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BRAIN HEALTH
INSTITUTE

**Brain Health & Housing
Seminar Series**

Understanding the Past

Trauma and Adverse Childhood Experience



GBHI/Respond Seminar Series on Brain Health and Housing

The Brain Health and Housing seminar series is a joint initiative between the Global Brain Health Institute (GBHI) and Respond, an Approved Housing Body (AHB) and service provider.

This series aims to advance our understanding of brain health as it applies to housing design, care provision and homeless services.

Conceptually, the overall intersection between brain health and housing can be divided into two interrelated meta-themes, that of the built (building, services, infrastructures), and that of the human (community, inclusion, social supports), with this series focusing on both these strands and how they interconnect.

Optimising one's environment, lifestyle and social community connection are both key factors in protecting brain health and preventing dementia, and generally contribute to individual and societal wellbeing. The value of approaching housing through the lens of brain health therefore, inherently touches on social justice, equity, community building and sustainable development.

Seminar 3: Understanding the Past- Trauma and Adverse Childhood Experience

The third seminar in this series focussed on understanding the past and examined the effect of trauma and adverse childhood experience. This overall theme is of major importance to the management and provision of housing and housing supports. Awareness of how past trauma can manifest in an individual's behaviour or effect their overall wellbeing is an essential component of effectively supporting a resident or service user. From a brain health perspective, past trauma or childhood adversity can impact overall mental and physical health, increasing exposure to the risk factors associated with poor brain health in later life.

Speakers explored how trauma and adverse childhood experiences can impact education, life trajectory and adult health along with how we can understand and manage this impact, to support communities and protect brain health. The seminar was an 'action orientated session' which aimed to discuss, generate and disseminate best practice in the field.

The seminar took place online on 11th April 2022 and the contributors included:

Opening statements

Declan Dunne - CEO, Respond

Keynote presentations

Professor Trevor Spratt - AIB Professor in Childhood Research and Director of Children's Research Centre, Trinity College.

Dr Niall Muldoon – The Ombudsman for Children, Ireland.

Panellists

Dr Cathal McCrory – Associate Professor (Psychology) of Life Course Development and Ageing in the Department of Gerontology, Trinity College.

Hanan Khalil – Associate Professor and Vice Dean of Faculty of Applied Medical Sciences at Jordan University of Science and Technology.

Closing Remarks

Brian Lawlor - Deputy Executive Director, GBHI

Moderator

Áine Kerr – Journalist and Co-Founder of Kinzen

Introduction – Setting the Context

This seminar focussed on understanding how adverse experiences in an individual's early years can affect their mental, physical, and brain health over their life course.

Speakers explored how trauma and adverse childhood experiences can impact their educational attainment and long term health outcomes over the life trajectory, and discussed how we can understand and manage this impact. Thereby, supporting communities and protecting brain health.

It is increasingly recognised that trauma and adverse experiences across the life course can affect our brain health, particularly in early life. Neglect, abuse, household dysfunction, chronic

exposure to stress, or stressful life events can have a long term impact on children as they grow and these impacts can have a long term effect on people's mental health, physical and emotional well-being. As a result, common experiences can feel daunting and stressful. It can be harder to negotiate new social situations and to learn how to trust people. Stress and social isolation can impact an individual's physical and psychological health, impact their brain health, increasing the risk of dementia in later life.



Definitions

Adverse Childhood Experiences (ACEs) are traumatic events that occur before an individual reaches the age of 18. ACEs include all types of abuse and neglect, such as parental substance use, incarceration, and domestic violence.

ACEs can also include situations that may cause trauma for a child, such as having a parent with a mental health difficulty or being part of a family going through a divorce.

A landmark study in the 1990s found a significant relationship between the number of ACEs a person experienced and a variety of negative outcomes in adulthood, including poor physical and mental health, substance use, and risky behaviours¹. The more ACEs experienced, the greater the risk for these outcomes. By definition, children in the child welfare system are far more likely to have experienced at least four ACEs, compared with the general population².

