. It is often characterized by surprise or disbelief, but upon acceptance requires a realignment of one’s thinking. On the other hand, decision is the choice between alternatives using a prescribed process, e.g. the statistical test of the results from an experiment in which one chooses the null or alternate hypothesis. Finally classifying elements involves putting elements into categories, e.g. humans are rational animals. Placing an object (people in general) in a category (animals) and simultaneously differentiating them from that category (rational). In contrast, generating relationships involves the postulation of specific relationship between independently defined and measured entities. For example, force is equal to mass times acceleration (F = MA). Each of these properties is independently defined and their relationship is specified. These dimensions are applied research methods in human-computer interaction.

Wixon, D. (2003). Evaluating usability methods:why the current literature fails the practitioner. Interactions, 10(4), 28–34. http://doi.org/10.1145/838830.838870

The paper raises questions about the literature which evaluates user research methods. The assumptions underlying these traditional methods are critiqued. These assumptions are:

1. Number of problems detected is the most appropriate criterion for evaluating a method
2. Methods can be evaluated in isolation from other practical goals and context.
3. A quasi scientific approach is the best way to choose the “best” method.

First problem detection is inadequate and misleading because it ignores an important criterion for evaluating methods in product development. That is whether the detected problem was addressed or not. It also leads researchers to discourage teams from fixing problems as soon as they are discovered. Second it creates an adversarial environment between the researchers and the design team. In effect, the researchers are turned into product critics who are not

helping create solutions for the problems discovered. Finally, it eschews a case-study approach to the evaluation of methods. In a case study approach methods are evaluated in the full context of product development and commercial business. The paper presents two case studies of a research method applied to actual products.

FEB 28

Measurement and screening challenges for entertainment efficacy, safety, and effectiveness: Presence, Intrinsic Motivation, Psychopathology

Case studies: Helping our Heroes and Skyfarer study.

Week 8

Peach - Presence Research in Action. (2011). Measurement compendium from presence-research.org. Retrieved May 11, 2015, from http://www.peachbit.org/?q=node/114

A classic list of presence measurement tools.

van Baren, J., & IJsselsteijn, W. (2004). Measuring Presence: A Guide to Current Measurement Approaches. *Measurement*. Retrieved from http://www.mendeley.com/research/measuring-presence-guide-current-measurement-approaches/

This compendium constitutes a comprehensive overview of presence measures described in the literature so far. It contains both subjective and objective approaches to presence measurement. The theoretical basis of measures is described, along with research in which they have been applied, and other relevant literature.

Chertoff, D. B., Goldiez, B., & LaViola, J. J. (2010). Virtual experience test: A virtual environment evaluation questionnaire. *Proceedings - IEEE Virtual Reality*, 103–110. http://doi.org/10.1109/VR.2010.5444804

We present the development and evaluation of the Virtual Experience Test (VET). The VET is a survey instrument used to measure holistic virtual environment experiences based upon the five dimensions of experiential design: sensory, cognitive, affective, active, and relational. Experiential Design (ED) is a holistic approach to enhance presence in virtual environments that goes beyond existing presence theory (i.e. a focus on the sensory aspects of VE experiences) to include affective and cognitive factors. To evaluate the VET, 62 participants played the commercial video game Mirror's Edge. After gameplay both the VET and the ITC-Sense of Presence Inventory (ITC-SOPI) were administered. A principal component analysis was performed on the VET and it was determined that the actual question clustering coincided with the proposed dimensions of experiential design. Furthermore, scores from the VET were shown to have a significant relationship with presence scores on the ITC-SOPI. The results of this research produced a validated measure of holistic experience that could be used to evaluate virtual environments. Furthermore, our experiment indicates that virtual environments utilizing holistic designs can result in significantly higher presence.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55*(1), 68–78. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11392867

Human beings can be proactive and engaged or, alternatively, passive and alienated, largely as a function of the social conditions in which they develop and function. Accordingly, research guided by self-determination theory has focused on the social-contextual conditions that facilitate versus forestall the natural processes of self-motivation and healthy psychological development. Specifically, factors have been examined that enhance versus undermine intrinsic motivation, self-regulation, and well-being. The findings have led to the postulate of three innate psychological needs--competence, autonomy, and relatedness--which when satisfied yield enhanced self-motivation and mental health and when thwarted lead to diminished motivation and well-being. Also considered is the significance of these psychological needs and processes within domains such as health care, education, work, sport, religion, and psychotherapy.

