The role of Psychological Flexibility; the impact of the COVID-19 Pandemic for mental health outcomes among college students in Ireland.

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Abstract

Aims: The current study investigated the impact of the COVD-19 Pandemic on mental health outcomes among third level students within Ireland. The study investigated the relationship between psychological flexibility, mental health and well-being, age and COVID-19 stress. The study investigated if psychological flexibility and COVID-19 stress were predictors of mental health outcomes while also investigating if students differed by gender and year of college with their COVID-19 stress and mental health outcomes. **Method:** An online questionnaire was administered to participants (n = 90) via social media and required participants to answer four questionnaires: The Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT), The Covid-19 Student Stress Questionnaire (CSSQ), The Warwick- Edinburgh Mental Wellbeing Scale (WEMBWS), and The Everyday Psychological Inflexibility Checklist (EPIC). **Results:** In contrast with previous research**,** results indicated that psychological flexibility strongly predicted adverse mental health and well-being outcomes. Results also indicated that students did not differ by year of college and gender in relation to their mental health and well-being or COVID-19 stress. **Conclusion:** Findings from the current study offer a greater understanding of the COVID-19 pandemic experience among the general population of third-level students in Ireland. Relationships between COVID-19 stress and adverse mental wellbeing indicate that the COVID-19 pandemic may have negatively impacted mental health. This study highlights the importance of research among college students during these challenging times, and future research should investigate the discrepancies found in the current study in contrast to previous literature.

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Introduction

The World Health Organization declared the Coronavirus outbreak a global pandemic on March 11, 2020 (Radi et al., 2020). The Coronavirus (COVID-19) is an acute respiratory disease transmitted by contact or inhalation of droplets from an infected individual (Singhal, 2020). The COVID-19 virus creates a possible threat to the physical health of an individual. Equally, mental health can also be impacted by the sudden changes within society, such as the implementation of lockdowns and isolation measures required to prevent exposure to the virus (Cao et al., 2020; Zhong et al., 2021). Lockdowns imposed within society required mandatory home confinement except for essential services, including food shopping and exercise (Roques et al., 2020). Individuals who were potentially exposed or displaying symptoms of the Coronavirus were advised to isolate themselves from loved ones and social supports. Isolation and lockdown measures necessary to mitigate the spread of the virus can negatively affect mental health as individuals may experience fear over health status, boredom, and frustration in response to the perceived loss of freedom (Brooks et al., 2020). The uncertainties within society caused by a health crisis such as the COVID-19 Pandemic can create fear among individuals as there is a continuous threat to safety within the environment (Avery, 2017). Due to the highly infectious rate of the virus, the closures of institutions such as college campuses were enforced throughout the world to uphold the safety of individuals (Cucinotta & Vanelli, 2020). Previous literature has suggested that social distancing and isolation measures can increase the likelihood of developing psychological disorders such as depression, anxiety, and psychotic symptoms (Holt-Lunstad et al., 2015; McCracken et al., 2021). Research has suggested that student populations are more vulnerable to developing mental health difficulties due to pressure and stress associated with the high demands of third-level education (Brooks et al., 2020). It can be argued that the COVID-19 Pandemic has altered the daily lives of college students and has created further

vulnerability for mental health difficulties (Son et al., 2020). When the experience of fear is elevated for an extended period in a crisis, it can negatively impact mental health; therefore, research is essential to investigate the impact of the COVID-19 Pandemic on mental health and well-being among vulnerable populations such as third-level students (Zhong et al., 2021).

Restrictions and transition to an online environment.