¹ Centers for Disease Control and Prevention. (2016). About the CDC-Kaiser ACE study: Major findings. Available at: <https://www.cdc.gov/violenceprevention/aces/about.html>.

² ACEs in young children involved in the child welfare system.

Available at: <https://www.flcourts.org/content/download/215886/file/ACEsInYoungChildrenInvolvedInTheChildWelfareSystem.pdf>

Summary of Ideas and Perspectives Presented

The main points and ideas presented by the contributors included:

Keynote speakers

Adversities Experienced in Childhood and their Influence on Later Life Trajectories: Professor Trevor Spratt

A number of studies have considered how 'our beginnings in life are very influential for our ends'. Many studies have focussed on measuring associations between singular adversities and singular outcomes. Over the last 30-40 years a number of studies have indicated that sexual abuse in childhood is a risk factor for depression in later life. However, what we've had in the past twenty years is a number of longitudinal studies that show, that the early experiences of not just abuse but also economic disadvantage, has implications for our longer term outcomes including economic, health and social outcomes.

Therefore, the understanding is developing from the 'singular' to the more 'complex' and studies looking at ACE now aim to put multiple factors together to understand how the combined effects of each singular traumatic experience increases the odds of challenges in later life. These studies have been conducted across many different countries which allows international comparisons to be drawn and patterns can be identified, across for example, countries at a similar level of economic development. It is commonly accepted that having four or more ACEs places an individual within a clinical range³, and evidence shows that socioeconomic background has an impact on the ACE profile of a population, both within and between countries.

This impact is seen very early during the developmental years. For example while there is an inherited/genetic component to attention deficit hyperactivity disorder (ADHD), the likelihood of being diagnosed with this condition actually increases when certain interactions with the environment are considered. Where ACEs are in the family background, they express themselves through behaviours which in turn, have health implications. In illustration, using the instance of smoking, people who have reasonably 'good' childhoods are less likely to smoke compared to people who have experienced adversities early in life. This is the same pattern with problematic drug and/or alcohol use. If you have an ACE score of four or more, you are twice as likely to develop type two diabetes and three times more likely to develop respiratory and heart disease. With an ACE score of seven or more, your life expectancy is 60 years which is 25% lower than the general population⁴.

The way this is conceptualised is that when an individual has adverse experiences, it results in neuro-developmental disruption, which can express itself in social, cognitive and emotional impairment. These stages are often identified in early years by school teachers and by the time of adolescence, individuals can be involved in maladaptive behaviours like smoking, drinking and substance abuse. This can then translate into

disease and disability into middle and older age, and social problems also occur with an overall impact on longevity.

The dominant model that is used to explain this, is the 'Toxic Stress' model whereby it is recognised that we all need stress in our lives to help us learn and cope. However, if there is too much stress it sets up chronic fight or flight responses by producing high cortisol through our system. This then changes the brain architecture and creates this 'hyper responsive stress condition' that means that an individual who has experienced chronic early life stress and ACE can be predisposed to see danger everywhere.

In addition, a large scale study in Japan has demonstrated that people with three or more ACEs had a greater risk of developing dementia after adjusting for variables including age, sex, economic hardship, environment and education. The conclusions from this study are, that ACEs can hinder opportunities in terms of receiving education, building social relationships and developing healthy behaviours thus increasing the risk of diseases associated with the onset of dementia.

Studies have also found that participants who experienced ACEs at a lower level of educational attainment, were more likely to be unmarried, had less social participation, were more likely to have a history of smoking and were more likely to have depression. They were less likely to have supportive human relationships that can support resilience and act as a buffer against the negative effects of stress.