MAR 7

Self and identity, gender, sexuality, bullying

GUEST PANEL: Andy Sacher, MFA (confirmed)

READINGS:

(see Bonnie Ruberg's chapter in the class private Google Drive)

TAKE-HOME EXAM DUE submission via Blackboard

Week 9

Weil, L. G., Fleming, S. M., Dumontheil, I., Kilford, E. J., Weil, R. S., Rees, G., … Blakemore, S.-J. (2013). The development of metacognitive ability in adolescence. Consciousness and Cognition, 22(1), 264–71. http://doi.org/10.1016/j.concog.2013.01.004

Introspection, or metacognition, is the capacity to reflect on our own thoughts and behaviours. Here, we investigated how one specific metacognitive ability (the relationship between task performance and confidence) develops in adolescence, a period of life associated with the emergence of self-concept and enhanced self-awareness. We employed a task that dissociates objective performance on a visual task from metacognitive ability in a group of 56 participants aged between 11 and 41 years. Metacognitive ability improved significantly with age during adolescence, was highest in late adolescence and plateaued going into adulthood. Our results suggest that awareness of one's own perceptual decisions shows a prolonged developmental trajectory during adolescence.

Sebastian, C., Burnett, S., & Blakemore, S.-J. (2008). Development of the self-concept during adolescence. Trends in Cognitive Sciences, 12(11), 441–6. http://doi.org/10.1016/j.tics.2008.07.008

Adolescence is a period of life in which the sense of 'self' changes profoundly. Here, we review recent behavioural and neuroimaging studies on adolescent development of the self-concept. These studies have shown that adolescence is an important developmental period for the self and its supporting neural structures. Recent neuroimaging research has demonstrated that activity in brain regions associated with self-processing, including the medial prefrontal cortex, changes between early adolescence and adulthood. These studies indicate that neurocognitive development might contribute to behavioural phenomena characteristic of adolescence, such as heightened self-consciousness and susceptibility to peer influence. We attempt to integrate this recent neurocognitive research on adolescence with findings from developmental and social psychology.

Salmivalli, C., Voeten, M., & Poskiparta, E. (2011). Bystanders matter: associations between reinforcing, defending, and the frequency of bullying behavior in classrooms. Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 40(5), 668–676. http://doi.org/10.1080/15374416.2011.597090

This study investigated whether the bystanders? behaviors (reinforcing the bully vs. defending the victim) in bullying situations are related to the frequency of bullying in a classroom. The sample consisted of 6,764 primary school children from Grades 3 to 5 (9?11 years of age), who were nested within 385 classrooms in 77 schools. The students filled out Internet-based questionnaires in their schools? computer labs. The results from multilevel models showed that defending the victim was negatively associated with the frequency of bullying in a classroom, whereas the effect of reinforcing the bully was positive and strong. The results suggest that bystander responses influence the frequency of bullying, which makes them suitable targets for antibullying interventions.

Sabella, R. a., Patchin, J. W., & Hinduja, S. (2013). Cyberbullying myths and realities. Computers in Human Behavior, 29(6), 2703–2711. http://doi.org/10.1016/j.chb.2013.06.040