Colleges campuses transitioned from traditional classroom learning to online learning in the spring of 2020 to ensure that students could continue their studies safely (Ali, 2020: Crawford et al., 2020; Huang et al., 2020). The lack of physical and social interactions with fellow students experienced during the transition to an online environment can negatively impact mental health and well-being (Burns et al., 2020). Although online learning reduces physical and social interactions among students, online learning can be a positive experience for individuals who prefer a flexible approach to academic studies (Kemp & Grieve, 2014). The transition to a virtual environment could facilitate and promote self-confidence for individuals who struggle with public speaking in a classroom among peers, promoting positive mental health outcomes (Almendingen et al., 2021). Mental health difficulties can be more evident among individuals who find it challenging to adapt to novel situations such as online learning, the unpredictability of societal restrictions and socialisation changes (Chen et al., 2020). Restrictions imposed to mitigate socialisation among individuals in different households were withdrawn and enforced continuously within Ireland to lessen the spread of the Coronavirus and protect the health service (Looi, 2020). The continuous altering of restrictions following health guidelines within Ireland could have caused significant anxiety surrounding the Pandemic as individuals, including third-level students, experienced uncertainty for extended periods (Chen et al., 2020; Kelly, 2021; Solé et al., 2021). The uncertainty of when life will return to “normal” can be suggested to evoke feelings of

helplessness, depression, and anxiety among individuals (Pierce et al., 2020; Wong et al., 2021).

Previous research has suggested no significant difference between classroom learning and online learning for students regarding the quality of learning (Shea & Bidjerano, 2014). However, the disruption to regular learning can result in a lack of motivation and interest in academia for third level students (Xu, & Jaggars, 2011). Numerous research studies have shown that third-level education students display higher psychological distress than the general population (Bayram, & Bilgel, 2008; Sharp & Theiler, 2018). Literature suggests that stress and pressure are significantly greater for college students than students currently in primary or secondary school (Gao et al., 2020). Research has also suggested that third-level students in Ireland are at a significantly higher risk of developing mental health difficulties than their age-matched peers who are not enrolled in third level education (Karwig et al., 2014; Union of Students of Ireland, 2019). Third level education students can be more vulnerable to psychological distress during their education as academic pressure, independent learning, continuous evaluation and financial burden can increase the risk of poor mental health outcomes within the student population (Adewuya et al., 2006; Blanco et al., 2008; Sharp & Theiler, 2018). Social support and social interactions among peers in third-level education can alleviate the pressures associated with the academic environment and promote positive mental health outcomes for an individual (Roudsari et al., 2005). Social support refers to the amount of care and support that an individual receives from individuals in their life, such as friends and family (Xiao et al., 2020). Relationships among peers and staff can support students in third-level education and can help to relieve the stress associated with college life (Hurst et al., 2012). If an individual does not have social support among peers within their life, particularly in third-level education, this can be a risk factor for mental health difficulties and psychological distress (Hefner & Eisenberg, 2009).

Risk factors for psychological distress.

Research conducted among a Chinese population identified potential risk factors for experiencing psychological distress during the Covid19 Pandemic, including gender, age, coping strategies and fear associated with the COVID-19 Pandemic (Qiu et al., 2020; Shen et al., 2021; Wu et al., 2020; Yu et al., 2020). Research from historical pandemics such as the severe acute respiratory syndrome (SARS) outbreak indicates that fear of contracting a virus can evoke feelings of helplessness (Cheng et al.,2006). Fear of contagion has been identified as a risk factor for psychological distress, increasing the likelihood of developing psychological disorders such as post-traumatic stress disorder (PTSD) (Cheng et al.,2006; Mak et al., 2009). Previous research has concluded that females are more likely to develop significantly higher psychological distress levels than males after exposure to a stressful situation such as historical epidemics and pandemics **(**Gómez-Salgado et al., 2020; Pierce et al., 2020; Ritsner et al., 2001; Sareen et al., 2013; Tahara et al., 2020). In congruence, research has indicated that females reported experiencing significantly higher levels of psychological distress throughout the Covid19 Pandemic than males and were at greater risk of developing adverse mental health outcomes such as depression and anxiety **(**Zhu et al., 2020; Al-Hanawi et al., 2020; Elmer 2020; Wang & Zhao, 2020; Xiaoming et al., 2020).

