Social Media, A silent mental hologram and the 'new crack cocaine' of the digital age:

An exploration into the use of social media, its effects on mental health and the sustained impact on young adults (aged 18 to 25) within the era of Generation Z.

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SUMMARY

Technology and social media platforms are continuously developing which means we are now more digitally connected than ever before. Our heavy reliance on social media sites can have seriously challenging and unnerving effects on a young person's mental wellbeing, creating feelings of inclusion and exclusion. It is fair to say that social media interaction can become a dangerously competitive trend. There is a strong connection between excessive usage of social media, and what is now developing into a personal reliance which is influencing human behavior to the extent that we are analyzing all forms of personal online activities which are prone to creating a stressful and competitive endurance where people begin to experience and become unaware of the hidden negative frailties that exist with excessive usage. This has triggered medical concerns and researched findings which relate to mental health, is what would be described as a silent mental hologram and the 'new crack cocaine' of the digital age.

This paper focuses on the effects of social media on young adults aged 18-25 and its links to depression. This can go unrecognized and therefore contribute significantly to mental health disorders. The findings reviewed would suggest that there is considerable over usage, and we are becoming a generation that is too reliant on technology, and it would appear that our own thoughts and decision-making values are being eroded. We are allowing ourselves to become a serf of social media. The methods measuring peoples mental health research are extremely difficult as we are attempting to understand the complexities of online human behavior combined with time usage on social media, and the relevance of linguistic usage which tend to portray depressive tendencies particularly in Twitter as this was our more suitable platform to investigate.

There is no doubt social media will continue to challenge us with technology and bring us into the combat zone of data-analysis and self-worth on a constant basis, however if we recognize that social media is a tool for technical development and business needs, our self-worth values and thought processes can remain outside of the jurisdiction of social media. While we are so caught up in quantifying data and measuring up to self-worth, we cannot see whether social media is becoming beneficial or detrimental to our health. We continue to move forward because the 'S' in *Social Media* does not give us the opportunity to stop. We begin to now realize that while social media can have positive attributes, people are now being ushered into biological support areas in mental health as a result of over usage. There are also complex legal issues that need to be resolved to assist Generation Z. Users are currently experiencing their own constant participation is analysis of data and are buying into the frenzied social media cycle of competitiveness and instant gratification which continues to generate a high dependence of new speculation and review. This is feeding into noticeable difficulties with coping skills, sedentary behaviours, low confidence levels, image depletion and yearning to establish inclusion at a self-rating scale in this ever evolving technical world.

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Introduction

We live in a world of instant gratification, increasingly being shaped by cyberspace and the rise of Social Media has meant that we as a global population, are far more connected to the online world than we have ever been before. With the remarkably rapid development of technology, this has allowed users to have access to the internet across all different devices, and according to Thompson (2011, p.169), this allows to feed voracious information and social connection needs of the user.

According to Thompson (2011, p.171), Moore's Law states that, 'every eighteen to twenty-four months technology capabilities double and previous technologies are outdated,' therefore technology advancements become a reoccurring demand, naturally fuelling the increase in usage of social media platforms. For the younger generation of today, those born after 1990, social media is a commonplace and it is fair to say that everyone is a sensor and an intelligence collector.

Moore's Law

'The **complexity for minimum component costs** has increased at a rate of roughly a factor of two per year. . . . Certainly over the short term this rate can be expected to continue, if not to increase. Over the longer term, the rate of increase is a bit more uncertain, although there is no reason to believe it will not remain nearly constant for at least ten years.' (McAfee et al., 2019)

Furthermore, it is vital to note that the largest Social media (SM) application, 'Facebook' was developed in 2004, followed by Twitter in 2006, Instagram in 2010, Snapchat in 2011, along with copious amounts of social apps that trend at large. According to Shaw (2018), recent statistics monitoring social media released by IPSOS MRBI compared social media account ownership in Ireland in November 2017 with the previous quarter, August 2017.

Results found that Facebook remains as Ireland's most popular platform at 65%, followed by Twitter in 2006 that has increased from 1% to 29%, Instagram which has seen 600 thousand Irish adults aged 15+ use Instagram daily, where account ownership has increased 5% to 32%. The introduction of these social media apps has altered the millennial generation, where Fischer (2011, p.2) reports that SM influences young adults approach to social interaction, similar to Butlers (2014, p.8) findings regarding SM and relationships, and Jan's (2017, p.331) findings state that self-image is influenced and inflicted upon SM.

The purpose of this thesis is to explore the usage of SM and the effects it has on an identifiable digital and consumption focused era, widely known as Generation Z, the sustained impact it has on young people's mental health and the silent damage, according to Reuhl (1991, p.1), meaning 'a prolonged period of latency between toxic exposure and disease.' This paper explores that young adults aged 18-25 in Ireland who suffer with mental illness are at great risk of being affected by SM. Despite Ireland's extensive efforts in tackling mental health problems, attitudes towards mental health difficulties remain fraught with stigma, closed as an off-topic and surrounded with negativity. Many people who suffer with any form of mental illness thrive on social isolation and become

challenged with severe unmanageable thoughts, where the mind becomes crumbled by crushing loneliness, unworthiness, remorse and shame.

Furthermore, Weiss (1973, p.17) reported two types of loneliness; emotional and social loneliness. Emotional loneliness defined by the absence of an attachment figure and social isolation, characterized by the absence of a social network. According to Mushtaq (2014), satisfying social relationships are essential for mental and physical well-being and impaired social relationships can lead to loneliness. The reason why SM may have an effect on loneliness is suggested by Baumeister and Leary (1995) whom argued that the primary human motivation is to have sustained bonds with important others, however, social exclusion resulting from lost bonds or isolation, causes anxiety and depression.

There is a broad range of mental health illnesses and a substantial amount of high-profile social networking sites that are used by young adults every day, however, for this thesis I am thoroughly exploring the over usage of Twitter as a fundamental social media platform and its effect on mental health, particularly focusing on depression and the sustained impact it has on a young adult within the age range of 18-25 in Ireland.

Further, in Chapter One, I will discuss the background analysis of social media. This will focus on the relationship between social media usage and mental health, and the implications that are related with use. Dopamine has been recognised as a reward motivational component released in the brain, and the effects portrayed by excessive use of social media is discussed and explained with relevance to the mental impact.

In Chapter Two, I will discuss the background to help understand the effects of depression as a medical issue. This will incorporate the biological support available through governing support bodies available in Ireland and the legal issues of concern. Specific emphasis on support areas but in particular, a focus on the work ethics of Jigsaw. Methods to quantify depression will be discussed, incorporating different overall methods of measurement and sampling of data. In relation to these methods, I will discuss an underlying problem which is relevant to excessive prescription drugs being administered in quantities that has increased rapidly in time in Ireland.

In Chapter Three, I will also discuss the influence of language measurement/terminology used on social media which links into elements recognised as trends of peoples linguistic behaviour, using Twitter as the main platform. Furthermore, the implications that recognise behavioural changes by the users of social media will be explored and examined.

0.1 <u>Generation Z</u>

According to the Oxford Dictionary (2019), Generation Z are perceived as an era from the late 1990s till current, being familiar with the Internet from a very young age, or Turners (2013, p.3) definition described it as, 'technology's potential impact in social Interest of contemporary youth.' This generation know nothing more than life without the internet, and according to Prensky (2001, p.1), present-day young adults are 'native speakers' of the digital language of the internet. As a result, the

World Wide Web (WWW) is a 'defining characteristic' of current society, therefore according to (Toronto, 2009, p.118), the revolutionary change has altered dramatically the way we relate as human beings.
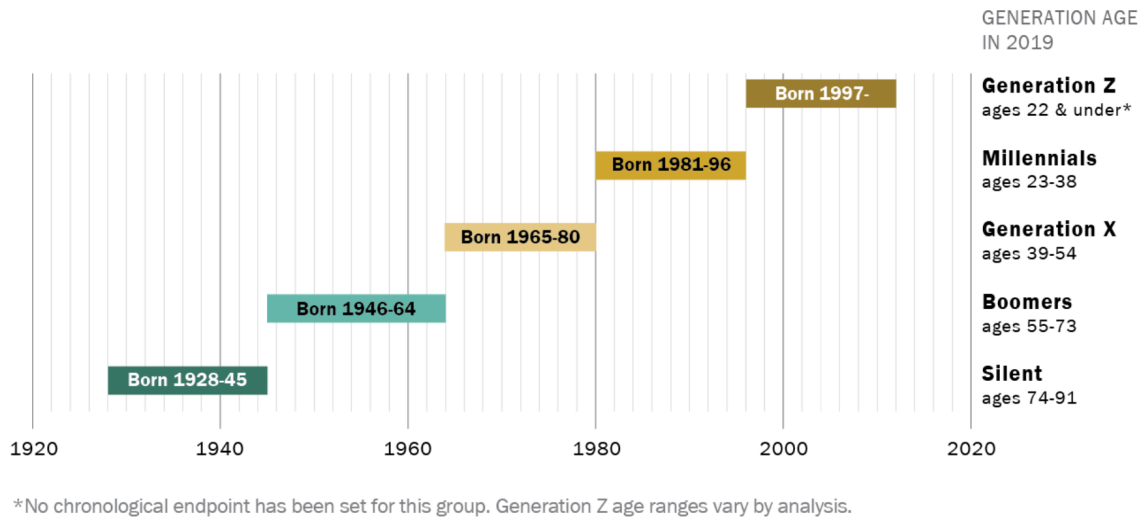

Figure 1: (Pew Research Centre, 2019)

With this new evolving way of life, there is no doubt that it has a positive effect on the world in terms of accessing information, education, instant news updating, Business and maintaining contact etc. However, according to Turner (2013, p.14), the high volume of technology consumption has the potential to disrupt neurological development and according to Toronto (2009, p.118), technology may impact in the way contemporary youth use technology so frequently in order to avoid struggles in their offline lives, to find belonging or by using escapism and fantasy to fill time and emotional voids.