Bullying has long been a concern of youth advocates (e.g., educators, counselors, researchers, policy makers). Recently, cyberbullying (bullying perpetrated through online technology) has dominated the headlines as a major current-day adolescent challenge. This article reviews available empirical research to examine the accuracy of commonly-perpetuated claims about cyberbullying. The analysis revealed several myths about the nature and extent of cyberbullying that are being fueled by media headlines and unsubstantiated public declarations. These myths include that (a) everyone knows what cyberbullying is; (b) cyberbullying is occurring at epidemic levels; (c) cyberbullying causes suicide; (d) cyberbullying occurs more often now than traditional bullying; (e) like traditional bullying, cyberbullying is a rite of passage; (f) cyberbullies are outcasts or just mean kids; and (g) to stop cyberbullying, just turn off your computer or cell phone. These assertions are clarified using data that are currently available so that adults who work with youth will have an accurate understanding of cyberbullying to better assist them in effective prevention and response. Implications for prevention efforts in education in light of these revelations are also discussed and include effective school policies, educating students and stakeholders, the role of peer helper programs, and responsive services (e.g., counseling).

PRIOR ART: Finding Zoe, Coming Out On Top

MEDIA RESOURCES:

- Oral History Project - Sheila Kuehl (The Lavender Effect)
- This American Life Episode #204 "81 Words": The story of how the American Psychiatric Association decided in 1973 that homosexuality was no longer a mental illness.
- This American Life Episode #27 "The cruelty of children: Stories about kids being mean to each other... including a mysterious handbook for bullies, a surprising experiment conducted by a teacher who wants to make kids be nice, and a story of youthful backstabbing told by David Sedaris.

- Intro to Queer Games Studies 101 by Bonnie Ruberg: http://ourglasslake.com/queer-game-studies-101/

MAR 14 NO CLASS - Spring Break

Week 10

MAR 21

Week 11

Aging, chronic illness, quality of life, isolation, intergenerational issues

SCREENING & DISCUSSION WITH THE FILMMAKER: Linda Brown's You See Me (2015) (tentative)

Filmmaker Linda Brown's father embodied 1960s masculinity. But when a devastating stroke leaves him vulnerable and dependent, Linda decides to confront the silence surrounding his troubled and violent past. Drawing on home movies, family photos and interviews, she reveals secrets, uncovers lies, and discovers a redeeming treasure in a lost family video. The result is an engrossing journey about the danger of carrying unresolved grief to our graves. You See Me is a brave, inspiring and empowering film that documents the essence of the human condition and seeks to face the past with courage in order to change the future.
- Written by Linda J. Brown

READINGS:

Jeste, D. V, Depp, C. a, & Vahia, I. V. (2010). Successful cognitive and emotional aging. World Psychiatry: Official Journal of the World Psychiatric Association (WPA), 9(2), 78–84. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22050770

We review the definitions, determinants, and ways of enhancing successful cognitive and emotional aging. Objective definitions of successful aging based on physical health emphasize outcomes including freedom from disability and disease, whereas subjective definitions center on well-being, social connectedness, and adaptation. Most older people do not meet objective criteria for successful aging, while a majority meet the subjective criteria. Older people with severe mental illness are not excluded from successful aging. The determinants of successful aging include complex interactions of lifestyle behaviors and social environment with genes. Depression interferes with nearly all determinants of successful aging. Evidence-based means of enhancing successful aging include calorie restriction, physical exercise, cognitive stimulation, social support, and optimization of stress.

Rizzo, A., Requejo, P., Winstein, C. J., Lange, B., Ragusa, G., Merians, A., … Aisen, M. (2011). Virtual reality applications for addressing the needs of those aging with disability. Studies in Health Technology and Informatics, 163, 510–6. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21335848

As persons with disabilities age, progressive declines in health and medical status can challenge the adaptive resources required to maintain functional independence and quality of life [1]. These challenges are further compounded by economic factors, medication side effects, loss of a spouse or caregiver, and psychosocial disorders [1-2]. With the gradual loss of functional independence and increased reliance on others for transportation, access to general medical and rehabilitation care can be jeopardized [2]. The combination of these factors when seen in the context of the average increase in lifespan in industrialized societies has lead to a growing crisis that is truly global in proportion. While research indicates that functional motor capacity can be improved, maintained, or recovered via consistent participation in a motor exercise and rehabilitation regimen [3], independent adherence to such preventative and/or rehabilitative programming outside the clinic setting is notoriously low [1]. This state of affairs has produced a compelling and ethical motivation to address the needs of individuals who are aging with disabilities by promoting home-based access to low-cost, interactive virtual reality (VR) systems designed to engage and motivate individuals to participate with "game"-driven physical activities and rehabilitation programming. The creation of such systems could serve to

