



Literature Review Architects and Mental Health

Prepared for the NSW
Architects Registration
Board

June 2016

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

Acknowledgements

ConNetica wishes to thank Tim Horton and Associate Professor Lee Stickells for their advice and guidance in preparation of this brief report.

Citation

Karklins L and Mendoza J, 2016. *Literature Review: Architects and mental health*. A report prepared for the NSW Architects Registration Board, ConNetica, Caloundra, Qld.

Table of Contents

Acknowledgements.....	2
Citation	2
Table of Contents	3
List of Tables.....	5
List of Figures	6
Introduction.....	7
1.1 Prevalence and risk factors.....	7
1.2 Mental Health in Creative Industries	10
1.3 Cost	11
1.4 Review Outline.....	11
2. Workplace Culture.....	13
2.1 Leading change	14
2.2 Gender Diversity Issues	14
3. Workplace Mental Health.....	18
3.1 Architect Specific Research.....	18
3.1.1 Organisational injustice	19
3.1.2 Project-induced stress	19
3.1.3 Dysfunctional Design Team	19
3.1.4 Poor Interpersonal Relationships	19
3.1.5 Perceived Career Decline.....	20
3.1.6 Negative Leadership Behaviours	20
3.1.7 Poor Organisational Culture	20
3.1.8 Long Work Hours	21
3.1.9 Precarious Employment	21
3.1.10 Lack of Creativity	21
4. Educational Settings.....	22
4.1 Architecture student demographics	22
4.2 Student mental health.....	22
4.2.1 Architecture students.....	23
5. Solutions	24
5.1 Mindfulness	24
5.2 Act-Belong-Coming campaign.....	25

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

5.3 Mates in Construction	25
5.4 Lifeboat.....	26
5.5 Other Interventions	27
6. Conclusion	28
6.1 A Draft Consolidated Framework for an Intervention for Improving the Mental Health of Architects ©	29
6.1.1 Context is Everything	30
6.1.2 Domain 1 - Intervention Characteristics.....	30
6.1.3 Domain 2 - Outer Setting	32
6.1.4 Domain 3 - Inner Setting	33
6.1.5 Domain 4 - Characteristics of the individuals involved	34
6.1.6 Domain 5 - The process of implementation	35
6.2 Recommendations	36
References	37
7. Appendices.....	49
7.1 Appendix 1 - Known intervention	49

List of Tables

Table 1: Estimated prevalence of mental and substance use disorders in Australia..... 8

Table 2: Selected external causes of death, Mechanism by intent, Australia (ABS, 2014)* 9

Table 3: Percentage of females and males in architecture across age groups 15

Table 4: Risk and Protective Factors for the mental health of architects 29

Table 5: Domain 1 30

Table 6: Domain 2..... 32

Table 7: Domain 3..... 33

Table 8: Domain 4..... 34

Table 9: Domain 5..... 35

List of Figures

Figure 1: Annual distribution of mental ill-health in Australia..... 8

Figure 2: Diagram by Georgina Russell, using data collected and analysed by Gill Matthewson and
Kirsty Volz 16

Figure 3: Illustration of systemic approaches to support those with mental illness..... 24

Introduction

This literature review has been prepared for the NSW Architects Registration Board. The aim of the review was to answer the following three main questions:

1. What research currently exists to indicate the prevalence or incidence of mental illness in the sector (broadly described as comprising practicing architects, and para professionals such as Computer Aided Design (CAD) technicians, students and graduates of architecture programs)?
2. What research currently exists to indicate the triggers, risk factors and early warning signs that could assist the sector to better support those in periods of mental illness? For example, does the isolated nature of sole practice and/or regional practice represent a greater risk or prevalence than, say, larger practice where the group dynamic provides informal support? How do the intense study patterns of studio-based education impact on students?
3. Does existing research suggest any correlation between the triggers and risk factors of mental illness, and any particular part of the sector? For example; risk factors that can be associated to the units of competency, or stages of life from university, registration and practice? For example, are there factors associated with university education? Is stress, anxiety or depression more commonly associated with design, documentation, project delivery or practice management? Are business pressures such as running a practice more likely to be a trigger for stress or anxiety than, say, the enjoyment of being engaged in the creative design process?

There exists a dearth of research around the mental health concerns facing architects, when students, when seeking employment, and when employed.

For the purpose of this review only, the term 'architect' may also refer to all those engaged in the sector, including students and CAD technicians.

Mental health is considered to be a 'state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (World Health Organization (WHO), Department of Mental Health and Substance Abuse, Victorian Health Promotion Foundation, & University of Melbourne, 2004). WHO estimates that more than 450 million people around the world suffer from mental disorders, and by 2030, depression alone will be the number one cause of disability. Suicide is currently the leading cause of death among Australians aged 15-44 (ABS, 2016).

Mental Health Promotion (MHP) is defined as 'interventions designed to maximize mental health and well-being by increasing coping capacity of communities and individuals and by improving environments that affect mental health' (Donovan & Anwar-McHenry, 2014, p. 1).

According to the Australian Institute of Architects (2016), Architecture influences 'all aspects of the built environment and brings together the arts, environmental awareness, sciences and technology. By combining creative design with technical knowledge, architects create the physical environment in which people live, which in turn, influences quality of life.'

1.1 Prevalence and risk factors

In Australia, in any given year, almost 4 million people, or 16.8% of the adult population, experience mental illness (Australian Health Ministers' Advisory Council, 2010). Furthermore, it is estimated that

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

560,000 children and adolescents, or 13.9% of all Australia children and young people (aged 4 to 17), experience mental illness. Over a lifetime, nearly half of the Australian adult population will experience mental illness at some point – equating to nearly 7.3 million Australians aged 16 to 85 (health.gov.au, 2016). As evident in table 1, 19.9% of the total population will experience mental illness in any given 12-month period.

Table 1: Estimated prevalence of mental and substance use disorders in Australia

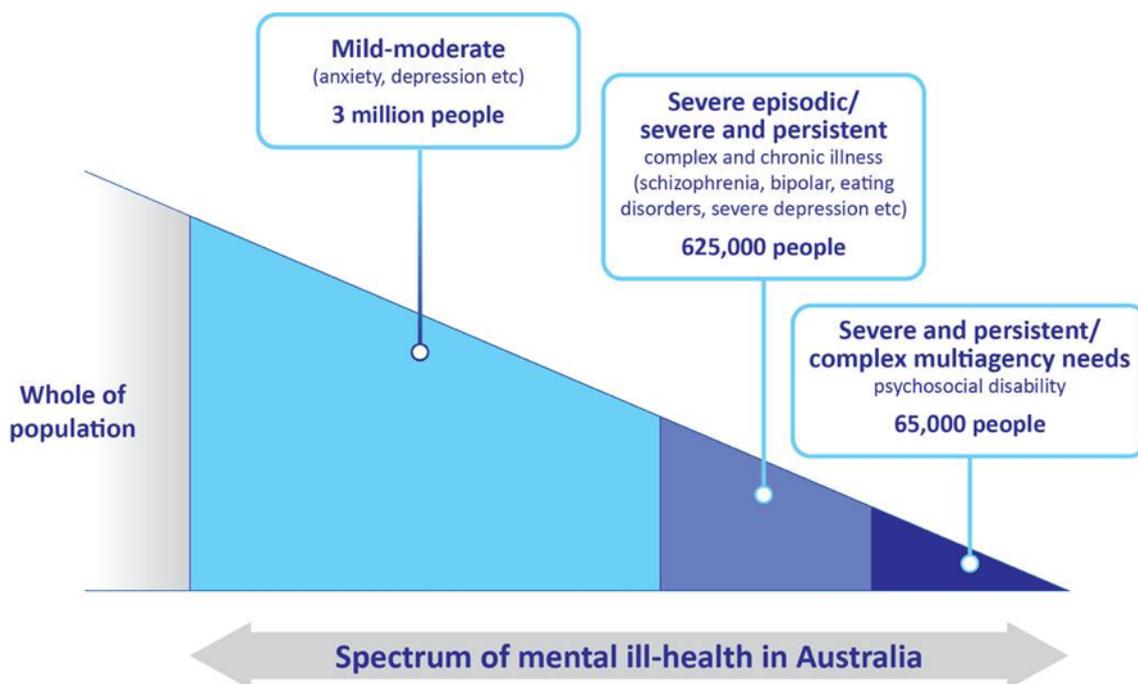
	0-14 years	15-24 years	25-64 years	65+ years	Total (all ages)
Mild	8.8%	10.9%	12.3%	8.3%	10.9%
Moderate	4.4%	5.6%	6.2%	4.3%	5.5%
Severe	2.2%	3.4%	4.1%	2.9%	3.5%
Total	15.4%	19.8%	22.6%	15.5%	19.9%

Source: (Diminic, Harris, Sinclair, Carstensen, & Degenhardt, 2013)

The experience of mental ill-health occurs across a wide spectrum and with differing levels of functional impairment. Those with mild to moderate mental illnesses are generally the high prevalence conditions such as anxiety and depression.