Therefore, Generation Z may camouflage and portray a dishonest or deceptive lifestyle, by overlaying problems using online filters to distract from the real personal interactive reality. The question remains open as to why, Generation Z, being an entire population is growing up with less self-esteem, through no fault of their own. However, this thesis will explore the use of social media and the prolonged impacts the digital era has on the mental well-being of contemporary youths. We may argue that it is more important to learn what they are viewing and how that affects their growth and relationships than merely how much time is spent on SM or using technology.

Chapter 1: Background Analysis

1.1 Social Media

Social Media is a paradoxical reality, and as stated by Meshi (2015), almost two billion people worldwide regularly using these platforms. According to (Miller, 2016, p.3), social media is the 'colonisation of the space between traditional broadcast and private dyadic communication providing people with a scale of group size and degrees of privacy that we have termed scalable sociality.'

Boyd (2007) was also an advocate in trying to construe a term for SM, describing platforms of the time as 'networked publics' and used four main characteristics which are 'visibility, spread ability, searchability and persistence.'

SM has become an increasingly popular component of our everyday lives in today's globalizing society due to the fact that it is a simple, visual, costless, quick and an effective method to disclose information to an audience of any particular size, regardless of their location. Communication on SM is done by the hard mentality of using particular SM tools such as likes, comments, and hashtags. For these reasons, SM is currently one of the most popular mediums of advertisement and daily routine.

SM platforms channel new directions for representing the 'self' according to Toma et al., (2013, p.322), and due to a major pervasive part of modern culture, platforms are used in many different ways. Self-affirmation theory can serve as a cohesive theoretical narrative for understanding important aspects of SM appeal. (Steele, 1988)

Buffardi & Campbell (2008, p.1305), believe that SM is used as a convenient tool for 'self-promoting images of oneself, an overall agentic (rather than communal) self-presentation, social interaction or expressing narcissistic drives.' Mosqueda (2010, p.44), who identified SM as enabling new relationships to be formed along with a boost of buoyancy and self-assurance based on asserting one's own individuality and communication abilities. Similar to research conducted by Urista et al., (2009, p.219), who discovered two modalities of gratifications. Social gratifications, meaning maintaining relationships with friends and family, and communication gratifications, which is the individuals capacity to control their communication, alongside the opportunity to establish new contacts.

Based on research findings, Jamal (2015, p.44) states that SM provides 'selective, efficient and immediate contact with others which produces a high level of reward, and Toma et al. (2006, p.322) argues that these technological affordances allow online communicators to craft optimized, highly desirable self-presentations.

A large multinational qualitative study was conducted by Moran (2016), which recorded interviews and usability testing, supplementing these findings on millennial users with naturalistic recordings; a diary study and a survey. Millennial's are those born between 1981 and 1996 (ages 23 to 38 in 2019), followed by Generation Z (1997 until current).

According to the Moran (2016), in 2006, when many Millennials were in Secondary school, 55% of teenagers reported having at least one social media account. Moran (2016) states that in 2010, as these millennials grew older, 73% reported having a social media account, whilst 78% age 18-29 reported being on Social media. In 2015 , the 'Research With Young Adults Group' study estimated around 90% of Millennials (currently young adults) on average, have reported the number of social media accounts in use was 4. Over a period of 9 nine years, the increase in social media application usage has risen by 35%. In conclusion, we see that the use of social media is rapidly increasing with every next generation.
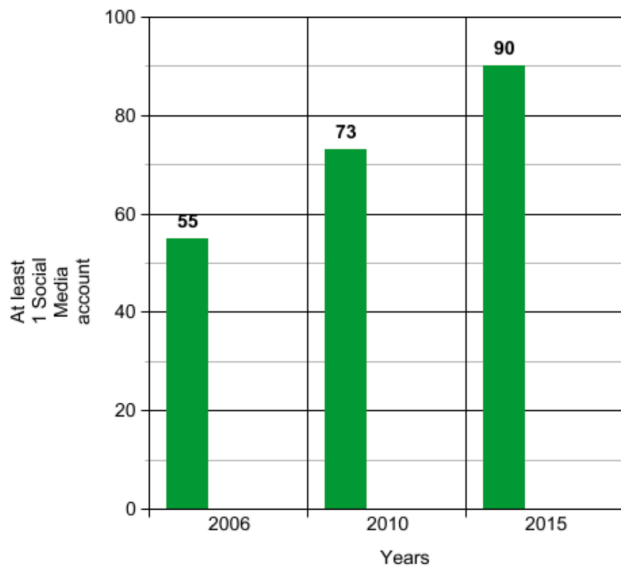
(Moran, 2016)

As global internet users have reached over 4 billion in 2018, this represents 53% penetration usage, which has risen by 7% year on year. This impact has resulted in active social media users worldwide increasing to 3.196 billion which represents 42% user penetration. Relating these figures to Ireland and according to Kemp (2018), it shows that 82% of people are internet user friendly and 65% of people have access to SM. Due to a dramatic increase in internet usage, Kemp (2018) reveals that the average user unevenly distributed worldwide spends, '6 hours each day using internet powered devices and services' where growth is driven by low-cost economical smartphone devices on the market and cheap data plans enticing and capturing users to make cost effective choices to sustain the infinity demands of the current population. In Ireland, Kemp (2018) also states that the average user spends 5h 19 minutes online per day however in reflection of these statistics, there is a general concern for the well-being of young adults over-consuming within the use of social media in Ireland.

1.2 Social Media and Mental Health

There has been an unprecedented uncertainty in recent years regarding our reliance on social media and how it may have detrimental effects that are linked with mental health problems amongst young adults in Ireland. According to Health at a Glance (2018), mental health illnesses can have a 'profound effect on people's ability to carry out their daily lives,' affecting their emotional and psychological well-being which results in poorer physical health. However, the term 'Mental health' is often undermined, and referencing Roe (2017), can be used as an 'all-encompassing term' that groups all mental illnesses together.

According to the annual Health at a Glance Report (2018), Ireland is ranked '3rd out of 36 countries surveyed with the highest rate of mental health illnesses in Europe,' where a staggering 18.5% of the Irish population was recorded as having a mental health disorder such as depression, anxiety, bipolar and schizophrenia. Results also showed that rates of depression were also well above the European average for both, men and women.

Mental Health Ireland (2017) defines depression as a 'common mental disorder that causes people to experience depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. '

According to Dooley (2012), the 'My World Survey' highlighted that nearly one in three young people aged 12- 25 years in Ireland had experienced mental health difficulties at some stage in their life, and Houghton et al. (2010, p.44) found that Irish students demonstrated significantly poorer mental health than that of an age-matched general population sample.

1.3 <u>Biological support for Social Media/Mental Health connection</u>

Social Media engagement is linked to social expression which initiates an adrenaline surge to immerse yourself unknowingly in personal writing and self-narratives. This relates to a chemical called Dopamine which plays a motivational component of reward-motivated behaviour. According to Conrad (2019), dopamine 'functions as a neurotransmitter in the brain' which is a 'hormone like' communication or message that travels through the nervous system. According to Leonard (2019), dopamine is a 'chemical that ferries information between neurons, and 'helps regulate movement, attention, learning, and emotional responses.' The neurotransmitter has the effect of giving a person pleasure, where it gives the ability to conquer everything, also known as 'the reward chemical.'

According to Kendra (2019), several types of addictive drugs increase dopamine levels in the brain, and in relation to this, Venton (2006), states that cocaine primarily exerts its behavioural effects by enhancing dopaminergic neurotransmissions. Therefore, the actual physical feeling rewarded, is retrieved from dopamine, not the drug which creates more dopamine in your body. If a person is deficient in dopamine, they may lack motivation and drive. According to Falck (2019), a person may become fatigued, become prone to regular suicidal thoughts or thoughts of self-harm, addiction becomes an issue and mood behaviours become unlevel. However, the over usage and saturation of drugs over time depletes dopamine reserves, which causes the necessity to take more and more, similar to over saturation of social media usage. Dopamine, in comparison, is the exact same chemical that makes a person experience a considerable high when we smoke, drink and gamble. In other words, it's highly addictive.

A study conduct by Weinstein (2010, p.268), involved reviewing 15 literature published articles between 2000 and 2009 in Medline and PubMed, based on computer and video game addiction, focusing on two objectives. The first objective entailed, computer and video game addiction over the topics of diagnosis, phenomenology, epidemiology, and treatment. The second objective of the study was used to describe a brain imaging study, measuring dopamine release during computer game playing.