WRITTEN ASSIGNMENT II DUE:

2-3 page literature review on special topic related to personal interests with critical look at implementation of existing interventions

enhance, maintain and rehabilitate the sensorimotor processes that are needed to maximize independence and quality of life.

Gerling, K., Dergousoff, K., & Mandryk, R. (2013). Is Movement Better? Comparing Sedentary and Motion-Based Game Controls for Older Adults. In Graphics Interface 2013 (pp. 133–140). Regina, SK, Canada. Retrieved from http://www.hci.usask.ca/uploads/302-GI13-105-camera-ready-v5.pdf

Providing cognitive and physical stimulation for older adults is critical for their well-being. Video games offer the opportunity of engaging seniors, and research has shown a variety of positive effects of motion-based video games for older adults. However, little is known about the suitability of motion-based game controls for older adults and how their use is affected by age-related changes. In this paper, we present a study evaluating sedentary and motion-based game controls with a focus on differences between younger and older adults. Our results show that older adults can apply motion-based game controls efficiently, and that they enjoy motion-based interaction. We present design implications based on our study, and demonstrate how our findings can be applied both to motion-based game design and to general interaction design for older adults.

PRIOR ART: The Voice in the Garden, PARO, Journey

MAR 28

Cognitive-motor rehabilitation, sensorimotor control, neuroplasticity, biological motion perception, mirroring, synchrony, affinity, presence

READINGS

Week 12

Weerdmeester, J., Cima, M., Granic, I., Hashemian, Y., & Gotsis, M. (2016). A Feasibility Study on the Effectiveness of a Full-Body Videogame Intervention for Decreasing Attention Deficit Hyperactivity Disorder Symptoms. Games for Health Journal, 5(4), 258–269. http://doi.org/10.1089/g4h.2015.0103

The current study assessed the feasibility and effectiveness of a full-body-driven intervention videogame targeted at decreasing attention deficit hyperactivity disorder (ADHD) symptoms, specifically inattention, hyperactivity, impulsivity, and motor deficiency. Materials and Methods: The game was tested in a Dutch sample (N = 73) of school-aged children with elevated ADHD symptoms. Children assigned to the intervention condition played “Adventurous Dreaming Highflying Dragon,” and those in the control condition played a comparable full-body-driven game without ADHD-focused training components. Games were played during six 15-minute sessions. Outcomes were teacher-rated ADHD symptoms and scores on neuropsychological tasks assessing motor skills, impulsivity, and sustained attention. There was some indication of greater improvement in the intervention group in comparison to the control group in terms of teacher-rated ADHD symptoms.

Gotsis, M., Lympouridis, V., Requejo, P., Haubert, L. L., Poulos, I. C., Frangoudes, F., … Jordan-Marsh, M. (2014). Skyfarer: Design Case Study of a Mixed Reality Rehabilitation Video Game. In A. Marcus (Ed.), HCI International 2014 (pp. 699–710). Crete, Greece: Springer Berlin Heidelberg. http://doi.org/10.1007/978-3-319-07626-3_66

This paper outlines a design case study for Skyfarer, a mixed reality rehabilitation application developed for upper body exercise of individuals aging with disability. We describe how

experience, experiential and participatory design methodologies were combined to develop a game, which was publicly exhibited at IEEE VR and ACM SIGGRAPH, and formally evaluated in a biomechanical study at Rancho Los Amigos National Rehabilitation Center RLANRC.

