SOCIAL CONNECTEDNESS
FELLOWSHIP PROGRAM

Holistic Approaches to Mental Health: Linkages to Education, Architecture, and Food

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www.socialconnectedness.org
July 2017

EXECUTIVE SUMMARY

Mental illness is a complex challenge requiring a comprehensive strategy to build an effective societal solution. Through my research, it became apparent that the answer to decreasing the number of individuals suffering from mental illness is not as simple as increasing the number of practitioners or services. A more holistic approach is required. In order to tackle the mental health crisis, we must expand our horizons and rethink different aspects of society that contribute to mental health and wellbeing. In this paper, I examine three cases to illustrate this point. Through an examination of aspects of our education system, our approaches to architecture, and our attitudes towards food, we can see the impact of these aspects as well as the intricate intersectionality of these factors on physical and mental well-being.

While access to mental health services must be increased and their efficiency improved, these are solutions at the treatment level. Through this examination, I suggest that a more efficient and effective approach would place greater emphasis on prevention. To truly improve long-term mental health, we must target the sources of mental illness. For example, we may find aspects of solutions in redesigning our education systems to facilitate more connection between students and teachers, constructing built environments that encourage community and foster social connectedness, and making whole foods more accessible and affordable, thereby strengthening the immune system and connection to the natural environment.

MENTAL HEALTH AND HIGHER EDUCATION

In Canada, the mental health care system is characterized by long waits – commonly six months to a year for therapy – follow-up appointments are rare, frequent changes of health providers disrupt treatment, and many helpline calls go unanswered.[1] This is alarming considering that one in two Canadians experience a mental illness by the age of 40.[2]

Furthermore, the system frequently fails those who are most vulnerable: young people aged 15 to 24. Fifteen to 24-year-olds are more likely than any other age group to experience mental illness.[3] Yet, one third of Canadians aged 15 or older did not receive adequate care in the past year, and suicide accounted for 28% of deaths among those aged 15 to 19 and one quarter of all deaths among 20 to 24-year-olds.[4]

What do individuals in this age cohort have in common? They comprise the vast majority of university student populations. Going to university brings with it significant changes and challenges. It may be a student's first time living away from home or controlling their own finances. Difficult decisions must be made and added pressures come from vigorous course work and competitive academic environments. These stressors commonly affect mental health, leaving students feeling overwhelmed and isolated.[5]

Yet despite increasing demands, needs are not being met. University funding for mental health services is severely lacking, and administrations often pose hurdles for students lobbing to improve such services. Inciting major changes requires battling the barriers set up by

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[1] "Mental Illness and Addictions: Facts and Statistics," Centre for Addiction and Mental Health, Accessed June 12, 2017, http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionmentalhealthstatistics.aspx.
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Claire Shaw, "Overworked and isolated - work pressure fuels mental illness in academia." The Guardian, May 08, 2014, https://www.theguardian.com/higher-education-network/blog/2014/may/08/work-pressure-fuels-academic-mental-illness-guardian-study-health.

administrators who have other priorities and navigating a maze of bureaucracy.[6] And these trends are not unique to Canada; similar issues are found in the United States and the United Kingdom.

In the United States, the number of students requiring help is rapidly increasing. The Center for Collegiate Mental Health reported that in 2016, 150,483 students in America sought mental health treatment, a 50% increase since the previous year.[7] Moreover, that number is predicted to be higher, as one in two college students decline to disclose their mental illness to their university.[8]

In the United Kingdom, 27% of university students report having a mental health issue.[9] This number may too be higher, as The National Union of Students (NUS) reports that eight out of ten (78%) students have experienced mental health issues in the last year.[10] A 2016 YouGov survey of Britain's students revealed that of those who report mental health problems, nearly half (47%) find it difficult to complete some daily tasks and 4% find even simple tasks impossible.[11] Eighteen percent of students have used university mental health services, yet one in five (21%) students said the services they received were inadequate and unhelpful.[12] Furthermore, 40% report being nervous about the support they would receive from their institution, perhaps reflecting why more than half (54%) of students who reported having experienced mental health problems in 2015 did not seek support.[13]