According to Weinstein (2010, p.269), studies have shown that dopamine released in the limbic system of the brain of video-game players is comparable to levels released in amphetamine users. Amphetamine is a stimulant, where it speeds up the heartbeat, and according to Murphy (2019), users may experience increased confidence, sociability and energy levels.

Weinstein (2010) states that the study attributed excessive amounts of time spent playing video games to an inability to manage frustration, fear, and uneasiness, and to declining grades. This may suggest that contemporary youths experiencing these symptoms might be missing out on opportunities to learn coping skills for navigating or tolerating difficult situations. We may argue that experiencing such difficulties on a continuous day to day basis, particularly excessive computer use, may lead to problems in fulfilling everyday tasks such as social interaction, social relationships, work and education.

Weinstein (2010, p.269) argues that this evidence supports the notion that psycho-stimulant users have decreased sensitivity to natural reward. However, it is of significance to note that, computer game addicts or gamblers may show reduced dopamine response to stimuli associated with their addiction presumably due to sensitization. In contrast with the usage of SM, people's real life interaction suffers because of dopamine response sensitization.

1.4 <u>Describing Legal Issues</u>

In Ireland, the age of digital consent stands at thirteen years old compared to the age restrictions for alcohol, smoking and gambling at eighteen years old. This is an entire generation that has access to an addictive numbing chemical, through social media and smartphone devices when going through adolescence. Therefore overtime, social media becomes a dependent in our lives and may lead to addiction, which according to Ryan et al., (2014, p. 62) involves being 'unable to control one's social media use and using it to such an extent that it interferes with other life tasks' and reality.

We're aware that the usage of new digital technologies is high amongst children and young adults. Article 12 of the UN Convention on the Rights of the Child states that children who are capable of forming their own views enjoy the right to express these views freely in matters affecting them and that due weight be given to them. This is expressed in the following legal interpretation.

According to the Department of Justice and Equality (2015), Referencing Article 8 that came into effect from May 2018, states that 'conditions applicable to the processing of the personal data of children (e.g. collection, use, sharing, storage) in the context of their usage of information society services, and imposes an obligation on providers of online goods and services offered to children to seek to obtain the consent or authorisation of a child's parent or guardian where the child in under the age of 16 years.'

We may argue that those lacking sufficient levels of maturity, awareness and understanding may be particularly vulnerable to risks when browsing the online digital environment, specifically social media sites. According to the Department of Justice and Equality (2015), these include risks of abuse, grooming, cyber bullying, access to unsuitable materials and the potentially adverse impacts of direct marketing activity. When a child or young adults physical or emotional safety and welfare is at risk, the need for adequate and satisfactory safeguards for children is beyond question and issues involving the matter must be taken earnestly and seriously.

In Ireland, the GDPR goes further, it imposes an obligation on providers of online goods and services offered to children to seek to obtain the consent or authorisation of a child's parent or guardian where the child in under the age of 16 years. Member States are given the option of adopting a lower age, but no lower than 13 years. Based on the fact when dealing with children's accessibility to online information, there is a particularly vulnerability and risk which go hand in hand with a child's age profile and early mental stages, and this can be influenced by oppressive materials which may trigger a negative relationship with SM.

A similar measure from which the EU appears to have drawn some inspiration has been in operation in the United States for a number of years. The Children's Online Privacy Protection Act (COPPA) is a US federal law which entered into force in 2000.

Stated by the Department of Justice and Equality (2015), it applies in the case of children under the age of 13 and contains provisions on when and how operators of commercial websites and online services that collect, use or disclose personal information from children are required to seek verifiable consent from a child's parent or guardian, and on the responsibilities they have to protect children's privacy and safety online, including restrictions on marketing activities. It is hardly surprising that there are divergent views on its effectiveness. The GDPR both in Ireland and in Europe, is in place as an awareness guide line to advise on the vulnerability to children and the dangerous impact SM can have due to easy accessibility in a non-controlled environment

Nonetheless, Social Media is a continuously growing powerful tool that has very positive effects in terms of empowering and connecting people, however there is the imbalance whereby certain platforms provide decidedly unhealthy and destructive behaviour patterns which lead to their own addictive prolonged usage problems. We can argue that the undoubtedly easy access to access to social media could bring about the potential for social media addiction, and according to Hou (2019), the irrational and excessive use of social media to the extent, can interfere with other aspects of daily life. The primary psychiatric relating to a subsequent impulse control or addictive problem such as pathological internet use should be effectively managed by a treatment protocol. We may argue that continuous checking of social media applications may be a sedentary behavioural problem.

While mental health issues pose a significant health burden on young adults in Ireland, mental health research lacks the quantifiable data available to many physical health disciplines. Furthermore, I will discuss in detail, the link between successful and non-successful social media and mental health related studies in context.

Chapter 2: Analysis and Competing Data

Before analysing how social media usage has detrimental effects on the health and well-being of young adults, it is firstly pertinent to construct a foundation for the analysis by exploring the current research and speculations that exist surrounding such a controversial topic in modern society.

The teenage years are recognised as a period of increased vulnerability in terms of mental health, and according to Headstrong (2013), 75% of mental health disorders emerge before the age of 25. On examining social media use in relation to mental health, the UK Millennial Cohort Research Study

released in 2018, approaches and recognises the same issues in a consistent younger age profile targeting 13-18 year olds, which is considered the early stages impacting on depressive symptoms which will expand in the same manner but become progressively more intense and serious within the age profile of 18-25 year olds.

The Cohort study has found an association between social media use and depressive symptoms and it was discovered that the magnitudes where larger for girls than boys. The following areas of concern were identified as; depressive symptoms, online harassment, sleep deprivation, low self-esteem and body image. These are the areas which are unknowingly becoming unmanageable propositions to the users resulting, impacting and influencing mental health issues.

The findings relating to the UK Cohort study, and the links between the symptoms mentioned and how they have impacted on the gender profiles for boys and girls. The research indicates that, 1-3 hours per day spent on social media found that 26% of girls were affected by the symptoms portrayed, compared to 21% for boys.

Furthermore, the usage of 5 hours or greater spent on social media per day found a similar increase, predominantly effecting girls at 50% compared to boys at 35%. This would enforce and compliment the findings of the Health at a Glance (2018) report previously mentioned in my research.

UK Cohort Research Study
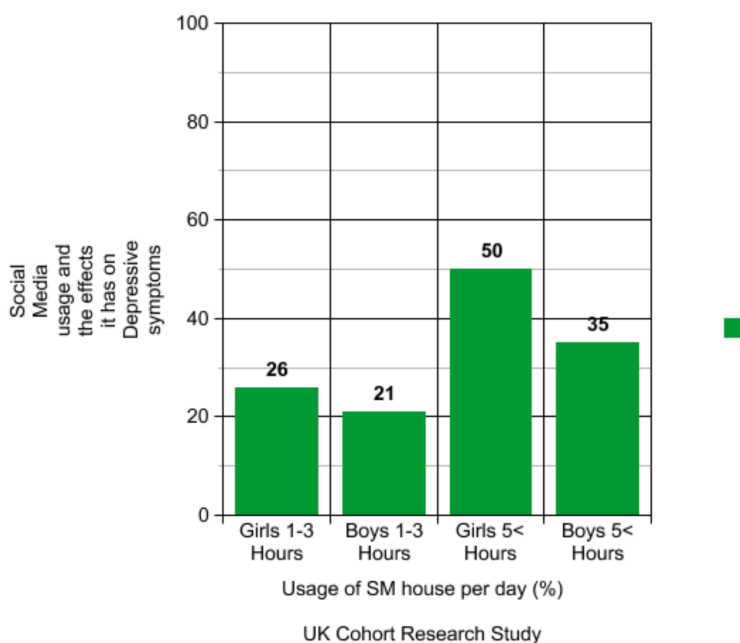
Central to these findings, it was viewed that social media had impacting issues relating and effecting depression levels based on higher symptoms in the following areas; online harassment, poor sleep, low self-esteem and poor body image. Additional observations would indicate that greater hours spent on social media is likely to contribute to an abnormal increase of body weight. This forms a part of the Cohort Survey findings.

Usage over 5 hours per day indicated that 31% of fourteen year olds where unhappy with their overall body profile, and their body dissatisfaction had risen 15% higher which also contributed to

low self-esteem. Therefore, the Cohort study establishes and may also suggest, higher depressive symptoms and pitfalls that link into increased hours spent per day using social media.

This is the silent damage and the lack of awareness by the user, possibly not being mindful of the factors contributing to a higher risk for depression impacting upon young people's lives. It is a positive indicator that areas of vulnerability, lack of self-confidence, easily influenced, risks to low self-esteem and feelings of exclusion will become negative factors and influence individuals online and offline behaviours. In turn, this links into and can effect self-expression analysis and SM interactions with normal human behaviour within the usage timeframes mentioned amongst 18-25 year olds.

2.1 <u>Background to Understanding Depression</u>

This paper is focusing on depression as being a major contributory factor with evidence suggesting that it is a catalyst effecting the mental health of users on social media. Depression is recognised as one of the high risk mental health areas which contributes to noticeable behaviour patterns which upon exploration would indicate that there is a link between social media usage and recognised medical symptoms of depression.