Simons, D. J., Boot, W. R., Charness, N., Gathercole, S. E., Chabris, C. F., Hambrick, D. Z., & Stine-Morrow, E. A. L. (2016). Do "Brain-Training" Programs Work? Psychological Science in the Public Interest, 17(3), 103–186.
http://doi.org/10.1177/1529100616661983

In 2014, two groups of scientists published open letters on the efficacy of brain-training interventions, or "brain games," for improving cognition. The first letter, a consensus statement from an international group of more than 70 scientists, claimed that brain games do not provide a scientifically grounded way to improve cognitive functioning or to stave off cognitive decline. Several months later, an international group of 133 scientists and practitioners countered that the literature is replete with demonstrations of the benefits of brain training for a wide variety of cognitive and everyday activities. How could two teams of scientists examine the same literature and come to conflicting "consensus" views about the effectiveness of brain training?

In part, the disagreement might result from different standards used when evaluating the evidence. To date, the field has lacked a comprehensive review of the brain-training literature, one that examines both the quantity and the quality of the evidence according to a well-defined set of best practices. This article provides such a review, focusing exclusively on the use of cognitive tasks or games as a means to enhance performance on other tasks. We specify and justify a set of best practices for such brain-training interventions and then use those standards to evaluate all of the published peer-reviewed intervention studies cited on the websites of leading brain-training companies listed on Cognitive Training Data (www.cognitivetrainingdata.org), the site hosting the open letter from brain-training proponents. These citations presumably represent the evidence that best supports the claims of effectiveness.

Based on this examination, we find extensive evidence that brain-training interventions improve performance on the trained tasks, less evidence that such interventions improve performance on closely related tasks, and little evidence that training enhances performance on distantly related tasks or that training improves everyday cognitive performance. We also find that many of the published intervention studies had major shortcomings in design or analysis that preclude definitive conclusions about the efficacy of training, and that none of the cited studies conformed to all of the best practices we identify as essential to drawing clear conclusions about the benefits of brain training for everyday activities. We conclude with detailed recommendations for scientists, funding agencies, and policymakers that, if adopted, would lead to better evidence regarding the efficacy of brain-training interventions.

Berrol, C. F. (2006). Neuroscience meets dance/movement therapy: Mirror neurons, the therapeutic process and empathy. The Arts in Psychotherapy, 33(4), 302–315.
http://doi.org/10.1016/j.aip.2006.04.001

The recent discovery by neuroscientists of mirror neurons has launched a spate of scientific investigations. A keystone of the therapeutic process of dance/movement therapy (D/MT), the concept of mirroring is now the subject of neuroscience. An interactive phenomenon, studies are revealing that the identical sets of neurons can be activated in an individual who is simply witnessing another person performing a movement as the one actually engaged in the action or the expression of some emotion or behavior. The domains of behavior currently under investigation span motoric, psychosocial and cognitive functions, including specific psychosocial issues related to attunement, attachment theory and empathy. Although D/MT embodies empathic forms, until recently their neurological underpinnings have not been studied. The paper addresses the theoretical constructs of the mirror matching mechanism and empathy, and the implications for D/MT. Beginning with the basic mapping of important central nervous system structures and their behavioral functions, the focus shifts to the mirror neurons with respect to the formative years vis-à-vis the developmental issues of

empathy—attachment, attunement, social cognition and morality. The final section offers two exemplars of mirror neurons and empathy as mediated through dance and D/MT.

Frith, C. D., & Frith, U. (2008). Implicit and explicit processes in social cognition. Neuron, 60(3), 503–10. http://doi.org/10.1016/j.neuron.2008.10.032

In this review we consider research on social cognition in which implicit processes can be compared and contrasted with explicit, conscious processes. In each case, their function is distinct, sometimes complementary and sometimes oppositional. We argue that implicit processes in social interaction are automatic and are often opposed to conscious strategies. While we are aware of explicit processes in social interaction, we cannot always use them to override implicit processes. Many studies show that implicit processes facilitate the sharing of knowledge, feelings, and actions, and hence, perhaps surprisingly, serve altruism rather than selfishness. On the other hand, higher-level conscious processes are as likely to be selfish as prosocial.