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[6] Caroline Simon, "More and more students need mental health services. But colleges struggle to keep up," USA Today, May 04, 2017, http://college.usatoday.com/2017/05/04/more-and-more-students-need-mental-health-services-but-colleges-struggle-to-keep-up/.
[7] "2016 Annual Report," Center for Collegiate Mental Health, March 22, 2017, http://ccmh.psu.edu/publications/.
[8] Matthew Wilson, "For college students grappling with mental illness, the world can seem colorless," USA Today, May 04, 2017, http://college.usatoday.com/2017/05/04/college-students-mental-illness/.
[9] Scott Aronin and Matthew Smith, "One in four students suffer from mental health problems," YouGov, August 9, 2016, https://yougov.co.uk/news/2016/08/09/quarter-britains-students-are-afflicted-mental-hea/.
[10] Natalie Gil, "Majority of students experience mental health issues, says NUS survey," The Guardian, December 14, 2015, https://www.theguardian.com/education/2015/dec/14/majority-of-students-experience-mental-health-issues-says-nus-survey.
[11] Scott Aronin and Matthew Smith, "One in four students suffer from mental health problems," YouGov, August 9, 2016, https://yougov.co.uk/news/2016/08/09/quarter-britains-students-are-afflicted-mental-hea/
[12] Ibid.
[13] Natalie Gil, "Majority of students experience mental health issues, says NUS survey," The Guardian, December 14, 2015, https://www.theguardian.com/education/2015/dec/14/majority-of-students-experience-mental-health-issues-says-nus-survey.

Mental illness is a leading cause of disability, with the potential to cut 10 to 20 years from a person's life expectancy.[14] Furthermore, mental and physical health are intricately linked: poor mental health has been shown to increase the risk developing a long-term medical condition and vice versa.[15] Thus, universities should be weary of diverting funding away from mental health services. Rather, they should ensure services are adequate and that the supply of medical practitioners meets the demand. Mental health should be a top priority for universities, particularly since healthier students mean higher retention and graduation rates.[16] This is inordinately important, as "university graduates are the foundation upon which [a country's] future success and prosperity must be built."[17]

My research on mental health in universities demonstrated that students across the board are feeling stressed-out, anxious and depressed; yet, they often do not receive adequate support. The magnitude of students suffering from mental illness – from anxiety and depression to low mood and affective disorders – may be indicative of a broader problem in the design and approach of University education. As Stephen Toope, former vice-chancellor of the University of British Columbia and current vice chancellor of Cambridge University in the UK has said, "Universities, in some ways, are a crucible for what's happening in your society. They are representative, I hope, of the best of our aspirations. That's why, if we fail in our university sector, we're failing socially as well."[18]

Evidently, the well-being of students is a significant determinant of the welfare of society. We must therefore tackle the mental health crisis happening in universities. I believe a

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[14] "Mental Illness and Addictions: Facts and Statistics," Centre for Addiction and Mental Health, Accessed June 12, 2017, http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionmentalhealthstatistics.aspx.
[15] Ibid.
[16] Caroline Simon, "More and more students need mental health services. But colleges struggle to keep up," USA Today, May 04, 2017, http://college.usatoday.com/2017/05/04/more-and-more-students-need-mental-health-services-but-colleges-struggle-to-keep-up/.
[17] Robert Campbell, "Universities can drive economic growth if they focus on their primary mission: education," The Globe and Mail, March 20, 2013, https://www.theglobeandmail.com/news/national/education/universities-can-drive-economic-growth-if-they-focus-on-their-primary-mission-education/article9949476/.
[18] Ian Bailey, "UBC president Stephen Toope says universities face five challenges," The Globe and Mail, June 26, 2014, https://www.theglobeandmail.com/news/british-columbia/ubc-president-stephen-toope-says-universities-face-five-challenges/article19356944/.

solution may be found in challenging the way the education system currently operates. Universities employ a linear, "one-size-fits-all" approach to learning.[19] This means students must follow a curriculum, beginning at point A, ending at point B; "check the boxes and get the degree."[20] Since learning is controlled by the teacher, and attaining a degree is controlled by the university, students have no opportunity for "tailoring to individual learning styles or interests."[21] This can leave students feeling disenchanted and forgotten. Most importantly, this system isolates students who do not fit the status quo.