Our World in Date (2018), reported that 15.5% of the worldwide population suffer with some form of mental health condition, with 4% suffering solely with depression, this accounts for 2.7% males and 4.1% females. According to the HSE (2019) , it is estimated that 90% of people who attempt or die by suicide have one or more mental health condition. Furthermore, Masango et al (2008) states that approximately 90% of people who have taken their own lives are associated with possessing some form of mental health disorder, which is commonly found to be merely depression or a combination of multiple conditions that includes depression.

There are many factors that make people vulnerable to suicide such as genetics, life history, relationships and financial worries, however having any form of mental health condition is the most significant risk factor for suicide in Ireland. According to Sutton (2017), the number of suicides reported in Ireland has risen over the decades from 76 deaths recorded in 1950 to 554 in 2011. However, suicide was only decriminalised in 1993 so many experts agree that the number of suicides are under-counted.

The most recent research conducted by the Central Statistics Office(CSO) in 2017 shows that there where 392 suicides in Ireland, with men accounting for 8 in 10 suicidal deaths. According to Eurostat (2009), the mortality rate from suicide in the 15-24 age group in Ireland, is the fourth highest in the EU National Office of Suicide Prevention (2010). In addition, Eurostat (2009), states that Ireland accounts as the third highest suicides amongst young men aged 15- 19.

According to Detels (2009, p.16), '87% of the world's governments offer some primary health care services to tackle mental illness, 30% do not have programs, and 28% have no budget specifically identified for mental health available services.' McGorry (2013), states that a major factor contributing to this poor access is the current design of our mental healthcare system, which is

manifestly inadequate for the unique developmental and cultural needs of our young people. With a budget of 84 million allocated to mental health in Ireland in 2019, the reality is that upwards of 10% more funding is needed in today's terms, and Flanagan (2019) states that, in light of today's demographics, simply to fulfil the mental health services allowing for early awareness intervention to provide the basic treatment.

Furthermore, depression is a physical, cognitive and psychological illness, and is one of the leading causes of disability in the world. Depression is a medical condition that is pervasive in the world, whereby according to Dowdy (2018), it is an underdiagnosed and undertreated illness that affects 350 million people worldwide. Our understanding from existing research shows, the nature of depression has changed significantly in the last decade, from being a self-limiting illness, to a growing depression epidemic in Ireland that is considered to be a lifelong illness.

According to Richards (2011, p.4), long term studies on the cause of depression and outcomes in patients only began to be reported in the late 1980s, similar to the period of time of which the internet started to evolve. According to Mental Health Ireland (2017), 'depression affects around one in 12 of the whole Irish population,' and it is believed that 50% of people seek help for depression, and only 50% of those will receive treatment.

However, it can be a lot harder to understand the condition compared to a physical health problem. According to Dr. Hall-Flavin (2017), depression ranges in seriousness from 'mild, temporary episodes of sadness to severe, persistent depression.' Clinical depression, also known as major depressive disorder involves seriously significant bouts of low mood lasting up to periods of 6-9 months. Depression interferes with quality of life, including the ability to communicate, the cause of noticeable problems in relationships and day to day activities.

Symptoms of Depression can contribute to; low mood, lack of interest, loss of appetite, feeling worthless or excessively guilty, sleeping too much or too little, poor concentration, restlessness, loss of energy and recurring thoughts of suicide. However, it's not just behavioural symptoms, depression has physical manifestations inside the brain.

Brain activity is discernibly different for people who suffer with depression however, after many years of investigative research, neuroscientists still don't have a complete picture of what causes depression, and according to Tamir (2015), the ubiquity of SM use to gain novel insights about social cognitive processes are beginning to capitalize. According to Pandya (2012), depression can be localized as multiple brain regions simultaneously, where this could arise from a common molecular abnormality in the neurons of multiple brain regions. A second possibility of depression is that a separate systems may influence the functioning of multiple brain regions involved in mood regulation and impairment of this system, and could lead to abnormalities in multiple brain regions.

Furthermore, these changes are visible with the naked eye, and x-ray vision. Changes include smaller frontal lobes and hippocampus volumes. On a micro scale, depression is associated with a number of different things and can be triggered by many associations. According to medical profession, Dr. Farrell (2015), the 'abnormal transmission or depletion of certain neurotransmitters, especially

serotonin, norepinephrine and dopamine, blunted circadian rhythms or specific changes in the REM and slow wave parts in the sleep cycle, and hormone abnormalities such as high cortisol and deregulation of high thyroid hormones. National Institute of Neurological Disorders and Stroke, NINDS (2019) describe the understanding of REM sleep where it first occurs about 90 minutes after falling asleep. A persons eyes rapidly from side to side behind closed eyelids, mixed frequency brain wave activity becomes closer to that seen in wakefulness, breathing becomes faster and irregular, heart rate and blood pressure increase to near waking levels.

A complex interaction between genes and environment is the main component to the approach of gathering research, however a diagnostic tool doesn't exist to accurately predict where or when depression will arise. The symptoms are intangible, however it's impossible to know if individuals, who may look physically fine, but are actually silently struggling. According to Dr. Hall Flavin (2017), many doctors use the symptom criteria for major depressive disorder in the diagnostic and Statistical Manual of Mental Disorders(DSM-5), published by the American Psychiatric Association in 2013, which was compiled over 10 years by hundreds of international experts in all aspects of mental health.

2.2 <u>Organisational Support in Ireland</u>

According to Minister for Health and Older People, Jim Daly, there are 1020 mental health services available in Ireland funded by Ireland's Health Services (HSE). The June 2017 Report on the Impact of Mental Health Charities on Irish Society conducted by Sutton (2017), provides an overview of the 'vision 'and how eight selected charities are working towards achieving their 'missions.' These Charities include Aware, GROW, Jigsaw, Mental Health Reform, Mental Health Ireland, Pieta House, Reach Out Ireland and Samaritans Ireland. Other examples not represented in the 2017 most recent report include: A lust for life, SHINE, Walk in my Shoes, Nature Health and many more.

Each Charity in the research sample share a common aim to promote and support mental health and wellbeing in Ireland. According to Sutton (2017), The charities can be differentiated by the type of services they offer, how they deliver their services, the needs of the people they work with, whether they work on a one-to-one basis, on a group basis, with communities, if they work directly with the public or on behalf of other mental health organisations.

Aware provide a service to help people who are affected by stress, depression, bipolar disorder and related mood disorders.' According to Sutton (2017), Aware 'provide nationwide support groups, telephone and email support services, educational programmes on mental health for senior cycle students, life skills programme for adults and students, conduct monthly lecture series on mental health issues and a repository of information free through the website or by post.' Beat the Blues programme carried out by Aware delivered in 477 schools nationwide reaching 27,790 students, 64 life skills programmes to adults and 5 online programmes to 2,557 adults.

GROW provide a survive to help nurture mental health problems, provide personal growth support, prevention and full recovery ranging from all kinds of mental illnesses. GROW also organise 130 weekly support groups in Ireland, and according to Sutton (2017), international research shows that

'over a period of time members need significantly less professional help and have less chance of relapse.'

Mental Health Reform act as a voice of the Government who identify unmet mental health needs particularly focusing on people with intellectual disabilities, those who are homeless or people from ethnic minorities. Another objective is to secure Government funding in order to carry out their nationwide mission successfully. According to Sutton (2017), Mental Health Reform got 'agreement on a Standard Operating Procedure for child and adolescent mental health services, secured commitment to a clinical care programme on dual diagnosis, roll-out of Self-Harm Liaison Nurses in hospitals, a Comprehensive Employment Strategy that addresses people with mental health disabilities, deletion of the term 'unwilling' from the Mental Health Act, 2001, and a commitment of €2 million to improve mental health services for homeless people.'

Mental Health Ireland [MHI] (2019) provide and promote positive mental health and well-being to communities, and believe that everyone is entitled to inclusion in society and opportunity for personal fulfilment. According to Sutton (2017), in 2015 a total of 442 training and information sessions were delivered by Area Development Officers to 14,827 individuals nationally, and a newly developed 'Mind Your Mental Health' training programme accounted for 90 sessions to 1,941 participants. Moreover, information sessions accounted for 143 sessions to 6,295 individuals.

Pieta House is solely focused on life saving work, with the prevention of suicide. According to Sutton (2017), Pieta House help those 'suffering from suicidal ideation, to those who have attempted suicide, and to those engaging in self-harming behaviours.' Since 2006, Pieta House has helped more than 22,000 people in suicidal crisis or who engage in self-harm, with 5,500 clients in 2015.

Reach Out Ireland is an online service that helps people through severe times of mental health suffering and According to Sutton (2017), the online network 'attracted 4,000 Irish visits per week and 714 comments were submitted in 2014. Reach out also engage in MH research in order to evaluate and understand young people MH needs, focusing on the age group of 12-25. The report states that Reach Out, 'offer a free mental fitness app, online training programmes to increase mental health literacy, and to learn ways to promote positive mental health.' Each year, Reach Out also hold an informative 'technology for wellbeing conference' that succeeds beyond limits.