There is no internationally or nationally accepted definition of the term “severe mental illness,” however it is most commonly used to describe conditions, which are likely to involve persistent symptoms, significant functional impairment, and psychosocial disability. This includes conditions such as schizophrenia, bipolar affective disorders, major depression, personality disorders, and eating disorders.

Figure 1: Annual distribution of mental ill-health in Australia



Source: National Review of Mental Health Services and Programmes, Vol 1, 2014

The National Mental Health Commission provided a broad classification of severe mental illnesses within three further sub-groups, with overall numbers of people being about 690,000 (3.1 per cent of the population):

- **Subgroup 1–Severe episodic** – individuals who have discrete episodes, interspersed with periods of remission (about two-thirds of the overall severe population).
- **Subgroup 2–Severe and persistent illness** – individuals with chronic mental illness that causes major limitations on functioning (i.e. very disabling) and is chronic without remission over long periods. This group represents about one-third of the overall severe population.
- **Subgroup 3–Severe and persistent illness with complex multiagency needs** – this group represents those with the greatest disability among the severe population and who require significant clinical care (including hospitalisation), along with support to manage most of the day-to-day living roles (e.g., housing support, personal support worker domiciliary visits, day program attendance). This group is relatively small (approximately 0.4 per cent of the adult population or 65,000 people) and is likely to be the focus of the National Disability Insurance Scheme (NDIS) Tier 3 individual support packages.

National data reports that 2,864 people died by suicide in 2014. Over three quarters of all suicide deaths were males. Suicide accounted for 97,066 years of potential life lost – this is the highest of all causes of death and nearly 3.3 times the number of years of potential life lost to breast cancer. The number of undetermined deaths for 2014 was 280, most of which are likely to have been the result of intentional self-harm.

Among those aged 15-44, suicide is the leading cause of death, followed by accidental poisonings (including drug overdoses), and land transport accidents. Within both these classifications there is likely to be a significant number of suicide deaths. It is generally accepted that the official number of suicides is some 20-30% below the actual number due to stigma, problems with data collection and the legal variations across jurisdictions.

Among males 45-54 years of age, suicide is the third leading cause of death behind cancer and heart disease. Table 2 displays all causes of death.

Table 2: Selected external causes of death, Mechanism by intent, Australia (ABS, 2014)*

Mechanism of death	Accidental death	Intentional self-harm	Assault	Undetermined intent	Other intent	Total
Poisonings	1,224	628	1	117	0	1,970
Hanging	172	1,611	10	27	0	1,820
Drowning and submersion	186	53	0	22	0	261
Firearms	3	178	31	18	0	230
Contact with sharp object	4	80	96	7	0	187
Falls	2,301	134	0	11	0	2,446
Other	2,570	180	98	78	222	3,148

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

Total	6,460	2,864	236	280	222	9,840
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*Causes of death data are preliminary and subject to further revisions due for release in 2017 and 2018.

Research investigating factors that contribute to being mentally healthy found that having good friends to talk to, keeping the mind active, and having the opportunity to have control over one's life are important (Donovan et al., 2007). Factors considered to contribute to being mentally unhealthy include: excessive alcohol or drug use; having no friends or support; and particular crisis or traumas (Donovan et al., 2007).

There are several risk factors that can contribute to poor mental health, and particular populations also are at greater risk of developing mental illness, including:

- People living in rural and remote areas
- Aboriginal and Torres Strait Islander people
- Young people
- Culturally and linguistically diverse groups (CALD)
- People who are lesbian, gay, bisexual, transgender, intersex and/or questioning sexuality/gender (LGBTIQ)
- People who use alcohol and/or other drugs;
- Individuals with chronic illness or a disability
- Families and carers of people with mental illness, including young carers
- People who have experienced trauma (e.g., adult survivors of child abuse)

1.2 Mental Health in Creative Industries

Whilst this literature review is addressing the mental health concerns facing architects, there currently exists a dearth of research in regards to this profession specifically. However, given that architecture is a creative industry, mental health in creative industries in general was examined. Creative industries can be defined as 'activities which have their origin in individual creativity, skill and talent and which have the potential for wealth and job creation through generation and exploitation of intellectual property' (Cunningham, 2002, p. 54). As such, Cunningham (2002) explains that creative industries include: Advertising, Architecture, Arts and Antique Markets, Crafts, Design, Designer Fashion, Film, Interactive Leisure Software, Music, Television and Radio, Performing Arts, Publishing and Software.

Researchers have long examined links between creativity and mental illness and disorders (Andreasen, 2008; Jamison, 1996; Jamison, 1995; Ludwig, 1989), suggesting that those in creative industries may be more likely to suffer mental health issues. Although some researchers suggest that those in creative professions are no more likely to suffer from psychiatric disorders than those not in creative professions (Kyaga et al., 2013), research by Entertainment Assist in association with Victoria University found that mental illness is prevalent among workers in the entertainment industry (van den Eynde, Fisher, & Sonn, 2015). A potential implicated as a result of this link between creative industries and mental illness is difficulty with gaining and maintaining employment, especially among those with severe mental illness (Kyaga et al., 2013).

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

The culture of working in architecture, and creative industries in general, could play a role in mental health, and will be discussed in section 2.

1.3 Cost

The Australian Institute of Health and Welfare (2014, p. 47) reported that in 2011-12, Australia spent around \$140.2 billion on health, around 1.7 times higher than in 2001-02, and that expenditure increased from \$4,276 per person in 2001-02 to \$6,230 in 2011-12.

Australia spends in excess of \$28.6 billion per year to support people with a mental illness, equating to approximately 2.2 percent of Australia's Gross Domestic Product (Medibank Health Solutions and Nous Group, 2013). According to the 'Counting the Cost' report (Degney et al., 2012), mental illness in young men in particular, aged 12-25, costs the Australian economy \$3.27 billion per annum or \$387,000 per hour across a year in lost productivity.

In 2013/14, whilst there were more than 10,000 hospitalisations of NSW residents for intentional self-harm (with females accounting for more than 60% of these), in 2015, the Child and Adolescent Mental Health and Wellbeing survey found that approximately one in ten Australian adolescents had engaged in self-harming behaviour (Lawrence et al., 2015). Other data suggests that in any 12-month period, about 8% of all 12- to 17-year-olds are engaging in self-harming behaviour without suicide intent, and this increases with age to 11.6% in 16- to 17-year-olds (Zubrick et al., 2015). These high rates of hospitalisation have consequences for the economy, as research suggests that the cost of self-injury due to hospitalisation alone over 4 weeks is roughly \$14,168,000 (Martin, Swannell, Harrison, & Taylor, 2010). It also is known that many consumers present to Emergency Departments (ED) many times. This has significant financial costs to the community as well as significant inefficiency costs to the mental health system placing both a burden on ED/admissions and creating pressure on hospital beds.

1.4 Review Outline

This literature review discusses some of the issues that may be facing students, educators, graduates and architects. It begins by discussing workplace culture and issues associated with gender, including pressures associated with gender diversity issues within the industry and consequences this may have on both males and females. This section also highlights factors that may contribute to effective leadership and what may improve the psychological quality of work.

Next, this review will discuss workplace mental health in detail, and will examine the many different factors that may contribute to poor mental health in the workplace as well as demotivation among architects. One aspect that may be associated with mental health concerns among architects is the lack of creative expression when entering the workforce, and so this will be discussed.

Issues facing architects in educational settings will then be examined, and the report will discuss mental health concerns facing students in architecture as well as concerns with seeking employment and preparedness for work. The mental health concerns associated with undergraduates, in architecture and in university in general, will be discussed.

Finally, some potential solutions/interventions will be examined, such as mindfulness and meditation, and implications of the 'Act-Belong-Commit' campaign and programs like 'Mates in Construction'.

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

This review will conclude by proposing a draft consolidated framework for an intervention for improving the mental health of architects. It will discuss 5 domains of this framework, including: intervention characteristics; outer setting; inner setting; characteristics of the individual's involvement, and the process of implementation. Finally, this review will list a set of recommendations.

It is important to note that research and literature surrounding architects specifically is very limited. Therefore, this review examines the broader architecture industry by including students, graduates, and those in similar professions.

2. Workplace Culture

Workplace culture, or organisation culture, can have a significant impact on the mental health of employees. Schein (1985) describes 3 fundamental levels at which culture manifests:

1. Artefacts are apparent on the surface as behaviour and tangible products of the group (e.g., language, the group's design of its environment, enacted rituals) and beneath these forms the *climate of the organisation* represents the deepest level of cultural artefacts.
2. Espoused beliefs and values are shared ideals and theories held by members of the organisation. When they are clearly articulated they can help guide and direct action and behaviour. When well understood by all members they can be a unifying force.
3. The underlying assumptions that members tend to share and take for granted, developed through shared experiences in the organisation, are the core of the organisational culture. These assumptions are generally unquestioned or unexamined and are difficult to discern as they exist largely at an unconscious level (sometimes they are expressed in a management philosophy). They provide the key to understanding why things happen the way they do.