Although research indicates that females are more susceptible to psychological distress, it can be argued that mental health stigma can account for the gender differences as males could be less likely to report mental health difficulties (Chatmon, 2020; Sagar-Ouriaghli et al., 2020). A meta-analysis conducted by Johnson & Whisman (2013**)** suggests that females are more likely to ruminate, increasing the likelihood of developing psychological disorders such as PTSD. Among the risk factors for the development of psychological distress during the COVID-19 Pandemic, age also poses a potential risk factor

for psychological distress (Rens et al., 2021). Research indicates that 18–30-year-olds and 60+-year-olds have displayed higher levels of psychological distress throughout the COVID-19 Pandemic (Lahav, 2020; Qiu et al., 2020). Research suggests that the COVID-19 Pandemic has significantly impacted young adults below thirty-five years old compared with older adults (Huang & Zho, 2020). Young adults generally consume more information and interaction through social media, contributing to the high prevalence of psychological distress as the overload of information could contribute to fear and anxiety surrounding the COVID-19 Pandemic (Cheng et al., 2014; Gao et al., 2020 Glowacz & Schmits, 2020). Contrary to these findings, research has also identified that older adults were more at risk of developing the Coronavirus and, therefore, isolated for more prolonged periods which can negatively impact mental health (Donovan & Blazer, 2020; Vernooij-Dassen et al.,2020; Wu, 2020).

Replacing physical interactions with solely virtual interactions and spending more time online due to imposed social confinement can provoke feelings of anxiety and stress for young adults (Glowacz & Schmits, 2020). Research has suggested that college students also experienced uncertainties and anxiety surrounding future educational and professional opportunities due to the societal changes implemented during the COVID-19 Pandemic (Huang & Zho, 2020). The year of college students are currently in has also been suggested to be a risk factor for mental health outcomes (Polychronopoulou & Divaris, 2005; Thiemann et al., 2020). The prevalence of depressive symptoms was higher among students in the fourth year of their undergraduate degree, 29% compared to third-year, 24%, second year, 21% and first-year 17% (Ge et al., 2020; Fu et al., 2021). Students in their final year of studies can experience significantly higher stress levels regarding final grades, possible post-graduate opportunities and career prospects that could be impacted by the COVID-19 Pandemic (Rabei et al., 2020). It is suggested that the uncertainty of future career opportunities after college has significantly impacted final year college students as a direct

result of the economic disruption and altering of restrictions imposed throughout the Covid19 Pandemic (Elmer et al., 2020). Significant milestones such as graduation for final year college students were delayed, cancelled, or moved to an online platform due to the COVID-19 Pandemic (Sahu, 2020). Significant milestones such as the formal acknowledgement of graduating from third level education are of great importance for individuals as they celebrate their achieved goal (Wilt et al., 2016). The cancelled events, closure of college campuses and the disruption to daily routines can impact personal growth for an individual in third-level education (Hawley et al., 2021).

Psychological flexibility as a protective factor.

Due to restrictions imposed during the COVID-19 pandemic, regular routines have altered within society. The world has been impacted socially, economically, and psychologically (Kılıç et al., 2020). Previous literature surrounding historical virus outbreaks, particularly SARS, has indicated that mental health difficulties experienced during a pandemic can last for months or years after the experience has ended (Liu et al., 2012). Investigating modifiable processes can allow for appropriate interventions to combat psychological distress caused by the COVID-19 Pandemic, and moderating variables may influence the relationship between the experience of COVID-19 pandemic conditions and distress (Holmes et al., 2020). Psychological flexibility may be a moderating variable that can offer further understanding for individuals' reactions to the significant changes during the COVID-19 Pandemic (Browne et al., 2022). Psychological flexibility can be defined as accepting all sensations, including negative thoughts and feelings, while remaining focused and open to the experience in the present moment (Hayes 2009). Psychological flexibility promotes positive mental health and can reduce psychological distress by allowing the individual to fully experience all thoughts and feelings during challenging times while engaging in value-based behaviour (Gloster et al., 2017). It is believed that individuals who