In terms of housing and housing vulnerability, research from the USA has shown that in the homeless population, 87% reported having experienced at least one ACE and 53% had four

or more ACEs. This demonstrates that an informed approach to preventing homelessness requires consideration of these factors. This is where the 'trauma informed approach' has stemmed from, in terms of a model for responding to people with high ACE scores. This model acknowledges 'complex post-traumatic stress disorder' suffered by people who have repeatedly experienced traumatic situations, such as severe neglect, violence or abuse and recognises that these can cause similar symptoms to 'post-traumatic stress disorder' (PTSD) commonly caused by one extreme single event, but that this may not develop until years after the event. Also, this is often more severe when the trauma was experienced early in life and as mentioned earlier, the trauma can affect a child's development.

In terms of developing services, taking this idea of trauma and trying to develop skills that are 'trauma informed', means that it is essential to move away from conceptualising individual troubles as personal difficulties and consider the wider contexts for why this has happened.

Studies have also shown that one supportive adult can make a difference to outcomes. People who had four or more ACEs who did not have an adult they could trust and talk to about their problems were more likely to be problem drinkers, habitually use heroin or cocaine and more likely to have been incarcerated. As such, the evidence shows that problematic human relationship can cause damage, however, positive and supportive human relationships can be healing.

³ Hughes et al. The Lancet Vol. 2 (August 2017), The effect of multiple adverse childhood experiences on health: a systematic review and meta analysis. Available at: <https://reader.elsevier.com/reader/sd/pii/S2468266717301184?token=7BD1944A8679F371FC74FD29BBC46A04308C9744B850B7A382A508BA31E885AE20C7D77FCD2B54A7005016BB857459BD&originRegion=eu-west-1&originCreation=20220727162926>

⁴ Fellitti et al. The relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. American Journal of Preventive Medicine. (1998) Available at: <https://www.ajpmonline.org/action/showPdf?pii=S0749-3797%2898%2900017-8>



Impact of Childhood Homelessness on Brain Development and Brain Health: Niall Muldoon

Healthy brain development is essential for children to reach their full potential and for their overall wellbeing. Brain development in children who experience childhood trauma may be interrupted, leading to functional impairments which can impact their mental, emotional and behavioural health into adulthood. Therefore it is imperative that professionals recognise developmental delays and provide appropriate support services. We also need to recognise that not everybody experiences trauma in the same way. It is extremely personal to the individual.

The negative impact of homelessness on children is well documented. Those living in emergency accommodation experience the lack of privacy, struggle to sleep, find it difficult to study and have a lack of opportunities to play. They also have a problem maintaining relationships with family and friends. Parents have described how their young toddlers have a lack of space to crawl and are literally 'developmentally cramped'.

Homelessness results in multiple disruptions to family life and is rarely the manifestation of one crisis but the accumulation of a series of crises. This may then lead to further crises including the loss of friends, employment, disruption in education and ultimately, leads to a loss of the sense of safety and security.

To this end, an initiative called 'A Better Normal', has been created calling on political parties to agree to the eradication of homelessness for children and elimination of child poverty by 2026. This is achievable with the right level of commitment from Government. Social housing and

housing for those on lower incomes is part of the solution. This facilitates many children to move out of the cycle of homelessness. Creating vibrant and caring communities alongside housing is essential. This is the holistic approach that is required for enhancing health and wellbeing and improving people's lives.

Brain plasticity refers to the brain's capacity to alter its structure and function in reaction to environment. This capacity is greatest in infancy and early childhood therefore, there is the most opportunity for change and the reason why prolonged trauma in early childhood can be so devastating. However, it is also a window of opportunity for positive interventions for brain health development and lessening the consequences of trauma.

An initiative we have engaged with Tusla on, is to give children brought into care, automatic access to therapeutic services to help them come to terms with being moved from their family home, regardless of how negative that environment may have been. We are also pushing for such services to be available in all schools from primary through to secondary levels, thereby providing early interventions. Children should have the necessary supports to allow them to grow up in a safe environment which instils hope, trust and confidence. If children have been exposed to ACE, and face difficulties as a result, those supports should afford those children the resources to return to the path of 'normal' development, and reach their full potential as quickly as possible.