Other characteristics of universities contribute to feelings of isolation as well. Presently, most large universities are marked by massive lecture halls, alienating students from peers and their professors and leaving them feeling like a mere number. Moreover, there is a distinct lack of support and one-to-one attention from advisors. Furthermore, universities do not put enough emphasis on inter-cultural fluency skills, meaning teaching varied cultures to work together.[22] Failure to help students develop better inter-cultural fluency can "create 'ghettos' of people not truly interacting with each other."[23] These factors contribute to an environment conducive to social isolation and mental health issues.

DIFFERENT APPROACHES

Solutions at the post-secondary level may actually be best informed by looking at the experience of education at more junior levels. One example emerges from the approach taken by Richard Dunne, Head teacher at Ashley Primary School in the UK. The pedagogical approach of

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[19] Jacob Ruytenbeek, "The Problems (And Solutions) Of Higher Education," The Huffington Post, October 19, 2013, http://www.huffingtonpost.com/jacob-ruytenbeek/how-to-make-education-more-affordable_b_3744356.html.
[20] Ibid.
[21] Ibid.
[22] Ibid.
[23] Ian Bailey, "UBC president Stephen Toope says universities face five challenges," The Globe and Mail, June 26, 2014, https://www.theglobeandmail.com/news/british-columbia/ubc-president-stephen-toope-says-universities-face-five-challenges/article19356944/.

the school is based on HRH The Prince of Wales' Principles of Harmony. The school focuses on the intersectionality of subjects; for instance, the Year Fours created a poster board for the River Nile, which utilized skills learned in art class, in addition to geography and history for facts about the River, and English class to link the board to metaphors and similes [*Figure 1*]. Moreover, the children are taught to respect nature and learn about agriculture by tending to the vegetable gardens on site and partaking in harvesting and composting [*Figure 2*]. The school also places less emphasis on testing; Richard does not believe that it's "about a right or a wrong answer and a tick and getting your marks or not."[24] These principles encourage a holistic approach to learning – one that is also more easily tailored to individual learning styles and interests.

With regard to applying these principles at the post-secondary context, Richard suggested: "It would obviously be a whole lot better if it were more human scale, smaller, more personal, more about relationships. And I think perhaps we all need to be challenged to say, if it's not making us feel well… then how can we break that down into more manageable pieces?"[25]

Each individual is unique, each has their own personality and character and characteristics. This, notes Richard, is the richness of life; it is a fundamental quality of life. Thus, "if education at any level, primary, secondary, or tertiary doesn't [allow for this uniqueness], we have to question it."[26] When individuality is suppressed and students become just a number, they are socially isolated and mental health issues arise. Indeed, Richard argues

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[24] Richard Dunne, interview by Emma Harries and Claire Chauvel, June 8, 2017, transcript.
[25] Ibid.
[26] Ibid.

that it is "no wonder people feel depressed and have mental health issues if they feel they're

never recognized, they're never heard, they don't have an identity."[27]

Learning how to bring humanity back to the university classroom – how to put students

as *humans* at the center of education – is no doubt a challenge. Yet, it is a challenge that must be

met in order to mitigate the potentially harrowing effects of university on students' mental

health. Making students feel that they are more than a number is a good place to start. University

administrations should seek ways to decrease class sizes to instill a feeling of connectedness

between peers and professor. Furthermore, they could encourage community on campus through

events such as barbeques, concerts, farmer's markets, and book readings. Finally, administrations

should strive to increase funding for support groups and mental health services.

Architecture

Another way to promote mental health and social connectedness involves architecture.