Samaritans Ireland according to Sutton (2017) is a, 'telephone, email and SMS helpline service available 24 hours a day to provide emotional support for people who are experiencing feelings of emotional distress or despair.' Samaritans have a total number of 2,400 active volunteers and 1,145 face-to-face contacts.

It is clearly evident that the importance of active mental health charities is vital in Ireland in order to meet the mental health needs of Irish residents, and maintaining constant help and support for those struggling with any form of mental health issue is made available. According to the report, 'Pieta House had 5,500 clients in 2015 alone,' point to an obvious need for the range of services provided by these mental health charities. Alongside the great work each individual charity endures, In particular, Jigsaw is a well-known Mental Health Charity that will be discussed.

2.3 A reference to the work ethics of Jigsaw

Jigsaw offer a robust primary care mental health service to young people aged 12-25 who do not meet the criteria for specialist mental health services, but need support that is responsive and easy to access. Jigsaw is a free and confidential mental health support service and a pathway to care for young people where non-existent or dysfunctional issues relating to mental health are explored. Jigsaw offers a brief therapeutic support service to young people to help them to cope with the challenges they face. The charity also provide an education and training programme, whereby it fosters engagement through their Youth Advisory panel, and Adult Advisory Panel.

Jigsaw, who have helped produce the framework for a national desire to see widespread reform occur as captured in the national mental health policy framework 'A Vision for Change. 17.' It incorporates territoriality results through responses by young people who felt they had no voice.

Jigsaw conducts research and evaluation to research the needs of young people to ensure services match their needs. Statistics show that, 80% of 17-25 year olds had a reliable reduction in psychological distress after visiting a Jigsaw Service for sessions with a mental health professional. 4,070 is the number of young people given direct and indirect support by Jigsaw services. 62% of 12-16 year olds had a reliable reduction in psychological distress after visiting a Jigsaw service for sessions with a Jigsaw mental health professional. 2,110 is the number of young people who attended Time to Start Talking workshops. In addition, a total of 10,176 people attended Supporting Young Peoples mental health workshops.

As of November 2011 a total of 2079 young people had been seen on an individual basis by the three fully operational Jigsaw sites, where the most common presenting issues for young people are anger, stress, tension, low self-worth, family problems and alcohol use. The resultant goal plans cover a wide range of areas, but the most common focus is on emotional, cognitive and behavioural self-regulation. However, according to McGorry (2013), the importance of Jigsaw is to reduce the need for transition into adult services.

2.4 Existing Studies regarding Depression & Social Media

The intensity of the online world is thought to be a factor that may trigger depression within the current stigmatised era, Generation Z. While anthropology may shy away from this topic, Jelenchick et al., (2013, p.128) argues that depression is a significant cause of morbidity in adolescents, and given the pervasiveness of SM use, a causal relationship could indicate a significant and widespread health impact.

From large, internet usage and mental well-being have been closely associated since the internet became a working invention in the late 1980s. However, one of the most profound difficulties when combating the relationship between SM usage and depression, is that it is proven difficult to record or gauge accurate results immediately and effectively.

Many conducted studies have failed or found no association, and many questions still remain unanswered due to several factors such as duration of time conducted for studies, and scientific understanding. We may argue that researches must dedicate more time, and paying particular attention, focus and dedication on understanding the elements associated with negative mental health outcomes, and in hindsight, how to alleviate these outcomes. However, numerous studies that have identified the connection between social media use and negative findings such as increased depression, compulsive behaviour, anxiety and narcissism.

2.5 Methods to quantify Depression Data and Social Media

Initial research carried out using the Zung self-rating Depression Scale (ZDI) was designed to gauge the level of depression for patients already diagnosed with depression which found that moderate to severe rates of depression co-exist with pathological internet use. However, the ZDI according to Young (2009), was utilized for its expediency with online administration and it's limitations, where poor normative data and less frequent clinical use.

Therefore at the time of research, Beck Depression Inventory was used as a more accurate source to quantify depression data. Young (2009) conducted an online survey administered on an internet site and utilized the BDI as part of a larger study. Data from a total of 312 people was collected, however 259 redeemed valid profiles from addicted users, which supported significant levels of depression to be associated with pathological internet use.

Place check mark (✓) in correct column.	A little of the time	Some of the time	Good part of the time	Most of the time
1. I feel down-hearted and blue.				
2. Morning is when I feel the best.				
3. I have crying spells or feel like it.				
4. I have trouble sleeping at night.				
5. I eat as much as I used to.				
6. I still enjoy sex.				
7. I notice that I am losing weight.				
8. I have trouble with constipation.				
9. My heart beats faster than usual.				
10. I get tired for no reason.				
11. My mind is as clear as it used to be.				
12. I find it easy to do the things I used to.				
13. I am restless and can't keep still.				
14. I feel hopeful about the future.				
15. I am more irritable than usual.				
16. I find it easy to make decisions.				
17. I feel that I am useful and needed.				
18. My life is pretty full.				
19. I feel that others would be better off if I were dead.				
20. I still enjoy the things I used to do.				

Figure. 2: (Zung, 1965)

Similar to the study conducted by Jelenchick et al., (2013, p.128), where the purpose of the study was to evaluate the association of social media usage and depression, however focusing on older adolescents. The study involved 190 participants, 58% being female and 91% Caucasian.

In contrast with Young (2010), the participants partook in a different form of a depression scale, using an online Patient Health Questionnaire-9 created by Spitzer et al (1999) which involves a diagnostic tool used to screen for depression. According to Blackwell et al., (2014), results were recorded by scoring each of the nine depression criteria from the DMS-5, from '0' (not at all) to '3'(nearly every day).

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)				
Over the last 2 weeks, how often have you been bothered by any of the following problems? (Use "✔" to indicate your answer)	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING __0__ + _____ + _____ + _____
=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Figure 3: (Spitzer et al., 1999)

2.6 Alternative Method using ESM

Furthermore, in a timeframe of one week, an experienced sampling method (ESM) was used to collect data from assessing SM usage. The ESM indicated the participants online engagement that included Jelenchick et al. (2013, p.129), 'academic work, general browsing, chatting, e-mailing, downloading, SM usage, gaming and streaming other media.' Results found that the estimated median time spent on social media sites accounted to 28 minutes per day, however there was no supporting evidence to show that the relationship between social media and depression exists. To counter argue this survey, not enough time was spent to conduct valuable results, and the current most popular social media apps such as Facebook, Snapchat, Twitter and Instagram weren't a predominant reliable source and technology wasn't so advanced in contrast to 2019.

We take a look at more recent psychological studies which suggest that social media may increase depression, and other forms of negative subsequent mental health issues such as dissatisfaction, jealousy, negative body image and loneliness. While some prior studies have found no association or

mixed results, the findings are consistent with prior research that showed an association between social media use and mood dysregulation.

2.7 Method of random digital dialling, address based sampling and PROMIS report

In 2016, Lin et al., (2016, p.324) showcased a strong research gauge that included a nationally representative sample of US young adults aged 19-32 whereby the study assessed the association between SM use and depression. A total of 1787 young adults participated via 'random digital dialling and address based sampling.' The usage of SM was assessed by self-reporting total time per day spent on SM, visits per week, and a global frequency score based on the Pew Internet Research questionnaire. Depression was measured by using a depression scale short form known as the Patient Reported Outcomes Measurement Information Systems (PROMIS).

Results showed that SM site visits per week and those with a higher global frequency score had significantly increased odds of depression. 44.5% of the sample reported no indicators of depression in the past week and where categorized into the 'low' group. Approximately one-fourth, 26.3%, were classified as 'high,' and the remaining 29.2% of participants were in the 'medium' group. The average total time spent on social media was 61 min per day (IQR [Inter Quartile Range] = 30–135).

The average social media site visits per week across all platforms was 30 (IQR =9–57) and the average global frequency score was 11 (IQR= 6–17). Results also found that only 58 individuals, 3.2%, reported zero SM site visits per week. A greater percentage of participants aged 27–32 were in the 'high' depression category (38.7%), as compared to participants aged 19–23 (28.8%) and 24–26 (32.5%)

Female sex and lower education level were also both associated with being in the 'big' depression group. Additionally, the bivariable analyses demonstrated significant associations between total time per day on social media, age, sex and education level. Younger age, female sex, and lower education level were all associated with greater time per day on social media. Furthermore, age was the only covariate significantly associated with social media site visits per week with younger age associated with being in the highest category of site visits per week.

Overall, participants in the highest quartile of total time per day on social media had significantly greater odds of having depression compared to those in the lowest quartile. Participants in the highest quartiles of SM site visits per week represented a global frequency score of greater depression. All associations between independent variables and depression had strong, linear, dose-response trends and results were robust to all sensitive analyses.

2.8 Multidata methods using a systematic review

In comparison to the research conducted by Lin et al., (2016, p.325), we contrast these findings with the research conducted in the same year by Seabrook (2016). Seabrook (2016, p.1), conducted

research using a 'multidata base' which examines papers published between January 2005 and extending to 2016. These findings were classified as 'extracted reviews.' The findings of the systemic review focused on the positive interaction, social support and social connection which resulted in lower levels of depression.