Panellist contributions

Impact of Inequality on Lifelong Health:

Dr Cathal McCrory

There are two studies currently being undertaken. The first is 'Growing up in Ireland'. This is a prospective cohort study which follows the progress of two cohorts of children. An infant cohort from nine months, three, five, seven and nine years and a middle cohort, that began at nine years. Researchers return at regular intervals i.e. 13, 17, 21 years and so on. The second study, is The Irish Longitudinal Study on ageing (TILDA). This includes 8,500 people and starts at 50 years and follows them every two years thereafter.

These studies facilitate a better understanding of the impact of factors such as socioeconomic disadvantage or exposure to longer term health outcomes in later life and important economic outcomes. Like the probability that you will be unemployed if you use alcohol and drugs problematically, for example. It is also an opportunity to look back into their early childhood and examine the impact of things like poverty, childhood physical abuse, childhood sexual abuse, and growing up in a household with parental substance use and the loss of a parent.

A sobering finding is that individuals growing up in more disadvantaged social backgrounds will get diseases earlier, and they will die earlier on average, compared with their more advantaged counterparts. They will also live a larger proportion of their shorter lives with illness and disability.

It has also been established that one can see these socioeconomic differentials in health and mortality in essentially every organ system of the body. Studies have shown that there's a social gradient in obesity in very early life. By three years of age, children whose parents have a primary level education are twice as likely to be obese, compared with children of parents who have a third level education. Individuals from more disadvantaged social backgrounds have a higher risk of almost every non-communicable disease. Particularly, it has been shown there is increased risk for diabetes, kidney disease and

heart disease. There is also a difference in how fast your heart beats. The heart rate is a simple prognostic indicator of health. It has been shown that individuals engaged in unskilled occupations walk 10 centimetres slower per second, compared to individuals from professional groups. More recently, there has been evidence that there are associations of socio-economic position, with cellular and molecular markers of biological age acceleration.

In the field of the social determinants of health, the social environment in which people live, grow, develop, work and die, has an important impact on their health over the life course. The association between wealth and health is so ubiquitous that it has been referred to as an 'overarching determinant' of health. The evidence shows that intervening in early life is as beneficial as intervention on socioeconomic position and on poverty.

The 'critical period hypothesis', holds, that given the speed with which organ systems and the brain are developing in early life, an ACE occurring in early life, will have a long term impact on health and overall life trajectory. This is considered a type of 'physiological scarring event'. Alternatively, some people have argued that there is a long-term chain of risk, that essentially socioeconomic disadvantage in early life or ACEs, trigger or precipitate a whole chain of risks. For example, someone growing up in poverty, may lead to educational under attainment which leads to occupational under attainment, which leads to lower income in later life.

Through these studies it has been established that persistent poverty is more injurious to an individual's health than transient poverty. This reinforces the need to move the focus of intervention to very early in life. By definition, ACEs are potentially harmful to the child and this work demonstrates that ACEs are associated with earlier pubertal maturation. It's associated with more rapid development in areas of the brain that are associated with independent emotional

regulation in early life and it's also associated with cellular markers of age acceleration. Interestingly, evolutionary life history models hypothesise, that earlier development may serve as an adaptive response to a harsher, threatening environment and what you get then, is a trade off with poorer health in later life and a shorter lifespan.

According to data from the Economic and Social Research Institute (ESRI), 16.6% of children in Ireland are growing up at risk of poverty. That means that their resources are so inadequate as to preclude them from having a standard of living which is acceptable by our society that can result in isolation and social exclusion. Childhood poverty is associated with a higher 'allostatic load burden'⁵ and 'epigenetic age acceleration'⁶. Individuals who experienced poverty were two years older biologically when assessed at 50 years and older, and they're also ageing at a faster rate.