There are several ways workplace culture can be identified and understood, and can be through direct examination, including:

- Observed behaviour: language, customs, traditions
- Group norms: standards and values
- Espoused values: published, publicly announced values.
- Formal Philosophy: mission
- Rules of the Game: written and unwritten
- Climate: climate of group interaction
- Embedded skills
- Habits of thinking, acting, paradigms: Shared knowledge for socialization.
- Shared meanings of the group
- Metaphors or symbols

Hofstede (1991) discussed five domains of culture, with power distance being the first domain: the degree to which the society accepts there to be a difference in levels of power. The remaining four domains include: uncertainty avoidance, which reflects the extent to which a society accepts uncertainty and risk; individualism vs. collectivism, which reflects the extent to which people are expected to stand up for themselves, or alternatively act predominantly as a member of the group or organisation; masculinity vs. femininity, which refers to the value placed on traditionally male or female values, such as competitiveness or assertiveness; and long-term vs. short term orientation, which reflects an emphasis on values oriented towards the future, such as persistence, over those oriented to the present or past, such as tradition. It is important that these aspects of culture work together with effective leadership in order for a workplace to be successful. According to Schein (1985) culture is the most difficult organisational attribute to change, and that most organisational change efforts fail because of a lack of appreciation for the role of culture and the need to address

cultural change above other elements of the change process. Once the current culture has been defined the company must then assess and clearly identify the new, desired culture, and then design a change process.

2.1 Leading change

Kotter and Cohen's (2002) eight steps for leading change are useful for organisations to use when addressing change in the workplace, particularly in relation to workplace culture. The steps are as follows: step one involves creating a sense of urgency, meaning it is important that people are not complacent and that there is a sense of excitement; step two involves building a guiding coalition, so that there is a group with power and energy to lead and support collaboration; step three involves forming a strategic vision and initiatives to help steer the change and develop strategic initiatives; step four involves raising a large force of people or are willing to drive the change in an urgent manner; step five includes enabling action by removing any barriers or obstacles to the change that pay pose a threat to achievement; step six involves generating short-term wins by celebrating both small and large scale accomplishments; step seven includes sustaining acceleration through using change systems and structures that differ from the vision, and promote and develop employees to implement this; and step eight includes instituting change through articulating the connections between new behaviours and organisational success (Kotter & Cohen, 2002). Following these steps can promote effective leadership and support change in the workplace so that employees remain motivated and efficient.

If the psychological quality of work within the workplace drops, there can be significant consequences. Butterworth et al. (2011) explain that psychological quality of work can have a significant impact on mental health. Factors that contribute to mental health in the workplace will be discussed further in section 3, however, the Mentally Healthy Workplace Alliance (2014) identifies the following strategies that contribute to the mental health and wellbeing of workers. These include:

- Smarter work design that encourages employee engagement and contribution, flexibility in hours worked, job design that capitalizes on strengths as well as a physically safe work space
- Building better work cultures to encourage trust, collegiality and team work, address bullying, promote organisational justice and ensure management and leadership teams are trained to support wellbeing.
- Awareness and facilitation of timely evidence based intervention strategies to seek help earlier with greater awareness by all staff of strategies to provide informal collegial support.
- Increase awareness of information and resources to encourage people to take ownership of their own health and access support when they require it and
- Support recovery for individuals managing or returning to work from mental illness or stressful life events. Training for supervisors to understand and to be willing and able to support people returning to work, as occurs when returning from a physical illness, is critical to achieving good outcomes. A psychologically safe environment also reduces the stigma associated with mental ill health and supports an individual's and the teams' resilience.

2.2 Gender Diversity Issues

Architecture can be considered as part of a broader male dominated industry, defined as an industry in which there is a substantial majority of male workers compared to female workers. As classified by

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

the Australian and New Zealand Standard Industrial Classification (ANZSIC 2006), male dominated industries include: agriculture, forestry & fishing; mining; building and construction; transport, postal & warehousing; manufacturing; and utilities. The AA Dossier in the September 2014 issue of Architecture Australia looked at the state of gender equity in architecture in Australia (visit <http://archiparlour.org/aa-dossier-the-state-of-gender-equity/>), and discusses a range of statistics around women in architecture. In the dossier, Clark (2014), presents an overview of the results of the Parlour surveys and explains some of the differing statistics. Results of the survey highlight that women were:

- more likely to be employees compared to employers,
- less likely to be in senior positions, earned less,
- less likely to have their current primary employment in private practice,
- less likely to be registered, and
- less likely to be a member of the Australian Institute of Architects.

The surveys also revealed that twice as many women had taken a career break of six months or more, and that substantially more had taken time off to care for children or family compared to men (355 women compared to 31 men). Furthermore, 2011 census data shows that the percentage of women in architecture declines with age, as shown in the table below.

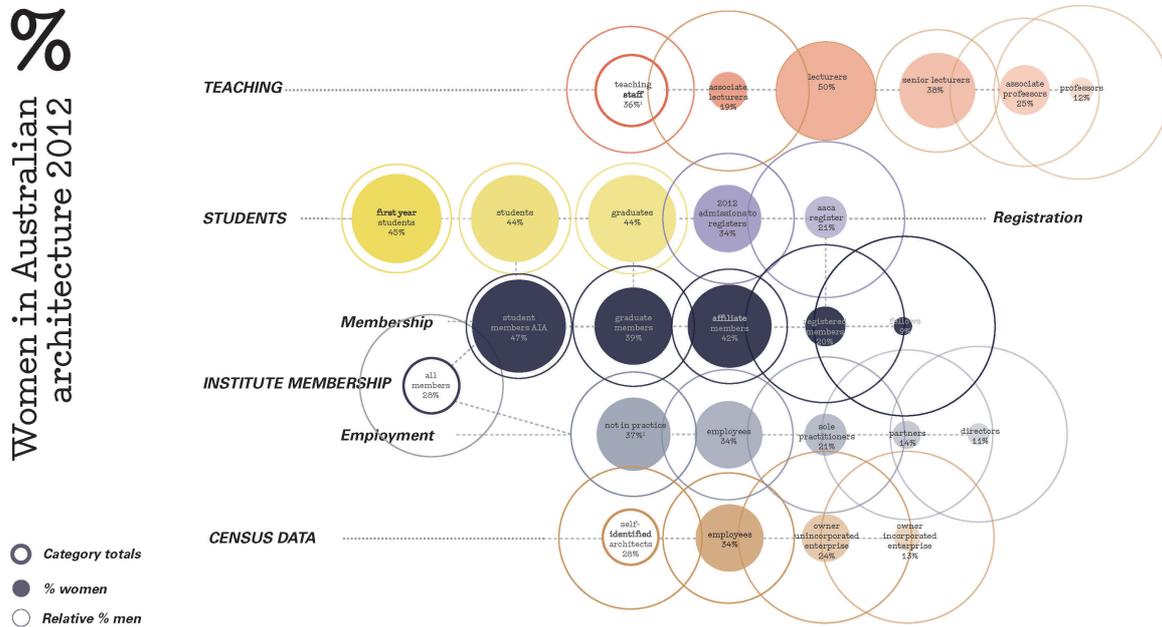
Table 3: Percentage of females and males in architecture across age groups

Age	Males	% of Age Group	Females	% of Age Group
20--24	359	52.79	321	47.21
25--29	1183	54.29	996	45.71
30--34	1439	63.11	841	36.89
35--39	1468	69.74	637	30.26
40--44	1208	69.79	523	30.21
45--49	1085	75.09	360	24.91
50--54	1156	85.06	203	14.94
55--59	1150	89.77	131	10.23
60--64	964	92.96	73	7.04
65 and over	798	94.10	50	5.90

Source: Julie Connolly, *Architects in Australia - A snapshot from the 2011 Census*

The figure below highlights the different proportions of women teaching, studying, registered, are members and employed.

Figure 2: Diagram by Georgina Russell, using data collected and analysed by Gill Matthewson and Kirsty Volz



Australian research on the prevalence of mental health disorders among male-dominated industries remains scarce, and requires further attention. Remembering that male dominated industries encompass a broad range of professions, a review by the National Centre for Education and Training on Addiction (NCETA) indicated that: mental health disorders are not elevated in male dominated industries; depression and anxiety are elevated in construction and mining industry workers, but prevalence of mental health disorders varies between groups; mental health disorder prevalence rates may be higher in some non male dominated industries; suicide rates may be higher in industries such as agriculture, transport and construction; there is a higher prevalence of problematic alcohol and drug use in male dominated industries. The report also found that risk factors for mental health and substance use problems include: lack of support for supervisors; poor working conditions, such as high job demands, overload, insecurity, and work-life imbalance; and work setting factors conducive to risky substance use (Roche et al., 2012).