Hagendoorn, I. (2003). Cognitive Dance Improvisation: How Study of the Motor System Can Inspire Dance (and Vice Versa). Leonardo, 36(3), 221–228.

This paper describes several dance improvisation techniques inspired by the study of the motor system. one technique takes experiments on interlimb coordination from the laboratory to the dance studio. Another techniques, termed fixed-point technique, makes use of the fact that one can change which part of the body is fixed in space. A third technique is based on the idea that one can maintain the action, as it were, by `reversing the acting limb'. All techniques target a specific capacity of the motor system and as such may inspired new psychophysical experiments. The present approach to generating movements, which merges dance improvisation with insights from cognitive neuroscience and biokinesiology, may also be fruitfully extended to robotics.

Hagendoorn, I. (2003). The Dancing Brain. Cerebrum: The Dana Forum on Brain Science, 5(2), 19–34.

How can watching one dance performance, whether classical ballet or the newest modern choreography, be so engaging—even thrilling—and watching another leave us indifferent? Dutch choreographer and researcher Ivar Hagendoorn argues that contemporary neuroscience points at the answer. The limbs move, but it is the brain that dances.

Osterman, P., & Schwartz-Barcott, D. (1996). Presence: four ways of being there. Nursing Forum, 31(2), 23–30.

Presence is an important but confusing concept in nursing. At times, it is used to simply characterize a nurse's physical presence, while, at other times, it is used in a highly metaphysical sense to depict a nurse's full physical, psychological, and spiritual presence. As a concept, presence has not been clearly defined. Its core characteristics need to be identified and separated from those characteristics that reflect its variability. The authors establish a definition of presence as "being there" based on the essence of the concept as it is used in the nursing literature; identifying four ways in which presence varies based on the quality of being there, the focus of the nurse's energy, and the nature of the nurse-patient interaction; and address possible outcomes of each type.

Peach - Presence Research in Action. (2011). Measurement compendium from presence-research.org. Retrieved May 11, 2015, from http://www.peachbit.org/?q=node/114

PRIOR ART: Watergait, Adventurous Dreaming Highflying Dragon, Skyfarer, WAY, Journey, Synchronous Objects

APR 4

Principles of qualitative data coding

Week 13

READINGS

Saldana, J. (2011). Understanding Statistics: Fundamentals of Qualitative Research. Cary, GB: Oxford University Press, USA. Retrieved from http://site.ebrary.com/lib/uscisd/detail.action?docID=10446255

Elegant, concise, and pragmatic overview of qualitative research.

Wixon, D. (1995). Qualitative research methods in design and development. Interactions, 2(4), 19–26. http://doi.org/10.1145/225362.225365

Questions such as what do users do and when do they do it; what is the intention behind user work; and how do users think about their work, are the types of questions that qualitative research methods answer. This paper surveys some of these methods and offers a framework for their consideration. The framework provides a basis for organizing current practice and generating new methods. Unlike other valuable frameworks that have been proposed, this framework establishes a set of dimensions based on consideration of the kind of understanding the analysis produces and the purpose that understanding has in the broader development process.

APR 11

IN-CLASS LAB

Video recording of full body interactive entertainment experience for Group B project.

Week 14

Charge your phones so you can video record what we are doing in class :)

WRITTEN ASSIGNMENT III DUE:

2-3 page critical experience analysis of an existing intervention

APR 18

Week 15

Death, grief and bereavement, suicide, survivor guilt, epigenetic impact, social media, virtual archiving

READINGS

Massimi, M., Odom, W., Banks, R., & Kirk, D. (2011). Matters of life and death. In Proceedings of the 2011 annual conference on Human factors in computing systems – CHI '11 (pp. 987–996). New York, New York, USA: ACM Press. http://doi.org/10.1145/1978942.1979090

Examining developmental periods of the human lifespan has been a useful tradition for focusing HCI research (e.g., technologies for children or the elderly). In this paper, we identify the end of life as another period of the human lifespan that merits consideration by technology designers and researchers. This paper maps out current and future research in HCI at the end of life by first describing how this area raises questions concerning materiality and artifacts, social identities, temporality and methodologies. Having provided a description of the richness of this area, we then frame it against HCI traditions and practices in an orientation we term the lifespan-oriented approach. This paper maps early efforts in end of life research, structures and suggests areas for continued work, and situates the end of life among existing areas of HCI research.