The built environment has "the power to restore and promote solidarity, mental and physical

health and be a source of happiness,"[28] a fact which is often overlooked in campus designs. Thus,

universities must rethink the way they structure their campuses, from the layout of buildings to

the number of windows in a classroom. According to HRH The Prince of Wales, "designing

places according to the human scale and with nature at the heart of the process" would likely

decrease feelings of social isolation and promote social connectedness.[29] Constructing buildings

surrounding a central playing field is a good place to start, as this is quite literally placing nature

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[27] Ibid.

[28] Karl Johnson, "Place and public health: the impact of architecture on wellbeing," The Guardian, June 11, 2013, https://www.theguardian.com/sustainable-business/public-health-architecture-impact-wellbeing.

[29] HRH The Prince of Wales, "Facing up to the future: Prince Charles on 21st century architecture," *The Architectural Review,* December 20, 2014, https://www.architectural-review.com/rethink/viewpoints/facing-up-to-the-future-prince-charles-on-21st-century-architecture/8674119.article.

at the heart. Moreover, making all buildings easily accessible to those with disabilities, the elderly and children will help ensure nobody is isolated.

Designing for health is a concept that has been revived in recent years, though it dates back to the first century B.C. when leading thinkers such as Roman architect Vitruvius contemplated how one's surroundings might influence health and wellbeing.[30] Designing for health "is about the health impacts of design and construction at the scale of room to region with much greater attention to evidence, health data and criteria for well-being."[31] Since the *American Journal of Public Health* published an issue dedicated to public health and the built environment in September 2003, the movement has been gaining momentum. Today, "professionals across various fields consider buildings to be a critical tool for combating social isolation, epidemic obesity and depression."[32]

Our built environments have long-term implications for quality for life, as "design-led interventions can make better choices easier or constrain behaviours by making certain actions more difficult."[33] We are constantly moving through our built environments, and this habitual interaction with our spaces means the movement is done at the implicit level with little or no conscious awareness. For instance, if elevators are the epicenter of a building and stairs are hidden away on the sides, typical users of that building will not think twice about taking the elevator. Thus, architects should re-imagine designs, with the goal of making healthy choices easier and less healthy ones more difficult. The Bullitt Center in Seattle provides a strong case: "occupants choose to take its 'irresistible staircase' for 75% of trips on entering the building rather than opting for the elevator, as compared with the 17% to 23% of trips made via stairs in a

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[30] Amy Nordrum, "Architects Place Priority on Public Health for 2015," Scientific American, December 15, 2014, https://www.scientificamerican.com/article/architects-place-priority-on-public-health-for-2015/.
[31] Ibid.
[32] Ibid.
[33] Dominic King, Paul Thompson, and Ara Darzi. "Enhancing health and well-being though 'behavioural design,'" *Journal of the Royal Society of Medicine* 107, no. 9 (September 1, 2014): 336, http://journals.sagepub.com/doi/full/10.1177/0141076814548527.

typical office building."[34] [*Figure 3*] By designing environments through a health lens, architects

and developers truly have the capacity to improve the health of society.

For guidance and inspiration on designing for health, the American Institute of Architects

(AIA) provides an excellent reference. The AIA published an infographic on "six facets of

architecture that have been found to intersect with public health," including safety,

environmental quality, sensory environments, physical activity and access to natural systems.[35]

For safety, the AIA recommends incorporating elements that strive to promote the health, safety

and welfare of the public – such as active streets, thoughtful lighting strategies, and open

sightlines – when designing built environments. These "can protect people from more than

physical harm; [they] can remove real and perceived impediments that cause anxiety, stress, and

psychological harm."[36] Clean energy and smart material selections are some of the ways

architects can impact environmental quality. These elements are important, as "the places and

spaces [architects] design may mitigate or reverse quantifiable chemical and microbial site,

water, and air pollutants that directly and indirectly affect human health."[37] Sensory

environments are important as well, as humans experience the built environment through the

senses (touch, sound, smell and taste). Thus, the AIA recommends "design that embraces varied

sensory experiences including circadian rhythms, thermal and acoustic controls, and meditative

labyrinths [to] promote mental and emotional well-being, improve quality of life, and [improve]

physical health."[38] Designing for health also necessitates designing for physical activity.