Food poverty, fuel poverty, period poverty, clothing poverty, digital poverty and homelessness, all have

a root cause, which is poverty! If we treat the root cause, we will treat all of those other symptoms of it.

A final point on resilience. This can be defined as the process of adopting well in the face of adversity, in short it's the ability to 'bounce back'. Too often we hear that children are resilient. Generally it is used to justify Government or societal inaction on particular things. How else can it be acceptable, that almost one in five children growing up today in Ireland are at risk of poverty, in what is one of the wealthiest countries in the European Union? Unless we somehow think, that if children are resilient, we can fix inequalities at a later date.

The evidence presented has shown, that it's best to intervene very early in life. 'Resilience' is something that actually needs to be fostered and developed at the societal level. Essentially, through the provision of supports, society should scaffold children to ensure that we help 'develop' resilience in them.



⁵ (Allostatic load refers to the cumulative burden of chronic stress and life events).

⁶ A positive or accelerated epigenetic age occurs, when an individual's DNA methylation-predicted age is older than their chronological age.

Physical Therapy Interventions for Victims of Torture: Hanan Khalil

Taken from numbers from the Middle East, we know that the refugees are a population that is largely affected by trauma as they are more likely to have been exposed to a violent crisis and usually they are exposed to a number of stressful and traumatic experiences, not only during the time they are fleeing, but also when they try to resettle in host countries. Almost 50% of refugees are exposed to torture. Up to 70% of refugees experience PTSD as a result.

PTSD is a serious consideration because it puts people at higher risk of mental health problems and cognitive impairments. It also puts them at a higher risk of having chronic illnesses including heart disease and diabetes, with links to dementia.

The normal pathway to treatment for many is to receive psychological support. There is emerging evidence however, that movement and exercise interventions should also be provided as there is a strong rationale that exercise can reduce anxiety and depression amongst people who have PTSD, and in particular trauma. There is a strong body of literature about the benefit of movement therapy and exercise in the general population but not currently specifically for the refugee population.

'The Centre for Victims' in Jordan, is an NGO and one of the few places that uses physiotherapy

and movement-based intervention as part of the pathway to support refugees exposed to the trauma of war. Usually their program is group-based with programs for adults and for children. These programs are based on the principles of 'trauma informed care' and are 'trauma focused' or 'trauma informed'.

We are currently working with the Centre to develop the components of their service into an evidence based framework, using 'intervention mapping'. This is based on interviewing therapists and service users. One of the aims of the project will be to develop the model to be delivered remotely (away from the Centre) in order to reach refugees in rural locations and also to apply these therapies to other groups.

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Conclusions and Recommendations

Life course approach: recognizing differences in risks and opportunities across the life course, including critical developmental periods, as well as the cumulative effect of adverse exposures within and across life stages.

Adverse childhood exposures: acknowledging that they are linked to magnitude of brain health risks that may broadly present in peoples' lives. Childhood is also a time when health practices and behaviours are learned. Occurring in early life, adverse exposures have lifelong impact on health and may form a 'chain of risks' when socioeconomic disadvantage, exposure to assault and abuse, or other trauma coexist. These exposures are considered to be 'physiological scarring events'.

Addressing the life-long effects: Childhood trauma requires a comprehensive and collaborative approach, awareness and understanding of susceptibility and resilience factors. Supportive family and social environment and peer relationships are key aspects in addressing the effects of trauma. Services should be delivered using 'trauma informed approaches'.

Increased investment into early childhood programs: The evidence shows that intervening in early life is as beneficial as intervention on socioeconomic position and on poverty. To ensure that every child gets a good start in life, promoting education among children from disadvantaged backgrounds is key. There is benefit in increasing the number of Family Resource Centres who deliver essential services.

Combat poverty and persistent poverty: Work should continue towards the elimination of child poverty by 2026 including rolling out the European Union child guarantee, which has a focus on the reduction of child poverty. The provision of a minimum income for healthy living and providing welfare safety nets with high initial replacement rates, to help buffer economic shocks (as delivered through the Pandemic Unemployment Payment during the Covid 19 crisis).