Gibbs, M., Kohn, T., Gibbs, M., Mori, J., Arnold, M., & Kohn, T. (2012). Tombstones, uncanny monuments and epic quests: Memorials in world of warcraft. Game Studies, 12(1), 1–19. Retrieved from http://gamestudies.org/1201/articles/gibbs_martin

Many people are increasingly carrying out more of their social life through online media such as online games. It is unsurprising to find these media are becoming vehicles for expressing grief and for memorializing the dead. In this paper we document a series of memorials found in the massively multiplayer online game World of Warcraft and outline the repertoire of game elements the game developers have used to build these memorials within the game world. We argue these memorials draw on a range of material and semiotic resources. They use a variety of game elements to produce memorials that resemble and allude to traditional and contemporary forms of memorialization. We also consider how game designers draw on diverse cultural materials to speak to profound issues associated with death and dying.

Sudore, R. L., & Fried, T. R. (2010). Redefining the "planning" in advance care planning: Preparing for end-of-life decision making. Annals of Internal Medicine, 153(4), 256–61. http://doi.org/10.7326/0003-4819-153-4-201008170-00008

The traditional objective of advance care planning has been to have patients make treatment decisions in advance so that clinicians can attempt to provide care consistent with their goals. The authors contend that the objective for advance care planning ought to be the preparation of patients and surrogates to participate with clinicians in making the best possible in-the-moment medical decisions. They provide practical steps for clinicians to help patients and surrogate decision makers achieve this objective in the outpatient setting. Preparation for in-the-moment decision making shifts the focus from having patients make premature decisions based on incomplete information to preparing them and their surrogates for the types of decisions and conflicts they may encounter when they do have to make in-the-moment decisions. Advance directives, although important, are just one piece of information to be used at the time of decision making.

Massimi, M. (2014). Stories from my thanatosensitive design process. Interactions, 21(1), 47–49. http://doi.org/10.1145/2543489

Reflections on working with the bereaved.

Odom, W., Harper, R., Sellen, A., Kirk, D., & Banks, R. (2010). Passing on & putting to rest. In Proceedings of the 28th international conference on Human factors in computing systems – CHI '10 (p. 1831). New York, New York, USA: ACM Press. http://doi.org/10.1145/1753326.1753601

While it can be a delicate and emotionally-laden topic, new technological trends compel us to confront a range of problems and issues about death and bereavement. This area presents complex challenges and the associated literature is extensive. In this paper we offer a way of slicing through several perspectives in the social sciences to see clearly a set of salient issues related to bereavement. Following this, we present a theoretical lens to provide a way of conceptualizing how the HCI community could begin to approach such issues. We then report field evidence from 11 in-depth interviews conducted with bereaved participants and apply the proposed lens to unpack key emergent problems and tensions. We conclude with a discussion on how the HCI design space might be sensitized to better support the social processes that unfold when bereavement occurs.

Watney, S. (1987). The spectacle of AIDS. October, 43, 71–86. Retrieved from http://www.jstor.org/stable/3397565

An extraordinary and timeless essay on the era of the "gay plague".