Architects should incorporate opportunities for exercise and recreation, and more active daily

tasks including labour, errands and commutes. To reduce the risk of cardiovascular disease and

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[34] Amy Nordrum, "Architects Place Priority on Public Health for 2015," *Scientific American*, December 15, 2014, https://www.scientificamerican.com/article/architects-place-priority-on-public-health-for-2015/.
[35] Ibid.
[36] "Designing for health," The American Institute of Architects, Accessed July 24, 2017, http://info.aia.org/AIArchitect/2014/1121/aia-interactive/index.html?utm_source=http%3A%2F%2Finfo.aia.org%2FAIArchitect%2F2014%2F1121%2Faia-interactive%2Findex.html#!.
[37] Ibid.
[38] Ibid.

other health problems – including mental illness – design should promote "individual choice through multi-modal transportation, varied and highly-accessible parks, and appealing stairs."[39] Access to natural systems also promotes physical and mental well-being. Indeed, "the power of natural health systems, including natural forms, diverse species, and calming vistas [can be used] to support healthy food production, to provide stress relief, and to improve human performance."[40]

Designing for health by focusing on safety, environmental quality, sensory environments, physical activity and access to natural systems would undoubtedly improve the wellness of inhabitants. However, the sixth and final facet of architecture that has been found to intersect with public health is perhaps the most important – certainly for promoting mental health and decreasing social isolation. This is social connectedness. The AIA argues that "strong networks within our families, our friends, and our neighborhoods improve our happiness, our well-being, and our resilience."[41] Architecture can foster social connectedness through "design that encourages play, communal dining, and a friendly 'hello,'" as these are "fundamental to behaviors such as civic participation, voting, and helping neighbors."[42]

Though these six facets are intended for the design of communities, they may easily be applied to a microcosm of society: university campuses. Designing for health by focusing on safety, environmental quality, sensory environments, physical activity, access to natural systems and social connectedness would improve the physical and mental health of students, as well as decrease experiences of social isolation.

Vital to creating spaces which promote mental health is "a close relationship between a perceptive architect and their end-user client [as this] lays a figurative foundation for the best

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[39] Ibid.
[40] Ibid.
[41] Ibid.
[42] Ibid.

kind of building – one that honours the needs and wellbeing of those who will use it."[43] For universities, this means architects and administrators should work closely with students, surveying them to understand what they need out of their built environments and studying the evidence which demonstrates what components of architecture promote learning.

Importantly, seeking ways to create more human-centered built environments would not only be beneficial for university campuses, but also for the world beyond.

Nutrition and Agriculture

Nutrition is a third sector to consider in building mental illness prevention strategies and it applies equally to any age, any ethnic background, and any socio-economic status. "Food provides our bodies with the energy, protein, essential fats, vitamins and minerals to live, grow and function properly," and poor nutrition can lead to illness such as coronary heart disease, stroke, hypertension, atherosclerosis, obesity, some cancers and Type 2 diabetes.[44] Based on evidence showing the interdependence of physical and mental health, it is no surprise that food can also impact our mental state.

Though principally about food sustainability and agriculture, our interview with Patrick Holden brought surprising insights to my research on mental health. Patrick spoke about restoring the links that have been forgotten as we have created a vast disconnect between the food we consume and where it comes from. He argues that "there's something profoundly important about re-establishing these real links as a pre-condition for getting back to a society which is healthy."[45] On the topic of links, I responded, "I always think about the links between mental health, [physical] health, and food… For example, if you have a mental health issue, such

[43] Karl Johnson, "Place and public health: the impact of architecture on wellbeing," The Guardian, June 11, 2013, https://www.theguardian.com/sustainable-business/public-health-architecture-impact-wellbeing.
[44] "Nutrition," National Health and Medical Research Council, October 20, 2009, https://www.nhmrc.gov.au/health-topics/nutrition.
[45] Patrick Holden, interview by Emma Harries, Kim Samuel and Claire Chauvel, May 18, 2017, transcript.