Research suggests that practice in architecture relies on long working hours, homosocial behaviour and creative control, and that women are at a disadvantage and experience several limitations in relation to career development which are not faced by men (Sang, Dainty, & Ison, 2014). Females may also feel pressured to live up to certain standards and expectations when working within the architecture industry, and Gardiner and Tiggerman (1999) suggest that women report high levels of pressure due to discrimination, as well as worse mental health (compared to men) when utilising interpersonally oriented leadership styles within a male-dominated industry.

Some guidelines in Australia have been developed in order to meet some of the discrimination that women face in architecture, namely, the Parlour Guides to Equitable Practice (see www.archipalour.org). These guides (2016) state that 'women leave the profession at much higher rates than men, experience career constrictions that limit their ability to participate, and are dramatically under-represented at senior levels of the profession ... there is a significant mismatch

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

between education successes and career opportunities available to women in Australian architecture'. The guides cover a range of topics, including: pay equity; long hours; part-time work; flexibility; recruitment; career progression; negotiation; career breaks; leadership; mentoring; and registration (2016).

Stereotypical ideals of gender roles can have a significant impact on how people perform in the workplace. Research on leadership suggests that performance of leadership is influenced by: the leaders' immediate working group; the culture of their workplace; and stereotypical expectations of how women and men should behave in the workplace (Schnurr, 2008).

Stereotypical gender roles can impact a variety of professions, with a recent survey of more than 3,500 surgeons commissioned by the Royal Australasian College of Surgeons (RACS, 2015) revealing that about three out of five registered female trainees have been bullied, and that making complaints was widely believed to be "career suicide". Sexism and sexual harassment was a prominent issue, with women reporting they felt powerless to protest, with one in three of women reporting that they had been sexually harassed (RACS, 2015).

3. Workplace Mental Health

There has been considerable research on workplace mental health in general, but work addressing architects specifically is limited. This section will first discuss general literature around workplace mental health, and will close by examining the work that addresses architects specifically.

Research has examined preparedness for work in general, and how this may influence mental health and work-life goals among university graduates in general. Koivisto, Vuori, and Amiram (2010) found that school-to-work intervention increased employment preparedness, long term employment, and that this ultimately predicted work-life-related personal goals and lower financial strain, resulting in lower depressive symptoms.

Furthermore, some research has examined mental health in relation to quality of workplace relationships, and found that students who reported having workplace relationships with co-occurring positivity and negativity (compared to wholly positive) had poorer mental health outcomes, and that this relationship was influenced by negative work related variables such as job satisfaction; and level of support (Vaughn, Drake, & Haydock, 2016). Other researchers suggest that psychological quality (levels of control, demands and complexity, job insecurity, and unfair pay) of work can have an influence on mental health benefits, with jobs with poor psychosocial quality having poor mental health benefits than those with higher psychological quality (Butterworth et al., 2011). The mental health of those in jobs with poor psychological quality can even be worse than those unemployed (Broom et al., 2006; Butterworth et al., 2011), and job insecurity also can have a negative impact on mental health (Kim & von dem Knesebeck, 2015)

3.1 Architect Specific Research

There are several potential factors that may contribute to demotivation among architects, and therefore contribute to mental ill health. Research on architects specifically is limited, whilst some research suggests that the risk of suicide among architects is low (Agerbo, Gunnell, Bonde, Bo Mortensen, & Nordentoft, 2007), others suggests that those who work longer weekly work hours, have more exposure to a hazardous work environment, have higher job demands and lower job autonomy have significantly worse psychological well-being (Zeng et al., 2014); though this work does not address architects specifically.

There also are particular personality traits that may contribute to effective leadership and success in the architecture profession, and consequently reduce the risk of mental illness by acting as protective factors. A study on personality traits and leadership identified that extraversion and agreeableness positively predicted transformational leadership; and that transformational leadership behavior predicted a number of outcomes reflecting leader effectiveness (Judge & Bono, 2000). Other research relating specifically to architects identified that factors associated with successful productivity include: (a) commitment and drive; (b) overlearned skills; (c) aesthetic sensitivity; (d) ability to be a good salesman; and (e) ability to delegate responsibility (Dudek & Hall, 1991).

Research by Oyedele (2013) identified particular factors that can originate from organisational behaviour, project processes and design team/co-work related activities and include: organisational injustice; project induced stress; dysfunctional design team; poor interpersonal relationships;

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

perceived career decline; negative leadership behaviours; and poor organisational culture. These factors will now be discussed in turn.

3.1.1 Organisational injustice

Organisational injustice, defined as an employee's belief that either themselves or someone else has been treated unfairly (Ambrose, Seabright, & Schminke, 2002), can lead to demotivation among architects. There are many factors that can contribute to perceived organisational injustice, and generally incorporates the idea of imbalance in the organisation, or a violation of norms across situations (Sackett & Devore, 2001). Injustice can take on two overarching forms, namely, distributive justice: the reasonable allocation of rewards or punishments; or procedural justice: the fairness in the which decisions and allocations are made (Sackett & Devore, 2001). Pay diversity also can have a significant impact on whether employees believe their workplace to be 'organisational just' (Carr, Hodgson, Duncan, & Purcell, 2005). The work by Parlour on gender disparity in architecture practice (2016) describes a situation where there is a stark disparity between the number of female architecture graduates and their dramatic under representation at senior levels of the profession. This is an example of a situation within architecture that could induce perceptions of organizational injustice.

3.1.2 Project-induced stress

Project working is typical in architectural practice and is extensively mirrored in modes of architectural education. Researchers have highlighted that projects have become increasingly challenging for architects, due to the many significant sources of stress in relation to their processes, teams, organisations, structure and environment (Aitken & Crawford, 2007; Gällstedt, 2003; Hodgson, 2002; Sauer & Reich, 2009). Other factors, such as dysfunction within the team, and poor relationships, can contribute to project induced stress; these will now be discussed.

3.1.3 Dysfunctional Design Team

According to Oyedele (2013, p. 350), a dysfunctional design team refers to a set of designers whose actions are not performing normally, or are being impaired in their functions and operations. Sources of dysfunctional include factors such as commitment and competence of individual members, as well as an ineffective organisational structure or unclear goals (Oyedele, 2013). Factors which can contribute to an effective team include: clear and elevating goals; results-driven structure; competent team members; unified commitment; collaborative climate; standards of excellence; external support and recognition; and principled leadership (Larson & LaFasto, 1989).

3.1.4 Poor Interpersonal Relationships

Poor interpersonal relationships can have a significant impact on functioning in a work environment, and consequently lead to demotivation. Some research suggests that whilst job dissatisfaction may not directly reduce work efforts, it does put strain on interpersonal relationships, which in turn affects communication (Borcherding & Oglesby, 1975). Other research suggests that there are three sub-dimensions of poor interpersonal relationships, and these include the interpersonal relationships between an individual and their group, such as the design team/co-worker; their design leader/supervisor/manager; and their organisation, such as counterproductive behaviours (Cole, Schaninger, & Harris, 2002; Seiler, Lent, Pinkowska, & Pinazza, 2012).

3.1.5 Perceived Career Decline

Oyedele (2013, p. 350) explains that there are several factors that may contribute to individuals perceiving a career decline, and that this perception can lead to demotivation among workers. The first of these factors include parameters induced by external forces to the organisation, which can include instances such as economic downturn or competitive repositioning, which may lead to downsizing and subsequently job insecurity (Oyedele, 2013). This could potentially be a particular factor in architecture, with its sensitivity to economic cycles - especially with respect to development and construction cycles. The second of these factors involve those which are controlled within the firm, such as work assignments not matching the skills of the individual or their interests, thus resulting in inadequate opportunities for career development (Oyedele, 2013). The final factor includes those that are affected as a result of the personality of the individual, such as experience and knowledge which may lead to differences in perception about whether a task is challenging or not (Oyedele, 2013).

3.1.6 Negative Leadership Behaviours

Negative leadership can have a negative impact on employee's behaviour and mental health. Oyedele (2013) explains that it is common in design firms in particular that leaders are often appointed on their technical expertise and skill regardless of their leadership skills, thus resulting in negative leadership behaviours causing demotivation among employees. Schilling (2009) explains eight dimensions that can make up negative leadership behaviours and include being: insincere, despotic, exploitative, restrictive, failed, avoiding (active), avoiding (passive), and laissez-faire leadership (French for "let people do as they choose").