Increased investment in housing and services: Following the economic crash and the burgeoning of the housing affordability crises in 2012, family homelessness in Ireland has increased. Countercyclical investment in housing and services is vital during economic down periods, to safeguard children living in poverty.

Invest in children's brain health: Acknowledging that change is needed across a spectrum of child's well-being, encompassing child's cognitive, emotional, social, and physical development, and sense of self, as well as disrupting social inequities. Creating supportive environments, providing secure homes, and combating homelessness. The provision of high quality, social housing at scale is essential in achieving this outcome.

Strengthening community actions: Individual supports and services and organizational change that address inequities and social determinants of health are likely to create lasting societal change. The DEIS, 'Delivering Equality of Opportunity in Schools', programme is a good response in disadvantaged areas. However, investment in schools should be matched to investment in the community, to ensure that those educational interventions create long term opportunities. Therapy should be available across all schools as standard practice.

Policy responses from reactive to proactive: Policy should move away from public health systems which are designed to remediate the consequences of adverse childhood exposures and move towards preventative systems, providing the opportunity for children to reach their full potential and for families to be supported.

Comprehensive health promotion approach: Combining multiple strategies that address physical, mental, and social well-being simultaneously are required. Key considerations include physical exercise, sleep and healthy eating behaviours, injury prevention, substance use and harm reduction, violence and bullying, infectious disease prevention programs as part of brain health-related curricula and health needs in schools.

Research: Longitudinal population-based studies enhanced the current understanding of mechanisms sub serving the influence of early ACE and socioeconomic standing on later life health, functioning and behaviours. It is recommended that such studies are conducted in Ireland to further inform policy and practice.

Intersectionality: Recognizing that each child and family experience is based on their distinct combination of equity parameters such as place of living, race, ethnicity, gender identity, socioeconomic status. Patterns of disadvantage must be addressed in order to sustain efforts to promote equity in brain health, housing and service provision.



About Respond

Respond, a construction-led Approved Housing Body and service provider, has been working all around Ireland for over 40 years. Our vision is that every family and individual in Ireland will have high-quality housing as part of a vibrant and caring community. Housing and decent accommodation, in the areas where people want to live, are central to improving people's lives and enhancing the health and well-being of society.

17,008 tenants live in 7,761 properties across the 26 counties that we either own or manage. Respond also provide a range of services for families and

individuals within our communities. This includes emergency accommodation with 24/7 support for families who are homeless in six Family Homeless Services, three Day Care Services for Older People, 15 Early Childhood Care and Education, Family Support and Refugee Resettlement services. Our aim is to provide person centred services to support people to achieve their goals and reach their full potential.

www.respond.ie



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About the Global Brain Health Institute

The Global Brain Health Institute (GBHI) is a leader in the global community dedicated to protecting the world's aging populations from threats to brain health.

GBHI works to reduce the scale and impact of dementia in three ways: by training and connecting the next generation of leaders in brain health through the Atlantic Fellows for Equity in Brain Health program; by collaborating in expanding preventions and interventions; and by sharing knowledge and engaging in advocacy.

We strive to improve brain health for populations across the world, reaching into local communities and across our global network. GBHI brings together a powerful mix of disciplines, professions, backgrounds, skills, perspectives, and approaches to develop new science-based solutions. We focus on working compassionately with all people including those in vulnerable and under-served populations to improve outcomes and promote dignity for all people.

GBHI is based at Trinity College Dublin and the University of California, San Francisco. To learn more about GBHI, please visit us on gbhi.org or follow us on Twitter @GBHI_Fellows.

References

Material here is based solely on the seminar presentations and discussions.

More Information

For more details about the GBHI Respond partnership and Brain Health and Housing seminar series please visit:
www.brainhealthandhousing.ie