The negative interaction by the participants yielded a higher level of depression. The use of social media portrayed less loneliness, greater self esteem and life satisfaction. The findings relating to the use of social media within the systematic review indicates that findings are mixed for frequency usage and number of SM friends. Discovery of different patterns have emerged in the way individuals with depression compared to individuals with social anxiety while engaging with SM. The findings of both reviews in reference to Lin et al (2016) and Seabrook (2016, p.3), that social media contributes in an effective way to depression within users.

The conclusion of Seabrook's research clearly indicates mixed findings between depression, anxiety and SM use. The self-report methodology linked with the cross sectional approach used in the assessment yields suggested evidence that SM use corelates with mental illness and impacts on wellbeing. However, it is unclear whether the effect is 'beneficial or detrimental' depending on social factors in the SM environment.

2.9 <u>Restricted Limited usage of Social Media by participants</u>

Associate director of clinical training in the Department of Psychologgy at the University of Pennsylvania, Hunt (2018), conducted a research experiment that was designed using three SM platforms, examining the causal link between time spent on these social media and increased depression and loneliness.

Three platforms most popular with a cohort of undergraduates included Facebook, Snapchat and Instagram. 143 undergraduates at the University were randomly assigned to limit either Facebook, Instagram and Snapchat use to 10 minutes, per platform, per day, or in compassion, to use social media as usual for a period of three weeks. From each platform, collected objective usage data automatically tracked by iPhones for active apps, not those running the background.

Before proceeding with the conducted study, each of the 143 participants completed a survey to determine their well-being, and shared a recording of their iPhone battery screens that offered a week's worth of baseline social media data. At random, participants were assigned to a control group, which allowed users to maintain their typical social media usage and behaviour. Over the period of three weeks, all participants shared their battery levels which manifested into weekly polls for each individual. Using the available data, Hunt then looked at seven outcome measures including fear of missing out, anxiety, depression, and loneliness.

The 'limited use' group showed significant reductions in loneliness and depression over three weeks compared to the control group. Both groups showed significant decreases in anxiety and fear of missing out over baselines, suggesting a benefit of increased self-monitoring.

2.10 Medical Case Study by RTE Investigates regarding anti-depressants in Ireland

According to Corrigan (2019) and RTE Investigates, anti-depressants in Ireland increased by 18% from 2012-2017. The analysis also found that from 2012-2017, a staggering increase of 28% in dosage was prescribed to adults in Ireland. However, Corrigan (2019) states that lead psychotherapists, Michael Corry and Aine Tubridy argue that anti-depressants are hugely over prescribed, temporarily masking serious psycho-social problems instead of addressing the root cause, and exacerbating the problem. Where clearly individual psychological distress and the social milieu in which arises is evident. Where these figures have risen from association of young adulthood, where 75% of all mental disorders first emerge between the ages of 15 and 25 (Dooley, 2012).

2.11 The influence of language measuring depression using Twitter

So far we have looked at the contrasting impacts Social media usage has on depression and other forms of mental health issues, however recent studies are now able to digest data and statistics using the ability to record mental health problems using social media.

Although research findings identify the usage of Social Media are linked with different forms of mental health illnesses, conclusive findings are limited and it is still unclear how social media platforms may exacerbate or alleviate mental health conditions. It is hard to gather data around the subject of mental health, however, according to Coppersmith et al., (2014, P.51), social media platforms such as Twitter can be a useful tool to 'record quantifiable perspective human behaviour that may otherwise go unobserved, suggesting it as a powerful tool for mental health researchers.'

2.12 Crowdsourcing as a measurement tool

Using methods such as 'crowdsourcing,' and the CES-D2 (Centre for Epidemiological Studies Depression Scale) screening test, De Choudhury et al. (2013), examines the potential of social media as a tool in detecting and diagnosing major depressive disorders in individuals. According to Miller (2011), 'crowdsourcing is the act of outsourcing tasks to an undefined, large group of people or community through an open call.'

De Choudhury et al. (2013) argued that, social media contains useful and alarming signals for characterizing the onset of depression, and an efficient mechanism to gain access to behavioural data from an automated public heath tracking scale. Capturing behavioural patterns using Twitter is an effective way of assessing several hundred Twitter users. We may argue that Twitter is the strongest SM platform that can ultimately act as a tool to measure and predict major depression in individuals at any given time.

Using crowdsourcing, measurements recorded included language, emotion, user engagement to characterize depressive behaviour, style, and ego network from any target individual. Results found that individuals with depression show lowered social activity, greater negative emotion, high self-attentional focus, increased relational and medicinal concerns, and heightened expression of religious thoughts. We may argue that users who publicly share their emotions with larger audiences,

increases their chances of getting validation and support, or another form of managing their emotional obstacles.

Results also identified that Twitter users who used these language traits belonged to highly clustered close-knit networks, and according to De Choudhry et al. (2013), were typically highly embedded with their audiences, in terms of the structure of their ego-networks. Employing the findings, De Choudhry et al. (2013), used a Support Vector Machine (SVM) classifier that can ultimately predict, ahead of the reported onset of depression of an individual and his/her likelihood of depression. Furthermore, the classifier yielded promising results with 70% classification accuracy. Using the available tools, this may be of great benefit for healthcare sectors and for the interest of individuals, enabling those suffering from any form of depression to be more proactive about their own mental health issues.

2.13 Specific use of language in Twitter triggering Mental Health Issues

According to Coppersmith et al., (2014, p.51), a quantified mental health analysis based on language signals using Twitter as a social media platform was examined. They focused on 'demonstrating how rigorous applications of simple natural language processing methods can yield insight into specific mental disorders.' They maintain that Twitter activists used specific language which is linked to mental health and the vocabulary used would indicate specific linguistic relevance to mental health issues, for example post-traumatic stress disorder (PTSD), depression, bipolar disorder and seasonal affective disorder (SAD). However, this thesis is specifically focusing on research based on the analysed results contributing to depression in mental health.

The findings focus on how language data is utilised on twitter and how it relates to mental health findings, it is difficult to quantify but there are areas of language usage which would indicate a clear link between depression and social media.

The areas of complexity are suggested to relate to the underlining causes versus the social stigma attached to depression in mental health. Specific references are made to the effects of health topics in relation to social media and it is recognised that mental health is a measurable component where it is placed as a best topic to be examined and evaluated through the Twitter platform.

Arguably, it is examined that individual people have recognised key performance indicator behaviours verbally which are identified as how an 'individual acts, how they communicate, what activities they engage in and how they interact with the world around them including references to friends and family.'

2.14 Linguistic Inquiry Word Count (LIWC) and its effects on repeated usage of words

Mental Health in relation to depression can be measured as an individual personal trend or an overall people's trend. We can divulge from the analysis that Twitter can inform us in relation to three different components; language use, social expression and interaction.

The Linguistic Inquiry Word Count (LIWC), is a validated measurement tool used to calculate psychometric analysis of language data through the means of the digital environment, and has been used repeatedly over time to study language associated with all types of disorders, including depression.

The area of social media encompasses the main word which is 'social' meaning open to all in interpretation and action. Twitter is considered to be best placed to draw conclusions and facts which linguistically provide a measurement in behaviours which assist to evaluate and recognise depression as a symptom in mental health and is considered to be the 'perfect tool' to compliment these findings.

The LIWC report recognises that the use of survey information, depression battery, and personality tests can yield significant findings. These contribute to determine characteristics used as a support based on people's own personal data contributed and surveyed. The focus on depression relates to a number of users and only recognises those who complete the full survey.

The Centre for Epidemiologic Studies Depression Scale (CES-D) survey carried out by De Choudhury et al. (2013) supports the above findings although while based on 'limited responses' and 'scope' it also incorporates an element which identifies self-divulged mental health issues within a shared open public twitter profile using open vocabulary analysis. This in turn captures my reference to language use relevant to mental health.

2.15 <u>Using Neuro Linguistic Programming(NLP) to predict mental health literature analysis</u>

Having recognised that Neuro linguistic Programming (NLP) is also a recognised element of assessment, this concentrates and supports mental health literacy used to predict mental health literature analysis. We approach a comparison between languages versus behavioural patterns that result in different groups recognised as 'Depressed groups,' 'Diagnosed groups' and 'Controlled groups,' and briefly, it is understood that areas of significance can relate in the following way.

The 'Depressed Group' tend to reference the following:
- Use first person pronouns
- There is an increase in negative emotional words
- No differences in positive emotional word usage which are described by (Fredrickson,2001) as 'multicomponent response tendencies.'
- There is a decrease in the use of third person pronouns

The 'Diagnosed Group' tend to reference the following:
- Genuine survey information
- There is a genuine diagnosis of tweets which are analysed by filters for example, if tweets are not rated as 75% compatible in English they are excluded from the survey.
- Seek users who state a personal mental illness and may seek support from others
- They also wish to explain their mental behaviour within tweets obtained.