Research on positive leadership dimensions and what contributes to effective leadership by Gallup, revealed that the most effective leaders are always investing in strengths, and that when leadership fails to focus on the strengths of individuals, the engagement of employees falls (Rath & Conchie, 2008). The research also highlighted that effective leaders surround themselves with the right people and maximise their team, and that four distinct domains of leadership strength include: executing, influencing, relationship building, and strategic thinking (Rath & Conchie, 2008). Finally, effective leaders also understand employees' needs, and must be trustworthy, compassionate, stable, and offer hope (Rath & Conchie, 2008).

3.1.7 Poor Organisational Culture

Oyedele (2013, p. 351) defines poor organisational culture as the 'pattern of shared and stable beliefs, norms, values and expectations that are socially constructed within an organisation over time, which violate, and/or undermine legitimate organisational goals, and/or well-being or job satisfaction of organisational members'. Unfortunately, architectural organisations tend to have a small-size nature, with tasks often involving teams and individuals who have a strong urge to impose their individual selves and identities on the organisation (Ankrah & Langford, 2005). In large practices, project work is often structured through small project teams. According to the ABS (2012-13), around 98 percent of architect firms employ less than 20 people, highlighting that architect firms are often small in size. This type of organisational culture can easily be manipulated and abused which can contribute to infective processes, norms and beliefs that can affect overall well-being of employees (Oyedele, 2013).

3.1.8 Long Work Hours

In today's working climate there is a considerable amount of job uncertainty, and as such, it is not uncommon for architects to work long work hours and overtime in order to show commitment. Researchers have indicated that 'the periods of economic and employment uncertainty which prevail in the construction industry, and thus the architecture profession, have created a climate where it is necessary to demonstrate high dedication in order to retain one's job', resulting in long working hours and considerable stress (Caven & Raiden, 2010, p. 537).

3.1.9 Precarious Employment

As mentioned, there is considerable job uncertainty in today's world, as such, precarious employment is another factor that can contribute to poor mental health, and is particularly relevant to the architect profession. There has been a reduction in constraints on the movement of workers into and out of jobs, and as such an increase in unemployment and insecure job employment conditions (Caldbeck, Labonte, Mohindra, & Ruckert, 2014). Research highlights that workers in precarious arrangements often report poor mental health status similar to that of persons who have become unemployed, and as mentioned earlier, unsecure employment can reduce the psychological quality of work, also a contributor to poor mental health (Broom et al., 2006; Butterworth et al., 2011; Caldbeck et al., 2014).

3.1.10 Lack of Creativity

Creativity is defined by Warr and O'Neill (2005, p. 122) as 'the generation of ideas, which are a combination of two or more matrices of thought, which are considered unusual or new to the mind in which the ideas arose and are appropriate to the characteristics of a desired solution defined during the problem definition and preparation stage of the creative process'. Creativity is a primary reason as to why students enter the architect field (Sang et al., 2014), however, research suggests the reality of working life does not fulfil this desire due to the amount of administrative work (Sang, Ison, Dainty, & Powell, 2009) as well as senior (often male) architects getting the creative stage of the process (Sang et al., 2014). For some students, this gap between expectations and reality often causes disillusionment with the profession and consequently can have adverse effects on job satisfaction (Sang, Ison, Dainty, & Powell, 2009).

4. Educational Settings

4.1 Architecture student demographics

The Architects Accreditation Council of Australia (AACA) (2015, p.3) estimates that in June 2014 there were approximately 11,090 registered practising architects in Australia, based on total registrations of 12,751 discounted to account for registrations in multiple jurisdictions. This equates to 0.5 architects per 1000 people, similar to the UK and France, higher than the US and New Zealand, but lower than Germany and Italy (AACA, 2015).

Australia's architecture schools recorded 1293 graduates from accredited Masters programs in 2013, which is an increase of nearly 50 per cent from 2009 (AACA, 2015). Overall, the schools enrolled 9524 equivalent full time students in bachelor and masters level architectural study in 2013, collectively bringing over \$200 million to the university sector (Commonwealth Department of Education and Training, 2013). According to Department of Education and Training data, there were also around 300 higher degree by research (PhD and MPhil) students studying architecture-related topics in 2013 (AACA, 2015).

Parlour's research on the Australian architecture profession (using data from the Australian census as well as professional bodies), pointed to very similar percentages of female students in architectural education (45% of first year students in 2012).

In NSW, according to the NSW Architects Registration Board (see www.architects.nsw.gov.au), there are 4,762 practicing and non-practicing architects. 76% of registered architects are male.

4.2 Student mental health

It is well established that university is a time of distress (Bewick, Koutsopoulou, Miles, Slaa, & Barkham, 2010) and that students can suffer from a range of mental health concerns. A recent study indicated that students in humanities and art and design are significantly more likely to have mental health problems, and that those students with existing mental health problems, treatment rates are lowest among those in business and engineering (Lipson, Zhou, Ill, Beck, & Eisenberg, 2016).

Law students and medical students also are well known for having higher levels of psychological distress. Recent research has found that prevalence of mental health disorders among medical students were higher than those reported in the general population, and were: 4.7% for major depression; 5.8% for other depressive symptoms; 4.4% for anxiety; 1.9% for panic disorders; and 15.7% for psychosomatic complaints. These prevalence rates were higher than those reported in the general population (Wege, Muth, Li, & Angerer, 2016). Other work has indicated that law students experience higher levels of stress, anxiety and depression than university students in other disciplines (Skead & Rogers, 2015). Unfortunately, even though many universities have mental health services readily available for students, research has indicated that university students rarely seek help or treatment for their mental health concerns (Eisenberg, Golberstein, & Gollust, 2007).

Some research has examined potential interventions for improving mental health of university students. A particular study which focused on social and emotional skills, self-perceptions, and emotional distress, found that skill-oriented interventions programs, such as supervised practice, had the strongest benefits, and could be utilised for mental health promotion (Conley, Durlak, & Dickson, 2013). Interventions, which were conducted as a class, also were effective, suggesting that skills training through routine curricula offerings could be useful (Conley et al., 2013).

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

In line with gender discrimination in the work place, this is also a concern in universities. There have been several instances in the media in recent months around sexism in universities and the discrimination that females face. For example, students at the University of New South Wales recently were in the media in regards to male students chanting sexually explicit and degrading songs about women (Pearce, 2016), and it has been reported that a sexist and rape culture in many universities is not uncommon (Kermond, 2016). Other reports were also released around the discrimination females still face in research professions (Bagshaw, 2016).