as depression, it weakens your immune system. And therefore, you're more susceptible to physical health issues. And food comes into play with weakening both of those things."[46]

Stress impairs the immune system's capacity to respond. Mental health issues, which are often marked by experiences of long-term stress, are therefore correlated to weakened immune systems. This occurs because long-term stress causes excessive discharge of catecholamines epinephrine & norepinephrine (neurotransmitters critically important in individual responses to stressful events), which can lead to the suppression of immune functions; produce changes such as increased blood pressure and heart rate; provoke variations in normal heart rhythms; and produce neurochemical imbalances that can contribute to psychiatric disorders.[47]

Stress-related diseases emerge because of the constant activation of the physiological system that has evolved for responding to acute physical emergences. Two systems are involved in stress response: the sympathetic-adrenomedullary (SAM) system, and the hypothalamic-pituitary-adrenocortical (HPA) axis. These systems are intended to respond to acute stressors; however, detrimental consequences arise when they are turned on for months on end. Repeated activation of the HPA axis in response to chronic or recurring stress can compromise its functioning. Therefore, constant HPA axis activation affects both physical and mental health: chronic activation leads to the storage of fat in abdominal areas, which increases the risk of cardiovascular disease, obesity and Type II diabetes; and pronounced HPA activation is commonly found in patients suffering from depression. Indeed, stress impairs the immune system's capacity to respond.[48]

Importantly, this process works two-ways. Not only do stress and mental illness weaken the immune system, but also a weakened immune system increases the likelihood of mental and

[46] Emma Harries, interview with Patrick Holden by Emma Harries, Kim Samuel and Claire Chauvel, May 18, 2017, transcript.
[47] *Taylor, S. E. & Sirois, F. M. (2012). Health Psychology (3rd Canadian ed.) McGraw-Hill-Ryerson.* Chapter 2.
[48] *Taylor, S. E. & Sirois, F. M. (2012). Health Psychology (3rd Canadian ed.) McGraw-Hill-Ryerson.*

physical illness. These links are inextricable, and food plays a vital role as well. Food is linked to the immune system, either promoting or hindering its functioning. The science of epigenetics demonstrates that all living organisms are in a constant interaction with their external environment. Therefore, eating certain foods over a period of time will ignite responses at a cellular level in our gene expression which will either improve or degrade our health.[49] As Patrick noted, "the precondition might be a bacterial deficiency in your microbiome, which would then cause [mental or physical illness]" due to a weakened immune system.[50]

It is imperative that people are made aware of these links and that we respect their intricate connections between health, wellbeing and nutrition. Though my research focuses on highlighting the importance of access to mental health services, access to organic, fresh foods is a vital part of the equation in order for populations worldwide to achieve mental – and physical – health.

CONCLUSION

The WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[51] Indeed, mental health is not simply the absence of depression, anxiety, schizophrenia or other mood disorders. Positive mental health depends on a variety of systems. And while access to mental health services is imperative, my research has shown that a plethora of other factors influence mental well-being, including education, architecture and food.

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[49] Patrick Holden, interview by Emma Harries, Kim Samuel and Claire Chauvel, May 18, 2017, transcript.
[50] Ibid.
[51] World Health Organization, "Constitution of the World Health Organization," *Basic Documents*, Forty-fifth edition, October 2006, http://www.who.int/governance/eb/who_constitution_en.pdf.

BIBLIOGRAPHY

Aronin, Scott, and Matthew Smith. "One in four students suffer from mental health problems." YouGov. August 9, 2016. https://yougov.co.uk/news/2016/08/09/quarter-britains-students-are-afflicted-mental-hea/.

Bailey, Ian. "UBC president Stephen Toope says universities face five challenges." The Globe and Mail. June 26, 2014. https://www.theglobeandmail.com/news/british-columbia/ubc-president-stephen-toope-says-universities-face-five-challenges/article19356944/.