Genuine Statements of Diagnosis
In loving memory my mom, she was only 42, I was 17 & taken away from me. I was diagnosed with having P.T.S.D LINK
So today I started therapy, she diagnosed me with anorexia, depression, anxiety disorder, post traumatic stress disorder and wants me to
@USER The VA diagnosed me with PTSD, so I can't go in that direction anymore
I wanted to share some things that have been helping me heal lately. I was diagnosed with severe complex PTSD and... LINK

Disingenuous Statements of Diagnosis
"I think I'm I'm diagnosed with SAD. Sexually active disorder" -anonymous
LOL omg my bro the "psychologist" just diagnosed me with seasonal ADHD AHAHAHAAAAAAAAAAA IM DYING.
The winter blues: Yesterday I was diagnosed with seasonal affective disorder. Now, this sounds a lot more dramat... LINK

Figure 4: (Coppersmith et al., 2014, P.53)

The 'Controlled Group' tend to reference the following:
- Using Population Data
- Randomly selecting a target figure which resulted in 10000 within a two week timeframe
- Additionally downloading 3200 most recent tweets within the 10000 figure
- Also removing tweets that have less than 25 characters

In relation to these type of self-reports, it is considered that not all data information compiled is always truthful, but it is reasonable to suggest that people who have a genuine mental health issue are perceived to be operating in an honest and truthful manner. It is important to be mindful of the fact that Twitter users do not portray all mental health issues as a whole within one disorder.

By using the NLP method which represents repetitive findings conducted by Coppersmith et al., (2014, p.52), the building use of classifiers for control groups, identify and contribute useful signals from within each group which connects with the use of language in Twitter suggesting mental health issues through signals.

2.16 Understanding the importance and influential use of language

In understanding the method used in the Linguistic Inquiry Word Count (LIWC), it is important for us to understand that invalidating this process we need to understand how important language is and how it's used. This compiled with samples which are catered for within the survey demonstrate the link within the Linguistic Inquiry Word Count (LIWC), which compares diagnostic groups with controlled groups in the survey completed.

My conclusion is that we demonstrate quantifiable signals using twitter which is a method of collected data which can be validated and measured. It must also be mentioned that consistent replicated observations show significant differences between depressed groups and controlled groups. We also have to be mindful of constructive classifiers and their influences separating diagnosed from control users for each disorder.

To simplify, there is a difference in language use which is apparent between diagnosed users and controlled users. Genuine self-statements which are identified work well in some cases. However, it is also recognised that these experiments, taken together, indicate that there are a diverse set of quantifiable signals relevant to mental health observable in Twitter, and supported as being a strong reputable social media platform. Twitter users will have tendencies to use certain linguistic trends, however the LIWC can focus on the language used, and is programmed to interpret certain words that can be linked to depression and trigger a recognition that these individuals may have depressive symptoms.

Findings would indicate that social expression, language use and interaction on twitter are the three areas of validation with LIWC. People who have a high dependency linked to the areas of validation could be selected into an overall monitoring system survey as part of the Twitter permission for site use. This programme could work in the background of Twitter to extract the reference areas of concern and perhaps focus on a database for users who could be alerted to the possible potential medical issues if unaware, or who may wish to seek help in a confidential non-invasive manner through this platform. This could develop into an efficient recording gauge to perhaps help and assist users to become more aware of these symptoms if relevant to them as individuals.

Chapter 3: The impact of our behaviours using Social Media

The literature review thus far solely demonstrates that young adults are in jeopardy of being exposed to developing mental health issues as they experience the transition from early childhood into emerging young adulthood, ranging in ages. In the midst of such technological advances, we must consider the developmental influences these new technologies are having on young people. The generation we are focused on are ranked as predominantly always digitally present, being the most active users in terms of age group using social media, where research suggests has a noticeable association with mental health issues due to various reasons talked about above. According to Turner (2013, p.52), the need for instant gratification, and distractions associated with continual partial attention are behaviours that would ultimately deviate an individual from their ability to develop and exercise 'social interest.'

However, Prensky (2011, p. 1) states that as a result of this ubiquitous environment and the sheer volume of their interaction with technology, today's young adults think and process information fundamentally differently from their predecessors. Turkle (2010), argues that the time available for young people to sit and think, uninterrupted, has shrunk over the years, as the current culture of communication no longer allows sufficient space to ponder complicated issues. According to Dr. Perry (2018), 'the brain is malleable (capable of change) throughout life but is most malleable during development. Experiences, good and bad, influence the development, organization, and functioning of the brain therefore, different kinds of experiences lead to different brain structures.'

Besides from existing research, it's important to demand more of a perceptive view of this hazardous situation. We know that the complex undefined issue exists between SM and Mental health however taking further action to understand how and why implications between the associations of young adults, their health, the role of social media and their surrounding environments develop.

There is many theories that suggest or support help to understand why SM association with mental health problems endure, and will now discuss the possible causes. Despite the fact many of these theories attempt to propose a valid overall proven ideology, we're aware that definite proof indicating social media use causes a decline in mental health has not been proven.

<u>3.1 Sedentary Behaviours:</u>

According to Tremblay (2017, p.2), Sedentary Behaviour (SB) is a distinct class of behaviours characterized by little physical movement and low energy expenditure (≤ 1.5 METs), such as occupational sitting or lying down. Dowdy (2018), states that 'physical inactivity can have serious implications for people's health, and approximately 2 million deaths per year are attributed to physical inactivity, prompting that a sedentary lifestyle could be among the 10 leading causes of death and disability in the world.'

Sedentary behaviours are prevalent in today's society, evidence showing by the Healthy Ireland Survey (2016), which involved 7498 representative sample population aged 15 and older living in Ireland, showed that the 'average amount of time spent sitting each day is 396 minutes (6 hours 36 minutes). Furthermore, this is no surprise as I've stated previously, on average young adults in Ireland spend 5h 19 minutes per day using the internet, where instant gratification posed by social media influences and encourages these sort of behaviours.

A young adult especially, will pray on social media at the forefront when spending time in an aimless, idle way during a sedentary stage, this could include being on transport, waiting for a friend, before a meeting etc. Not to mention, we can now argue in 2019, that social media usage is now incorporated into important relaxation time which is ultimately necessary for positive health goals, and according to Schwartz (2007), relaxation reduces wear and tear on the mind and body. Therefore, we are transforming the importance of relaxation into a sedentary behaviour from the use of social media, rather than using the time in a clever way that will help reduce the risk of mental health issues.

Sedentary behaviour, similar to social media usage, may be adversely associated with chronic disease in adults and risk factors for chronic disease. According to Get Ireland Active (2012), prospective studies have found consistent evidence that SB is associated with an increased risk of type 2 diabetes, and according to Grontved (2011), Cardiovascular disease can be triggered from prolonged TV viewing which are all causes of mortality, and more specifically, Griffith (2010, p.35) states that research on television and videogame use by children and adolescents tends to show associations with obesity. Sedentary Behaviour, according to Boyle (2011), may also increase risk of certain types of cancer, such as distal colon cancer and rectal cancer. Nonetheless, we know from research, links between SM and mental health problems are difficult to gauge, however this is similar to the effect of SB on the exposure to mental health issues. Findings are somewhat inconsistent, but are all relatedly linked to sedentary behaviour.
According to Sharma et al., (2006), 'exercise improves mental health by reducing anxiety, depression, and negative mood and by improving self-esteem and cognitive function and we're aware that exercise has also been found to alleviate symptoms such as social withdrawal and low

self-esteem. Therefore, reducing sedentary behaviour activities, and reducing time spent online similar to the research carried out by UK Cohort study, would combat, reduce and prevent mental health problems.

With technological developments and modernised sedentary lifestyles has come an increase in diseases associated with inactivity such as obesity and other non-communicable diseases. Emerging evidence suggests that time spent sedentary may also interact with mental health.

Evidence has suggested that with the rapid development of technology and modernised sedentary behaviours, an increase in inactivity is becoming problematic amongst Generation Z. We may argue that time SB has a bigger influence on mental health issues than researchers thought. Hoare et al. (2016, p.1) conducted a systemic review that examined the 'associations between sedentary behaviour and mental health problems among adolescents,' were 32 articles were identified for the review and 'a quality assessment tool for quantitative studies was used to identity best available evidence.' Results found that all studies reported 'leisure screen time among adolescents' resulted in two thirds of identified studies examined as being in the depressive symptomatology category. Along with other mental health measures such as, 'anxiety symptoms, self-esteem, suicide ideation, loneliness, stress, and psychological distress.'

Findings by Hoare et al. (2016, p.1) also stated, 'strong consistent evidence was found for the relationship between both depressive symptomatology and psychological distress, and time spent using screens for leisure.' Evidence also suggested that the relationship between low self-esteem and screen use was moderate. Furthermore, Hoare et al. (2016, p.1) states that poorer mental health status was found among adolescents using screen time more than 2–3 h per day. It was also noted that necessary information was missing for quality of evidence including heterogeneity in mental health, measurements of screen usage and self-report data collection methods. The findings are of particular importance and noteworthiness for researchers, given the global public health concern of sedentary lifestyle-attributed diseases and the possibility for new approaches to mental health research.

In relation to existing research, we could argue that people who suffer with mental health problems may use Sedentary behaviours as a comforting tool or as a heavy reliance to yield their burden due to their individual Mental Health disorders. Contrariwise, Sedentary Behaviours can increase possibility of a person forming mental health issues.