are unwilling to adapt to the changing requirements during the COVID-19 pandemic and engage in rumination of negative thoughts can cause further psychological distress (Tindle & Moustafa, 2021). Psychological flexibility can mitigate the negative impact on mental health due to the COVID-19 pandemic and act as a protective factor to accept all feelings as a response to challenging times, preventing rumination (Pakenham et al., 2020). A systematic review has identified that psychological flexibility could reduce the formation of psychological disorders such as depression and anxiety, resulting in positive mental health outcomes (Prudenzi et al., 2022). Psychological inflexibility can occur when an individual is preoccupied with internal events such as thoughts and reasoning, while the behaviour is dominated by thoughts and behaviours that do not align with personal values (Thompson et al., 2019). Psychological inflexibility is often associated with psychological disorders such as anxiety, depression, and substance abuse (Levin et al., 2014). Psychological flexibility is not a fixed or solidified process and can be improved and taught through interventions such as Acceptance and Commitment Therapy (ACT) (Hayes et al., 2006). Psychological flexibility can be viewed as a protective factor for positive mental health during challenging times, and individuals can benefit from this skill with consistent practice by resisting the urge to ruminate after negative feelings or experiences (Gloster et al., 2021; Shepherd et al., 2022).

Overview of Literature Findings.

The COVID-19 Pandemic has undoubtedly had a significant impact worldwide, and further research is needed to investigate the specificity of the psychological impact (Saladino et al., 2020). To date, there has been limited research that has investigated the impact of the COVID-19 Pandemic for third level students within Ireland. Research has predominately focused on specific vulnerable groups such as individuals with existing mental health difficulties, frontline workers, and individuals with less economic and social resources (Ali et al., 2020; Burke et al., 2020; Gavin et al., 2020; O'Connor et al., 2020). Research among

third level students in Ireland has also focused on specific subgroups of the student population, including business students and medical students (O'Byrne et al., 2020; Son et al., 2020). Therefore, research is essential to provide more insight into the general population of third-level education students and address this gap in the current literature.

The Present Study.

This research study aims to investigate the impact of the Covid19 Pandemic on mental health outcomes among the general population of third-level education students in Ireland. The current study aims to identify if psychological flexibility, gender, and year of college are predictors of mental health outcomes among third level students in Ireland. Psychological flexibility has not been investigated among college students within Ireland as a moderating variable concerning the response of the COVID-19 Pandemic. Literature has identified the importance of modifiable processes when dealing with novel situations such as the COVID-19 Pandemic (McCracken et al., 2021). Research suggests that the COVID-19 pandemic has resulted in more significant psychological distress, but it is crucial to determine whether this is a universal experience (Varma et al., 2021). It is also crucial to examine factors that may mediate the relationship between COVID-19 stress and mental health. The research questions that will be addressed are: Is there a relationship between psychological flexibility, COVID-19 stress, and mental health? Is there a relationship between age, COVID-19 stress, psychological flexibility and mental health and well-being? Do psychological flexibility and COVID-19 stress predict mental health outcomes in Third level students, and lastly, do students differ by year and gender in relation to their COVID-19 stress and mental health outcomes. The hypothesis formulated by the research questions are as follows, (1) there will be a relationship between psychological flexibility, COVID-19 stress and mental health,(2) there will be a relationship between age, psychological flexibility, COVID-19 stress and mental health and well-being, (3) psychological flexibility will predict mental

health outcomes in third level students and lastly (4) there will be a significant difference between year groups and genders in their COVID-19 stress and mental health outcomes.