Funk, L. M., Stajduhar, K. I., Robin Cohen, S., Heyland, D. K., & Williams, A. (2012). Legitimising and rationalising in talk about satisfaction with formal healthcare among bereaved family members. Sociology of Health & Illness, 34(7), 1010–24. http://doi.org/10.1111/j.1467-9566.2011.01457.x

While there is a fair amount of knowledge regarding substantive features of end of life care that family members desire and appreciate, we lack full understanding of the process whereby family members formulate care evaluations. In this article we draw on an analysis of interview data from 24 bereaved family members to explicate how they interpret their experiences and formulate evaluations of end of life care services. Most participants wove between expressing and legitimising dissatisfaction, and qualifying or diffusing it. This occurred through processes of comparisons against prior care experiences and expectations, personalising (drawing on personal situations and knowledge), collectivising (drawing on conversations with and observations of others) and attempting to understand causes for their negative care experiences and to attribute responsibility. The findings suggest that dissatisfaction might be diffused even where care is experienced negatively, primarily through the acknowledgement of mitigating circumstances. To a lesser extent, some participants attributed responsibility to the 'system' (policy and decision-makers) and individual staff members. The findings are discussed in relation to the theoretical understanding of satisfaction and evaluation processes and how satisfaction data might inform improvements to care quality.

Coberly, B. (2017). After My Dad Died, He Left Behind Thousands of Hours of Civilization Save Files. Retrieved January 5, 2017, from http://kotaku.com/after-my-dad-died-he-left-behind-thousands-of-hours-of-1790709703

Thomas Barber Coberly died, without warning, on May 1st, 2016, at exactly 7:04 in the morning. A heart attack, or maybe an aneurysm. It really doesn't matter, at this point. The ambulance came promptly, but he died shortly after arriving at the hospital. Unexpected deaths leave behind a mess. Unfinished projects and obligations and all the detritus that life creates are all suddenly without the anchor that held them together or gave them meaning. At least with a lengthy illness, a person can try to set his life in order, but with a sudden death, everything is still unfinished and lived-in. So in between all the big questions, where is the funeral and who do we invite and did anyone tell Great Aunt Sally, you have all this stuff to deal with, stuff that's taking up space on the kitchen table, stuff you can't just ignore. What do you

do with the Post-it notes on his desk, reminding him to call so-and-so or pay the gas bill? What do you do with his glasses, which I found right where he left them, on his desk, just before he went to bed that last night? Then, later, once everyone has gone home and you've handled all the big problems, as you're left alone to bask in the awful realization that he's really gone, you have to deal with all the little things. What do we do with his books? Where should we send the remainder of his subscription to The Economist? What do you do with all the video game save files on his computer?

PRIOR ART: The Night Journey, That Dragon Cancer, Amour (2012)

MEDIA RESOURCES:

- Stories from OpenIDEO's End of Life Challenge
- Thank You For Playing (2016)

APR 25

Week 16

Orphan & emerging challenges in public health, neuroscience and medicine; the legacy of mind/body dualism, reframing mental health, redefining the user/patient/ client/human experience

FILM SCREENING: Code Black (2013) (82 minutes)

Content advisory: film contains emergency room scene with real-time open chest surgical intervention of gunshot victim. We can warn you ahead of time to close your eyes :)

A notorious trauma bay in an inner-city E.R. earns its keep as the 'hurt locker of medicine' as new, idealistic and adrenaline-seeking doctors train in an environment akin to a war zone. When the hospital moves to a swank new building, the rush fades and bureaucracy gridlocks the state-of-the-art facility, and the doctors are faced with the unexpected realities of life and death in a safety-net health-care system on the brink of overload.
- Written by Anonymous

WRITTEN ASSIGNMENT IV DUE:

2-3 page design rationale/proposal for a new intervention

Lapham, L. H. (n.d.). The God in the Machine. *Lapham's Quarterly*, Online. Retrieved from http://www.laphamsquarterly.org/medicine/god-machine

President Barack Obama during his first months in office seldom has missed a chance to liken the country's healthcare system to an unburied corpse, which, if left lying around in the sun by the 111th Congress, threatens to foul the sweet summer air of the American dream. The prognosis doesn't admit of a second or third opinion.

MAY 9

6:30PM

FINAL DEADLINE FOR ALL DELIVERABLES

GROUP PROJECTS DUE

ALL WRITTEN ASSIGNMENTS DUE (final revisions of all projects)

SCHOLARLY JOURNAL DUE

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