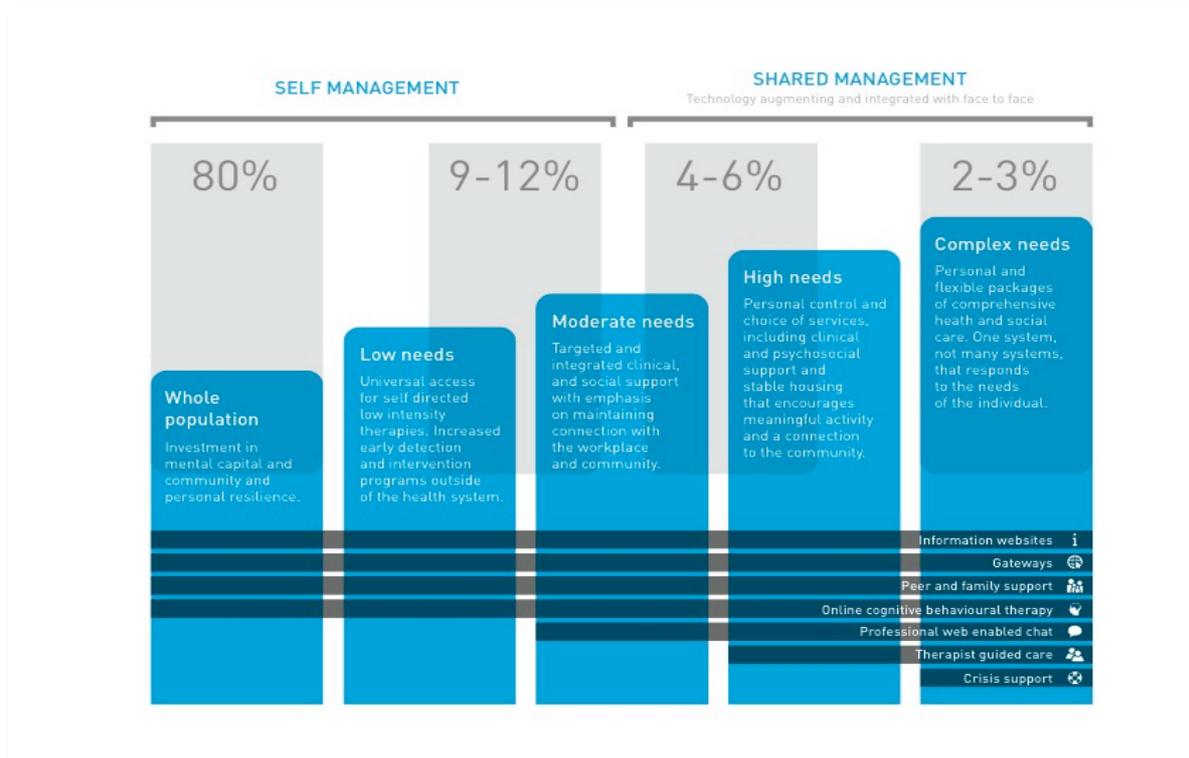
4.2.1 Architecture students

Work addressing the mental health of architect students is limited. Architecture schools have a reputation for pressuring students, and according to the first mental health survey conducted by the Graduate Architecture, Landscape, and Design Student Union (GALDSU) of the University of Toronto (2013), 61% of students felt the faculty was 'not doing enough' to address the mental health needs of students. The survey also revealed that many students have irregular sleeping patterns, skip meals, rarely exercise, and over half of the students have considered quitting the program, some multiple times (GALDSU, 2013). Whilst this data has its limitations, as it is specific to a particular school, there are very few studies that have examined mental health of architecture students specifically. However, it is commonly recognized that the studio culture of architectural education can be problematic due to pressures to prioritise it above all else, and its negative effects on student health and wellbeing (AIAS 2002). This highlights that further work is needed to explore the mental health of those studying architecture.

5. Solutions

Approached to mental health care vary depending on level of need. Figure 2 illustrates a systemic approach to support the different levels of need of those with mental illness.

Figure 3: Illustration of systemic approaches to support those with mental illness



Clinical staging, which involves identifying where a person lies on a continuum of the course of an illness, as well as the extent of progression of that particular disorder (McGorry et al., 2007), also can be beneficial for mental health interventions. This process enhances opportunities for individualised and needs based interventions, whilst more effectively utilising finite resources.

Integrated care pathways are essential for mental health. Integrated care pathways, defined as 'care plans that detail the essential steps in the care of patients with a specific clinical problem and describe the expected progress of the patient' exist for many conditions and procedures (Campbell, Hotchkiss, Bradshaw, & Porteous, 1998, p. 133). Integrated care pathways aim to: facilitate the introduction of guidelines into practice; improve multidisciplinary communication and care planning; reach quality standards; decrease unwanted practice variation; improve communication between clinician and patient and thereby improve patient satisfaction; and identify research and develop questions (Campbell et al., 1998, p. 133).

Some specific interventions and practices that may be useful for architects will now be discussed.

5.1 Mindfulness

Some potential intervention strategies to combat mental health concerns that are emerging include mindfulness and meditation techniques. Mindfulness, defined as 'paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally' (Jon Kabat-Zinn, 2003, p. 145), has

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

already been researched and found to be an effective intervention strategy in improving mental illness risks for employees with poor mental health (Conley et al., 2013; Huang, Li, Huang, & Tang, 2015).

Other researchers suggest that mindfulness also can benefit those with anxiety and depressive disorders, chronic pain and binge-eating disorders (Bice, Ball, & Ramsey, 2014; Helen & Teasdale, 2004; J. Kabat-Zinn et al., 1992; Jon Kabat-Zinn, 2003; Kristeller & Jones, 2005; Segal, Williams, & Teasdale, 2012; Telch, Stewart, & Linehan, 2001), and may help a broad range of individuals to cope with their clinical and nonclinical problems (Grossman, Niemann, Schmidt, & Walach, 2004).

Research also has examined how mindfulness can aid women in leadership. It is well known that leaders tend to be masculine, and researchers have found that men perceived a woman who was masculine and mindful to be a better leader than a woman who was masculine and mindless (Kawakami, White, & Langer, 2000).

5.2 Act-Belong-Coming campaign

The Act-Belong-Commit campaign could be utilised to promote positive mental health and wellbeing among architects. This campaign uses a community development approach to influence behaviour at an individual and community level, by creating supportive environments that foster and maintain mental health and wellbeing (Donovan & Carroll, 2008; Donovan et al., 2007; Pettigrew & Donovan, 2009).

Act-Belong-Commit represent 3 domains of activities following ABC: **Acting**, which involves keeping alert and engaged by being active (not just physically but also social, spiritually and mentally); **Belonging**, by maintain friendships, joining and participating in groups and activities within the community; and **Committing**, by engaging in activities that provide purpose and meaning in life such us supporting causes or helping others (Donovan & Anwar-McHenry, 2014).

This campaign has already been successful in Australia in: increasing awareness about how people can protect their mental health and encouraging people to engage in activities to do so; changing beliefs about mental health and reducing stigma associated with mental illness; increasing openness in relation to talking about mental illness; achieving a variety of local mental health-promoting initiatives; establishing effective and sustainable partnerships; and introducing systemic change within the health system (Anwar McHenry, Donovan, Jalleh, & Laws, 2012; Jalleh, Anwar-McHenry, Donovan, & Laws, 2013).

In summary, this campaign could be used to encourage individuals to not only engage in mentally healthy activities, but also to support organisations to offer mentally healthy activities to promote and increase wellbeing and resilience. The workplace applications of this program would be substantial, as employers could educate their employees about mentally healthy activities and awareness, as well as increase resilience.

Act-Belong-Commit could be tailored and applied across the architecture profession and through workplaces.

5.3 Mates in Construction

Whilst the architect profession is quite different in nature to building and construction, some research has investigated the broader male-dominated industry and suicide interventions. For

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

example, research has highlighted that suicide rates are substantially higher in construction workers (Notkola, Martikainen, & Leino, 1993; Stack, 1995, 1999; Stern & Haring-Sweeney, 1997).

The Mates in Construction (MIC) program, established in February 2008 by the Building Employees Redundancy Trust (BERT), was developed in an effort to prevent suicide through implementing recommendations of the Australian Institute for Suicide Research and Prevention (AISRAP) study.

The MIC program has five main objectives: universal prevention; selective prevention; indicated prevention; treatment and postvention; and has three main components: general awareness training (GAT); connector training; and applied suicide intervention skills training (ASIST) (Gullestrup, Lequertier, & Martin, 2011).

More specifically, the program aims to: 'promote awareness amongst construction workers about mental illness and suicide in the construction industry, warning signs for suicide and the preventability of suicide; reduce stigma associated with mental illness, suicide and help-seeking; enhance symptom identification by implementing a volunteer gatekeeper program within the construction industry community; improve access and engagement with specialised services and programs for specific difficulties (e.g., drug and alcohol problems, separated fathers without custody of their children); improve access to mental health intervention through flexible delivery of outreach and case management support for those at risk; ensure support provided is mindful of the context and needs of the construction industry population, to maximise engagement; encourage workers to access 24-hour telephone crisis support; facilitate referral for at-risk workers to appropriate local services; collaborate with services utilised by at-risk workers; ensure ongoing support for workers who have attempted suicide; and offer bereavement support following suicide of an industry worker' (Gullestrup et al., 2011, p. 4182).

Recent research has examined the benefits of the MIC program both on an individual level as well as economically, and found that MIC could potentially avert 0.4 suicides, 1.01 full incapacity cases, and 4.92 short absences in relation to self harm and suicide (Doran, Ling, Gullestrup, Swannell, & Milner, 2015). This would generate an annual savings of \$3.66 million (AU), and for every \$1 invested in MIC, the economic return would be approximately \$4.6, highlighting that MIC has potential in mental health and suicide prevention in the construction industry.

An evaluation of the MIC program also has highlighted the value it has among construction workers themselves. Findings revealed that: rate of awareness about the program was high, with 91% of workers being aware of the program; workers clearly understood the program; the program was valued by workers, especially so among those who had had experience with the program; there was a definite impact on workers around awareness of looking after each other and seeking help; and help received by those who had sought help was rated highly (Mates in Construction Program Evaluation Report of Findings, 2012).

5.4 Lifeboat¹

In 2012, ConNetica formed a joint venture partnership with the OzHelp Foundation, the National Institute for Mental Health Research at the Australian National National University and the Hope for

¹ ConNetica is a partner in the Lifeboat program and is disclosing a financial interest in this program.

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

Life program conducted by the Salvation Army. The joint venture was established to develop and provide a suite of suicide prevention programs and services using a mental health promotion framework.

Lifeboat has been developed to *move the dial* from suicide crisis intervention to suicide prevention.

Lifeboat consists of a suite of learning programs and resources informed by sound models, principles and evidence drawn from four key areas: 1) population health and mental health promotion, 2) suicidology, 3) adult learning, and 4) social marketing and communications.