Methodology

Participants

The research sample for the current study was selected using non-probability sampling. The target population were third level education students studying in Ireland. Per sample size calculations provided by G-Power analysis, 54 participants were required to achieve a large effect size among the population and reduce the possibility of a Type 1 error (Faul et al., 2007). Participants were recruited using convenience and snowball sampling. A recruitment poster (Appendix A) was posted on the researcher's social media accounts (Facebook and Instagram) which outlined the study's brief description and requirements for participation. The recruitment poster included a QR code and a link that directed eligible participants to the survey. Friends were encouraged to share the survey with friends on social media to recruit eligible participants. NCI students were also invited to participate in the study via Microsoft Teams.

Ninety participants above 18 were initially recruited for the research study. One participant identified as "other" within the gender demographic information and, therefore, was excluded from the analysis as they were not represented across the sample. The final sample for the study included 89 participants (Females including trans females = 61, Males including trans males = 28) with a mean age of 29 years old (*SD* = 10.42) with ages of participants ranging from 18-59. Participants were also assigned to different years of college. Of the sample, 12.2% of participants were first-year students, 38.9% were second-year students, 36.7% were third-year students, and 12.2% were fourth-year students.

Measures/Materials

Participants were required to complete five questionnaires in an online format (Demographic, The Comprehensive assessment of Acceptance and Commitment Therapy process (Compact), Warwick- Edinburgh Mental Wellbeing Scale (WEBMWS), The Everyday Psychology Inflexibility Checklist (EPIC) and the COVID-19 Student Stress Questionnaire (CSSQ). The online survey was hosted on Google Forms. Data collected from participants were stored in a secure format on the researcher's password-protected laptop. Internet connection and a device to access the questionnaire were required for participation in the study.

Demographic Questionnaire.

Participants were initially required to complete the demographic questionnaire when participation in the study commenced (Appendix B). Participants were required to provide demographic information, including gender, age, and their current year of college (first, second, third or fourth).

Psychological flexibility

The Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT) scale (Appendix C) investigated psychological flexibility (Frances et al., 2016). The CompACT scale is a 23-item scale and investigates core components of Acceptance and Commitment Therapy (ACT). The CompACT scale investigates three core components of ACT: 'openness to experience', 'valued action' and 'behavioural awareness'. There are three subscales within the CompACT scale, items 1,2,3,4,5,6,7,8,10 and 21 aim to measure 'Openness to Experience' with internal reliability ($\alpha = 0.84$), items 13,14,15,16,17,18,19,20 aim to measure 'Valued Action' with internal reliability ($\alpha = 0.89$) and items 9,11,12,22 and 23 aim to measure 'Behavioural Awareness' with internal reliability ($\alpha = 0.90$). Questions include "I tell myself that I should not have certain thoughts". Items within the scale are scored on a 7-point Likert scale with 0 = meaning 'strongly disagree' and six = meaning 'strongly

agree'. Scores range from 0 to 138, and higher scores on the scale indicate greater levels of psychological flexibility. Reverse scoring is used to infer psychological flexibility by reverse scoring the negatively phrased items (7, 10, 13, 14, 15, 16, 17, 18, 19, 20 & 21) within the CompACT-8 scale. Cronbach's alpha scores for the total scale from previous studies indicate acceptable internal reliability ($\alpha = 0.73$) and validity (Dawson & Golijani-Moghaddam, 2020). Cronbach's alpha score for the present study was ($\alpha = 0.89$).

Mental health and well-being

The Warwick- Edinburgh Mental Wellbeing Scale (WEMBWS), see (Appendix D), was used to investigate participants' mental health and well-being (Tennant et al., 2007) and is a 14-item scale. The (WEMBWS) is a preferable scale compared to the abbreviated version (SWEMBWS) for measuring mental well-being among individuals within the population (Koushede et al., 2019). The abbreviated version (SWEMBWS), a 7-item scale, has been criticised as it presents a more restricted view of mental well-being than the 14-item scale (Stewart-Brown et al., 2009). The scale assesses mental well-being's emotional, cognitive, functional, and social components. Questions within the scale include "I feel optimistic about the future". Items within the WEMBWS scale were scored on a 5-point Likert scale, with one = meaning 'none of the time' and five = 'all of the time'. Scores range from 14 to 70, with higher scores indicating greater mental health and well-being. Cronbach's alpha scores indicate good internal reliability ($\alpha = 0.85$) and construct validity (Rogers et al., 2018). Cronbach's alpha score for the current sample was ($\alpha = 0.92$), indicating excellent internal reliability.