3.2 Blue Light evolution

With the evolution of technological advancement, many of today's electronic devices functioning on LED light technology are used to help enhance screen brightness and clarity. Bedrosian et al. (2017) states that since the adoption of electric light, pervasive exposure to night time lighting has blurred the boundaries of day and night, making it more difficult to synchronize biological processes. Bauer (2018) argues that 'the increase in LED lighting and the use of digital technology, humans are routinely exposed to more blue light than in the past, especially at night.'
Blue light is a colour in the visible light spectrum that can be seen by the human eye. According to Blue Light Exposed (2019), the LEDs that are incorporated into devices that we use social media on

such as mobiles, computers and tablet screens emit very strong blue light. Furthermore, blue light can affect sleeping patterns which in turn can have alternative effects on influencing existing mental health conditions. According to the National Sleep Foundation (2019), most adults need 7-9 hours of sleep per night, and we may argue that sleep deprivation can have serious implications to our over-all mental and physical health. A sleep study survey was conducted by The Natural Sleep Company (2019), which included 1800 participants from all parts of Ireland. Results showed that a large proportion of participants, 60%, use their smartphones, tablets and laptops before going to bed however it will now be discussed about the implications of blue light being emitted from such devices which can affect sleep patterns.

A biological clock that controls sleeping patterns is known as the circadian rhythms. According to Hye Oh (2015), the circadian rhythm, which is the internal sleep/wake cycle of humans, adapts to day and night environments. The blue lights affect our circadian rhythm, by suppressing the secretion of melatonin which results in a shorter period of sleep. Therefore, when using mobile phone devices late at night, this is naturally interrupting our sleep cycle pattern. Freeman et al (2017) states that, sleep problems are a common occurrence in patients with mental health disorders and lack of sleep is associated with high risk of depression, diabetes and cardiovascular disease. According to research conducted by Taylor (2005), People with insomnia had greater depression and anxiety levels than people not having insomnia, and were 9.82 and 17.35 times as likely to have clinically significant depression and anxiety, respectively. At large, according to Chang (2014), in the past 50 years, there has been a decline in average sleep duration an quality, with adverse consequences on general health. We may argue that this could be the development of technology and how it's becoming our only way of survival.

According to Chang (2014), a representative survey of 1,508 American adults recently revealed that 90% of Americans used some type of electronics at least a few nights per week within 1 h before bedtime. A study conducted by Rosen (2015), focused on young adults, and sleep problems related to the effects of technology, focusing on 'several potential mechanisms including displacement of sleep due to technology use, executive functioning abilities, and the impact of emotional states related to stress and anxiety about technology availability.' To conduct the study, Rosen (2015) examined cognitive and affective factors that may influence technology usage and explored how it may impact on a sleeping routine, and detect problems. A total of 700 US University students completed 'an online questionnaire addressing technology usage, anxiety/dependence, executive functioning, night time phone usage, bedtime phone location, and sleep problems.'

According to Rosen(2015), results found that executive dysfunction directly predicted sleep problems, as well as affected sleep problems through night time awakenings. In addition, anxiety/dependence increased daily smartphone usage and also increased night time awakenings, which, in turn, affected sleep problems. A path model controlling for background variables was tested using the data. Therefore, we can argue that both the affective and cognitive factors that influence technology usage have an impact on our sleeping patterns.

The quick development and widespread use of mobile phones that we rely on to for to access social media, and their limitless effect on communication and interactions, it is important to acknowledge

the possible negative health effects of mobile phone exposure. Thomée (2011, p.1) investigated whether there are associations between psychosocial aspects of mobile phone use and mental health symptoms in a prospective cohort of young adults aged 20-24.

Each participant responded to a questionnaire at the beginning of the study, and this was followed up after a duration of one. According to Thomée (2011, p.1), mobile phone exposure variables included frequency of use, but also more qualitative variables: demands on availability, perceived stressfulness of accessibility, being awakened at night by the mobile phone, and personal overuse of the mobile phone. The Mental health outcomes associated included current stress, sleep disorders, and symptoms of depression. Thomée (2011, p.5) also noted that Prevalence Ratios (PRs) were calculated for cross-sectional and prospective associations between exposure variables and mental health outcomes for men and women separately.

Results showed that there were cross-sectional associations between high compared to low mobile phone use and stress, sleep disturbances interrupting important sleep patterns, and symptoms of depression for both, men and women. If we exclude respondents reporting mental health symptoms from the initial questionnaire, Thomée (2011, p.1) states that high mobile phone use was associated with sleep disturbances and symptoms of depression for the men and symptoms of depression for the women at 1-year follow-up. Furthermore, all qualitative variables had cross-sectional associations with mental health outcomes. In retrospect, overuse of mobile phone was linked to stress and sleep disturbances for only women, and results for both men and women collectively outlined that high accessibility stress was associated with stress, sleep disturbances, and symptoms of depression.

Although this is a complex issue, findings indicate that sleep and mental health each affect one another through a reoccurring cycle. In hindsight, when a person has a good sleep, this results in good mental health. When a person is feeling happy and healthy, this helps the mind and return allows for good sleep. However, findings may also suggest that poor mental health and lack of sleep come as one. It is evident that blue artificial lighting, where over 5 hours per day are spent by excessive usage of mobile phones and social media, especially at night, can hinder sleep routines and ultimately trigger mental health issues.

Conclusion

This thesis is linked to ongoing research exploration within available existing data which suggests that there is a strong connection between social media and depression in young adults. Findings have shown that this is increasing with unregulated online streaming, researched analysis show that it is reasonable to suggest that there is a tight link to acquired behaviours by users of SM which is having a negative impact to the mental health of young adults. The resulting data would indicate and support that depression is a key factor linked to measured behavioural changes with prolonged usage by young adults aged 18-25.

Findings suggest that there are supports available in Ireland for people who suffer from depression, however, we may argue that the rise of depression and increased rates of suicide and additional levels of medication being administered are excessive. Medical opinion and evidence would suggest that we are not capable to deal sufficiently with the demands placed on the mental health care system. It is evident that there is an imbalance of available help to cover all increasing demands and hopefully the introduction of the new Oireachtas committee will influence recognised changes here.

It has been found that legal implications exist with regard to social media which affects child age profile and vulnerability to sites with risks affiliated by oppressive materials. I would argue that it is necessary to introduce controls in this area to influence a change in the accessibility and governance of all social media platforms with restrictive age and conduct practices. However the legal fields are relatively new and combined with research still unexplored, this makes the risks to mental health more vulnerable and a race against time.

Based on findings, it's evident that Twitter is the most suitable platform to measure depression analysis and user behaviour. We may argue that Twitter is not fully aware of the implications social media can have on mental health and the detrimental effects it has on users. I would suggest that the Twitter platform create a governance link to an overall monitoring system survey as part of the site enrolment which could focus on the linguistic concerns associated with depression and be available to assist users in a non-intrusive manner. This could operate similarly to mental health charities available in Ireland, however, this would be incorporated into the platform and be a 24 hour available service specifically for depression if necessary to the users needs.

It is evident that there is a clear increase and vulnerability of depression indicating that early age detection between 13-18 year SM users olds will expand and increase in magnitude with time. While findings suggest that excessive time spent online will influence the key performance indicators of depression, it is a concerning trend that young adults are influenced by this and struggle with self-reflection. Usage can be restricted by sites based on time out scenarios. We may argue that parents and schools have a role to play in the awareness of this and to enforce this where necessary. We are dealing with a social media trend that takes from our freedom of values and self-thought processes. We can also argue that we cannot control this but can influence time spent online.

There is a strong link between the usage of social media and the impact it has on mental health triggering depression in different formats. There is a clear link to the age profile of the users with

non-restrictive boundaries, thus the relentless open access to online social media feeds into the recognised depression zones that in time, become a silent mental hologram and begin to create serious physical and mental health issues that impact on the well-being of the users. Like a drug, its needs are addictive and the danger is that, we remain complacent and do not recognise its diminishing and erosive effects forming and contributing to depression.

We can continue to negotiate and continue to assert that asking if social media makes people happier is far too simplistic a question, but we cannot deny that the question's popularity reveals an overwhelming interest in social media's impact on people's emotions. Living in a world of instant gratification, where it's proven difficult to disconnect, findings suggest that limiting social media use to approximately 30 minutes per day may lead to significant improvement in well-being. Our behaviours with social media have also a role to play in our exposure to depression. As a generation, we are in jeopardy of being over exposed to SM, with so many new technical advancements. It is fair to say Generation Z has become a guinea pig for progress. The impact to users will rise and may significantly increase depression and anxiety in mental health with continued excessive usage.

We are now always digitally present, and as active users our age generation will only continue to increase the thirst for usage. In turn, there is a noticeable association with online usage and health issues particularly in relation to depression and Twitter. The sheer volume of information and the increased interaction will continue to be an attraction for instant gratification and our coping skills will begin to diminish. This will influence our sedentary behaviours and will undoubtedly support the blue light evolution theory relating to depression and anxiety as issues. To look for an antidote to this, we have to examine the open ended access and time spent online. We may cease to be less interactive socially, and we may inherit expanding mental health issues far exceeding current concerns and expectations. We could suggest that our self-confidence, self-image, fear of exclusion, reduced social interactions and this combined with mental health are causes which will possibly label us as victims of social media.

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