The current suite of programs and resources focus on the following key areas:

- ✚ *Conversations for Life* - an introduction to suicide and suicide prevention course focussing on communication and influencing vulnerable others before a crisis intervention is necessary. In addition to general public programs, Conversations for Life has been adapted and conducted in a range of specific settings - for school counsellors and support teachers, for pharmacists, local government, and rental property managers. Over 2,500 people have undertaken the program.
- ✚ *Strengthened for Life* - suicide crisis intervention program for those working with vulnerable people or higher risk populations.
- ✚ *Strong Communities for Life* - a whole-of-community program for suicide prevention and more resilient communities
- ✚ *Working Minds for Life* - suicide prevention in the workplace
- ✚ *Resilient Minds for Life* - a program to build personal and collective resilience.

The Lifeboat program is supported and enhanced through an integrated digital platform - *Connect for Life*. Apps for Conversations for Life have also been developed and are available through Google Play and the Apple iStore.

ANU have undertaken continuous evaluation of the Conversations for Life program and the pilots of other programs. The results show significant improvements in knowledge, skills and confidence of participants.

5.5 Other Interventions

Other interventions include the 'Tradies Tune Up' program by OzHelp. As identified in the evaluation report of the program in 2010, the program aimed to increase the awareness of building and construction workers about their current state of physical and mental health; to provide direction and motivation to assist with more pro-health choices; and to increase access by these workers to support services and education that will assist in preventing or ameliorating health problems. The evaluation report revealed the program is successful in providing access to screening and preventative health care to building and construction workers (Argyle Research and Training, 2010).

For a full list of known interventions, see appendix 1.

6. Conclusion

Mental health of architects is an area of concern that requires more attention and considerable research. The perception of architecture as a profession that is male dominated, that involves excessively long study hours and intense commitment during education, and excessive work hours and intense, often isolating, project focus in practice, suggests there are elements in the profession's culture that could be contributing factors in mental health concerns. Whilst research to date has addressed the mental health of students (with some addressing architecture students specifically), limited work has investigated factors contributing to the declining mental health of architects when in the workforce. There also are concerns in regards to women in architecture, given that it is considered a male dominated industry, and that their mental health may be at risk as a result.

This brief literature review has discussed several factors that could contribute to poor mental health, as a student, when entering the workforce, and when employed. Potential interventions could include mediation and mindfulness practice, and the Act-Belong-Commit campaign has already proved to be effective in increasing wellbeing and fostering mentally healthy adults. Further attention and research is needed to address the mental health of architects, and a framework or theoretical model must be developed in order to guide the way forward.

It is important to discuss a framework for mental health promotion, prevention and early intervention. Appendix 1 highlights mental health interventions that are already in place, but it is important that the risk factors and protective factors facing the mental health of architects are further examined.

A theoretical or postulated model is essentially a model that illustrates all the factors that impact on mental health and wellbeing for this particular group. This model may be used for testing assumptions explained in this review, which can ultimately guide future research and interventions. Such models are needed to reduce fragmentation, frustration and confusion and help with assessment, evaluation and appropriately scale programs. It is also important to apply local wisdom and experience to what we know works elsewhere - to understand what works, under which circumstances and for whom.

A theoretical or postulated model can be defined as a proposed operation model and associated deliverables. Developing this model facilitates the conceptualisation and clarification of factors contributing to and impacting on the mental health and wellbeing of architects. It can provide guidance for developing and testing interventions for improved mental health among architects. Mediating, dependent and context variables are included in a postulated model. Mediating variables could include: the utility and validity of the case for action or change; knowledge, awareness and acceptance of need for action on mental health among architects; and whole of profession engagement/ownership. Dependent variables could include: the time and space given to mental action on health in architectural firms and within the university setting; the quality of the planning and implementation of mental health interventions for architects; and the health and wellbeing of architects. Lastly, context variables could include: resources that are available; number of stakeholder organisations; the economic conditions in the industry; strategic planning; and broader national health and hospital reform.

The development of a theoretical model will require further data gathered via survey/s and focus groups to better understand the current context of architects and their mental health and wellbeing.

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

A starting point is the following table of risk and protective factors that influence the mental health of architects, developed from the literature review.

Table 4: Risk and Protective Factors for the mental health of architects

Risk Factors	Protective Factors
Excessive alcohol or drug use	Having good friends to talk to
Having no friends or support	Keeping the mind active
Particular crisis or traumas	Having the opportunity to have control over ones life
Particular populations (see section 1)	
Organisational injustice	Smarter work design that encourages employee engagement
Project induced stress	Building better work cultures to encourage trust, collegiality and team work
Dysfunctional design team	Evidence based intervention strategies to seek help
Poor interpersonal relationships	Awareness and facilitation of timely interventions
Long hours of work	Increase awareness of information and resources
Perceived career decline	Support recovery for individuals managing or returning to work from mental illness or stressful life events.
Precarious employment	
Negative leadership behaviours	Leadership skills:
Poor organisational culture (closed communications, masculine, competitive, coercive, selective/exclusive etc.)	<ul style="list-style-type: none">• Commitment and drive• Overlearned skills• Aesthetic sensitivity• Ability to be a good salesman• Ability to delegate responsibility• Extraversion and agreeableness

6.1 A Draft Consolidated Framework for an Intervention for Improving the Mental Health of Architects ©

This Draft Framework is based on ConNetica's Consolidated Framework for Effective Implementation² and the findings of the Literature Review. It is designed to provide guidance to the

² The framework is based on Damschroder's et al (2009) Consolidated Framework for Implementation Research' (CFIR) and Angeles et al (2014) 'Theoretical framework for complex community-based interventions' and other aspects of implementation science.

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LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

NSW Architects Registration Board and stakeholders on addressing the mental health and wellbeing of under-graduate and registered architects.

The Framework is based on five inter-related domains. The table below describes the elements of each domain and then the possible application to architects. Careful consideration and a planned approach to each domain and the elements outlined will be more likely to result in improvements to the mental health and wellbeing of architects in training and in practice. Domains 4 and 5 would be informed by undertaking further targeted research (namely, focus groups and surveys).

6.1.1 Context is Everything

"There is a growing body of evidence that an intervention that was successful in one location doesn't deliver the same results elsewhere".

Bamber, in 'Perspectives on Context', The Health Foundation, 2014

What is context? Generally, context is described as a set of factors or attributes that can affect improvement efforts - organisation's leadership, clarity of purpose, culture, climate, approach to learning etc. Increasingly, there is an emphasis on the dynamic aspect of context - that is the relationship between context, intervention and implementation or between the various factors that might influence context.

The implication of this is that any intervention to improve the mental health of architects - encourage more early help-seeking, better support those with a mental health problem to stay in their employment and those returning from an episode of illness and so on - is that any plan for intervention cannot be just well planned and implemented from the outset but must be actively monitored and re-calibrated as contexts change.

6.1.2 Domain 1 - Intervention Characteristics

Table 5: Domain 1

#	Element	Possible Application/Implication
1	The perception of the stakeholders that the intervention is internally or externally developed	To date the work undertaken has been initiative form within the profession and external support engaged. Future stages - undertaking targeted research, development of pilot programs, broader rollout of initiatives - will need to have involvement of the profession
2	The legitimacy of the source	The reputation of both ConNetica and registration Board are factors here and the 'right' of the Board to take this action will need to be reinforced in communications.

3	<p>Stakeholder perceptions of the quality and validity of the evidence supporting the belief that the proposed interventions will have desired effect/s</p>	<p>Evidence from other professional groups will be important.</p>
4	<p>Stakeholder perceptions of the advantage of implementing the intervention vs not implementing vs alternatives</p>	<p>The case for change will need to be clear. Benefits must be seen as outweighing the costs of not acting at all, or simply doing no more than the appearance of action</p>
5	<p>Robust but adaptable - the degree to which the intervention can be adapted, refined or reinvented to local needs:</p> <ul style="list-style-type: none"> ➤ What are the core elements of the intervention? ➤ What aspects are adaptable/modifiable 	<p>Given the range of settings where architects are educated and employed, any intervention package will need to be adaptable for these settings - sole operator, small practice, larger practices and university campuses. It may also be useful to frame any intervention in terms of a staged or stepped approach from minimal to comprehensive. Core elements might include surveying, key messages, online support and referral, vignettes in various mediums to encourage help-seeking, conference inserts, etc.</p>
6	<p>Perceived difficulty of the intervention - duration, scope, radicalness, disruptiveness, centrality, intricacy, number of steps etc.</p>	<p>Organisational and university setting interventions will need to be simple and require minimal human resources to support.</p>
7	<p>Perceived excellence in how the intervention is bundled, presented and assembled</p>	<p>Any intervention must (particularly for architects) <i>look</i> contemporary and engaging. Look and feel will be more important for this target group</p>
8	<p>Costs of the intervention - and costs associated with implementing the intervention including investment, supply, and opportunity costs</p>	<p>Utilising online and mobile solutions along with easily printed and accessible resources will be important.</p>

6.1.3 Domain 2 - Outer Setting

This includes the economic, political and social context in which architects and architectural bodies reside (both within universities and in the building and construction industry).