Campbell, Robert. "Universities can drive economic growth if they focus on their primary mission: education." The Globe and Mail. March 20, 2013, https://www.theglobeandmail.com/news/national/education/universities-can-drive-economic-growth-if-they-focus-on-their-primary-mission-education/article9949476/.

"Designing for health." The American Institute of Architects. Accessed July 24, 2017. http://info.aia.org/AIArchitect/2014/1121/aia-interactive/index.html?utm_source=http%3A%2F%2Finfo.aia.org%2FAIArchitect%2F2014%2F1121%2Faia-interactive%2Findex.html#!.

Dunne, Richard. Interview by Emma Harries and Claire Chauvel. June 8, 2017.

Gil, Natalie. "Majority of students experience mental health issues, says NUS survey." The Guardian. December 14, 2015. https://www.theguardian.com/education/2015/dec/14/majority-of-students-experience-mental-health-issues-says-nus-survey.

Holden, Patrick. Interview by Emma Harries, Kim Samuel and Claire Chauvel. May 18, 2017.

HRH The Prince of Wales. "Facing up to the future: Prince Charles on 21st century architecture." The Architectural Review. December 20, 2014, https://www.architectural-review.com/rethink/viewpoints/facing-up-to-the-future-prince-charles-on-21st-century-architecture/8674119.article.

Johnson, Karl. "Place and public health: the impact of architecture on wellbeing." The Guardian. June 11, 2013, https://www.theguardian.com/sustainable-business/public-health-architecture-impact-wellbeing.

King, Dominic, Paul Thompson, and Ara Darzi. "Enhancing health and well-being though 'behavioural design'" *Journal of the Royal Society of Medicine* 107, no. 9 (September 1, 2014): 336-37. http://journals.sagepub.com/doi/full/10.1177/0141076814548527.

"Mental Illness and Addictions: Facts and Statistics." Centre for Addiction and Mental Health. Accessed June 12, 2017. http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionmentalhealthstatistics.aspx.

Nordrum, Amy. "Architects Place Priority on Public Health for 2015." Scientific American. December 15, 2014. https://www.scientificamerican.com/article/architects-place-priority-on-public-health-for-2015/.

"Nutrition." National Health and Medical Research Council. October 20, 2009. https://www.nhmrc.gov.au/health-topics/nutrition.

Ruytenbeek, Jacob. "The Problems (And Solutions) Of Higher Education." The Huffington Post. October 19, 2013. http://www.huffingtonpost.com/jacob-ruytenbeek/how-to-make-education-more-affordable_b_3744356.html.

Shaw, Claire. "Overworked and isolated - work pressure fuels mental illness in academia." The Guardian. May 08, 2014. https://www.theguardian.com/higher-education-network/blog/2014/may/08/work-pressure-fuels-academic-mental-illness-guardian-study-health.

Simon, Caroline. "More and more students need mental health services. But colleges struggle to keep up." USA Today. May 04, 2017. http://college.usatoday.com/2017/05/04/more-and-more-students-need-mental-health-services-but-colleges-struggle-to-keep-up/.

Taylor, S. E. & Sirois, F. M. (2012). Health Psychology (3rd Canadian ed.) McGraw-Hill-Ryerson.

Wilson, Matthew. "For college students grappling with mental illness, the world can seem colorless." USA Today. May 04, 2017. http://college.usatoday.com/2017/05/04/college-students-mental-illness/.

World Health Organization, "Constitution of the World Health Organization," *Basic Documents*, Forty-fifth edition, October 2006,
 http://www.who.int/governance/eb/who_constitution_en.pdf

"2016 Annual Report." Center for Collegiate Mental Health. March 22, 2017, http://ccmh.psu.edu/publications/.

APPENDIX

Figure 2. The Gardens at Ashley CofE Primary School (photo by Emma Harries)

Figure 1. A poster board at Ashley CofE Primary School (photo by Emma Harries)

Figure 3. The Bullitt Center Staircase (photo by Nic Lehoux)