Psychological inflexibility

The Everyday Psychological Inflexibility Checklist (EPIC) scale (Appendix E) investigated psychological inflexibility among participants. The EPIC scale is a 7-item scale, and participants were asked to rate their answers in the context of everyday life. The EPIC scale measured psychological inflexibility factors such as avoidance and behavioural rigidity.

Questions 1, 3, 5, 7 aim to measure the component ‘Avoidance’ and questions 2, 4, 6 aim to measure the component ‘Behavioural Rigidity’. Questions within the EPIC scale include items such as “If unpleasant situations come to mind, I think about something else”. Items within the scale are rated on a 7-point Likert scale ranging from 1= ‘never true’ and 7= ‘always true’. Scores range from 1 to 49, and higher scores indicate greater levels of psychological inflexibility (Thompson et al., 2019). Cronbach’s alpha scores indicate respectable reliability (α = 0.75) (Thompson et al., 2019). Cronbach’s alpha score for the current sample was (α = 0.78), indicating acceptable internal consistency levels.

COVID-19 stress

The Covid-19 Student Stress Questionnaire (CSSQ) investigated perceived stress during the Covid-19 Pandemic among third level students (Appendix F). This scale was specifically designed to evaluate third-level education students' perceived stress during the Covid-19 Pandemic and assesses fear of contagion, economic consequences, xenophobia, compulsive checking, reassurance seeking and traumatic stress symptoms (Zurlo et al., 2020). Questions within the (CSSQ) scale include items such as “How did you perceive the risk of contagion during the Covid19 pandemic?”. The scale consists of 7 items on a 5-point Likert scale with items ranging from zero to four. 0= indicates “not at all stressful”, and four indicates “extremely stressful”. Scores range from 0 to 28, and higher scores indicate greater levels of perceived stress. Cronbach’s alpha scores indicate respectable reliability (α = 0.71) (Zurlo et al., 2020). Cronbach’s alpha score for the current sample was (α = 0.84), indicating a high internal consistency level. One question in the CSSQ was left out of analysis “How did you perceive the changes in your sexual life during the Covid19 pandemic?” This could have influenced Cronbach’s alpha score.

Design

A Cross-Sectional within subject's design was selected for this study. Data were collected from participants to identify the impact of the Covid19 Pandemic, and all participants within the research study were required to answer the same questions. The research design was selected to investigate if there was a relationship between age, psychological flexibility, COVID-19 stress and mental health and well-being. The study aimed to investigate if COVID-19 stress, psychological flexibility and psychological inflexibility are significant predictors of mental health and well-being outcomes. The predictor variables in the study were psychological flexibility, psychological inflexibility, and COVID-19 stress. The criterion variable in the study was mental health and well-being. The independent variables in this study are gender, year of college and age. The dependent variables within the study are COVID-19 stress and mental health and well-being.

Procedure

Participants were invited to participate in the current study via social media (Facebook and Instagram). A brief text description about the current study accompanied the online post, which informed potential participants that the questionnaire was independent research for an undergraduate programme, how long the questionnaire would take to complete (ten minutes) and the anonymity nature of the research. Eligible participants were instructed to click the URL link or scan the QR code provided online, which brought the participant to the google form document that contained a self-report anonymous questionnaire. Participants were advised to read the information sheet (Appendix G), which outlined the nature of the research study, requirements for participation and any possible risks associated with the research study. Informed consent was required from participants before participation in the study could begin (Appendix H). Once consent had been obtained from participants, demographic information

was then obtained from all participants. Participants were advised that they could exit the questionnaire at any point without penalty prior to submission of data.