Table 6: Domain 2

#	Element	Possible Application/Implication
1	Target audience needs and resources	Architects, like all young adult and adult Australians, are at risk of developing mental disorders, which if untreated, will adversely impact on their professional work, income, overall health and even longevity. Presently there are no specific initiatives or resources targeting architects and mental health in Australia (or internationally)
2	Cosmopolitanism or connectedness - the degree to which an organisation/community is networked with external organisations	Based on input in the Literature review, architects through their work engage with a range of other professionals and para-professionals. Clearly those working in sole practice, are less networked on a day to day basis with peers but the degree of networking in medium and larger architectural firms will vary depending on work practices and systems.
3	Community expectations, norms and pressure	In general community expectations regarding the way employee and even sub-contractor health and wellbeing are considered is increasingly important. Not acting or allowing a culture that potentially damages individual's mental health to go unchecked, will damage the profession and architectural organisations.
4	External policies, incentives or disincentives	External policies relevant are the state/territory Workplace Health and Safety legislation.

		Incentives are not clearly evident in terms of improved productivity.
5	The overall operating environment	Australia’s economic circumstances are uncertain and a major shift from mining/resource extraction to services is underway. This in turn is causing increasing levels of anxiety in the community regarding employment. This is more prominent in certain sectors - construction and building is one. On the other hand, demand for architectural services is presently reported (at least in Sydney) as strong.

6.1.4 Domain 3 - Inner Setting

The Inner Setting includes the structural, economic, political (small ‘p’) and cultural contexts through which the implementation process or intervention will proceed.

Table 7: Domain 3

#	Element	Possible Application/Implication
1	The ‘user context’ - that is the architect’s world and how the user will view/use the intervention.	The interventions must be valued, relevant to the target groups
2	Structural characteristics - age, maturity and size of organisations in architecture. The less stable, the less likely that desired change will occur	The literature review revealed several structural characteristics about the nature of architectural organisations that can contribute to poor mental health, including: organisational injustice; project induced stress; dysfunctional design team; poor interpersonal relationships; perceived career decline; negative leadership behaviours; and poor organisational culture
3	Networks and communications - the nature and quality of the ‘webs’ of social networks and the nature and quality of formal and informal communications within architectural	This will need to be assessed more before any intervention is designed and involving these platforms.

	organisations.	
4	Culture - the norms, values, artefacts, basic assumptions of the organisation	The Parlour project provides a considerable body of evidence on the nature of the culture - male dominated, competitive, and creative nature. The parlour guides provide advice on: pay equity; long hours; part-time work; flexibility; recruitment; career progression; negotiation; career breaks; leadership; mentoring; and registration. The implications of these guides include greater awareness around workplace culture and fairness.
5	Implementation climate - six sub-constructs contribute to a positive implementation climate: Tension for change Compatibility Relative priority Organisational incentives and rewards Goals and feedback Learning climate	These sub-constructs can be considered at the whole of profession (macro) and individual firm (meso) level.
6	Leadership engagement - the commitment, engagement and involvement/visibility of leaders and managers with any intervention	To date the engagement of the University schools of Architecture is a positive basis to build leader engagement. This needs to extend to major firms and opinion leaders in the profession.

6.1.5 Domain 4 - Characteristics of the individuals involved

The possible applications and implications would be informed by survey and focus group methods. Research has highlighted that future research should explore to what extent changes in knowledge, attitudes, and supportive behaviour lead to seeking help earlier (Hanisch et al., 2016)

Table 8: Domain 4

#	Element
1	Knowledge and beliefs about the intervention - individuals’ knowledge of and value placed on the intervention, as well as familiarity with the facts, truths and

	principles related to the intervention. Skill in using the intervention is primarily a cognitive function that relies on adequate know-how or how-to knowledge and knowledge of the underlying principles or rationale for adopting the intervention.
2	Self-efficacy - individual belief in their own capacity and capability to execute courses of action to achieve the intervention goals
3	Stage of change (Prochaska & DiClemente, 1983). What phase is the individual in - pre-contemplation, contemplation? Need to characterise the phase the individual is in, as he/she progresses toward skilled, enthusiastic and sustained use of the intervention.
4	Individual identification with the organization or profession - a broad construct related to how individuals perceive their organisation/profession and their relationship and commitment to it
5	Personal traits and attributes: such as tolerance of ambiguity, intellectual ability, motivations, values, competence, capacity, innovativeness, tenure, learning styles and more

6.1.6 Domain 5 - The process of implementation

Table 9: Domain 5

#	Element
1	Planning - the degree to which a scheme or method and tasks are developed in advance and the quality of those schemes or plans
2	Engaging - the attracting and involving appropriate individuals in the design, implementation and use of the intervention through a combined strategy of social marketing, education and training, leader/ influencer role modeling, and similar activities. This includes opinion leaders, formally appointed implementation leaders, champions, and change agents.
3	Executing - the quality of the execution may consist of the degree of fidelity of implementation to planned courses of action, intensity (quality and depth) of implementation, timeliness of task completion, and degree of engagement of key individuals (e.g. implementation leaders) in the implementation process.
4	Reflection - the provision of timely, planned and active processes for reflection by key stakeholders

5

Evaluation - a robust evaluation framework with qualitative and quantitative measures of process, output, impact and outcomes preferably through an action research approach to capture the user experience.

6.2 Recommendations

This review has highlighted the lack of data and knowledge in relation to the mental health and wellbeing of architects. It has highlighted a number of characteristics of work and education of architects that are strongly associated with increased risk of developing mental health problems.

It is recommended that a series of targeted focus groups and surveys of both undergraduate and registered architects be undertaken to build a clearer picture of the current context of the profession. This research should consider the following:

1. Measuring the mental health and wellbeing of architects
2. The quality and utility of communication networks across the profession
3. Fairness in the workplace and gender equality and the impact on wellbeing
4. Effective and efficient leadership strategies in architectural firms
5. The impact of unstable employment and how architects respond to this
6. Improvement in psychological quality of work and great opportunities for creativity

Opportunities for interventions including mindfulness practice, training and education, changes in workplace and profession-wide policy, defined pathways to care etc.

It is hoped that through this review of the literature that the NSW Architects Registration Board, other organizations, practices and people in the sector, can consider what future interventions may aid in improving the mental health of architects.

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7. Appendices

7.1 Appendix 1 - Known intervention

Below is a list of known mental health organisations/interventions.

General

Lifeboat - Suicide prevention, resilience and capacity building courses and programs for individuals, communities and organisations.

Superfriend - SuperFriend is the Industry Funds Forum Mental Health Foundation

Beyond blue - provides information and support to help everyone in Australia achieve their best possible mental health, whatever their age and wherever they live.

Lifeline - Provide 24/7 crisis support and suicide prevention services.

Blackdog - A not-for-profit organisation and world leader in the diagnosis, treatment and prevention of mood disorders such as depression and bipolar disorder.

SANE - SANE Australia works to help all Australians living with a mental illness lead a better life - through support, training, and education.

Mind - leading provider of community mental health services who support people to live connected, productive and satisfying lives.

Headspace - National Youth Mental Health Foundation providing early intervention mental health services to 12-25 year olds.

Young and Well CRC - the Young and Well CRC is an Australia-based, international research centre that unites young people with researchers, practitioners and policy makers from over 75 partner organisations across the non-profit, academic, government and corporate sectors.

Reachout.com - Australia's leading online youth mental health service that is accessed by more than 110,000 Australians each month.

Mindstar - an online stepped-care or triage model of support and psychological based interventions. Australian based.

Male specific

Mates In Construction - MATES in Construction is a charity established in 2008 to reduce the high level of suicide among Australian construction workers.

Tradies Tune Up - The Tradies Tune Up program is a series of health checks directed at men in construction, mining and trades. The tuneup is usually run at locations where tradesman and workers frequent, including hardware stores, mining sites, and other locations.

Man therapy - A website designed as a toolkit, enabling men to learn more, providing them strategies designed to protect wellbeing and to guide them to professional treatment if/when they require support.

Mens shed - Any community-based, non-profit, non-commercial organization that is accessible to all men and whose primary activity is the provision of a safe, friendly and healing environment where men are able to work on meaningful projects at their own pace in their own time in the company of other men.

LITERATURE Review

Architects and Mental Health - PREPARED for the NSW Architects Registration Board

Healthy Dads - Healthy Dads, Healthy Kids (HDHK) is a community-based, multi-award winning program, aimed at engaging fathers in positive lifestyle role modelling and effective parenting strategies to improve the physical activity and dietary behaviours of both themselves and their children.

Beyond Barriers - *beyondblue* established the Beyond Barriers Strategy to encourage men to take action against depression and anxiety through reducing barriers to seeking support.

Mens Line - MensLine Australia is the national telephone and online support, information and referral service for men with family and relationship concerns