Participants were then required to complete the CompACT questionnaire, which assessed psychological flexibility and included twenty-three items. Followed by the WEMBWS scale, which assessed mental health and well-being and included fourteen items. A simple mathematical equation was then inserted after the WEMBWS scale to increase engagement (Appendix I). Participants were then required to complete the CSSQ scale, which assessed participants' perceived stress during the COVID-19 Pandemic and consisted of six items. Finally, participants were required to complete the EPIC scale, which assessed psychological inflexibility and consisted of seven items. Once participants had completed the questionnaire, a debriefing sheet (Appendix J) was displayed on the participants' screen. The debriefing sheet included contact details for the researcher and supervisor of the research study. Resources were also displayed for participants if they experienced any distress due to participation in the study and needed support from professional services.

Ethical Considerations

The current study was conducted in accordance with ethical guidelines provided by the National College of Ireland and the Psychological Society of Ireland. Ethical approval for the research study was obtained on 29/10/2021 from the National College of Ireland's Psychology Department's Undergraduate Ethics Committee. The following ethical implications were considered for the research study.

An information sheet was displayed prior to participation in the research study and explained the nature of the research study. Informed consent was obtained and required from participants prior to participation in the study to ensure benevolence and protect the participants throughout the study. Participants were advised that they had the right to withdraw consent and

data from the study prior to submission. Data were collected in an unidentifiable manner, and participants were made aware that the researcher would not have the option to retrieve personal data once answers had been submitted on the google doc form.

No identifiable information was collected from participants to ensure confidentiality and anonymity throughout the study. The researcher was the only person who had access to the data submitted to the Google Doc form. The Google Doc form was stored on the researcher's password-protected laptop. Participants were given sample questions that would be asked prior to participation in the study to inform participants of the nature of the study and minimise the risk of emotional distress. Participants were also advised that they could cancel out of the study at any point prior to submission of data if they experienced temporary distress. A debriefing sheet was displayed for participants at the end of the study and included telephone numbers for professional support systems if participants needed to seek support. Contact details for the researcher were also included in the debriefing sheet.

Results

Descriptive statistics

The sample for the current study had 90 participants with a mean age of 29 years old (*range* = 18 – 59, *SD* = 10.42). The study aimed to investigate the impact of the COVID-19 Pandemic on mental health and well-being among third level education students. As shown in Table 1, participants were assigned to gender (females including trans females, males including trans males and others). Of the sample, 67.8 % identified as female participants (*n* = 61) compared to 31.1% who identified as males (n = 28). One participant identified as "other" and represented 1.1% of the sample population. Participants were also assigned to their current year of enrolment within third-level education. Of the sample, 12.2% identified as a first-year college student (*n* = 11), 38.9% of participants reported being currently enrolled in second year (*n* = 35). Of the sample 36.7% identified as a third-year college student (*n* = 33) and of the sample, 12.2% identified as a fourth-year college student (*n* = 11).

Table 1

Frequencies for the current sample on each categorical variable (Gender and college year), (n = 90)

Variable	*Frequency*	*Valid %*
Gender		
Female	61	67.8
Male	28	31.1
Other	1	1.1
College year		
First	11	12.2
Second	35	38.9
Third	33	36.7
Fourth	11	12.2

The variables age, psychological flexibility, mental health and well-being, psychological inflexibility and COVID-19 stress were assessed for normal distribution and results are presented below in Table 2. Kolmogorov Smirnov tests of normality were used to identify the assumption of normality. Scores for variables Age ($p = < .00$), Psychological flexibility ($p = .02$) and COVID-19 stress ($p = .02$) suggests that there is a violation of the assumption of normality and the data are non-normally distributed for these variables. Scores for variables mental health and well-being ($p = .20$) and psychological inflexibility ($p = .07$) suggest that the data are normally distributed for these variables.

Table 2.

Descriptive statistics for continuous variables Age, psychological flexibility, mental health and well-being, psychological inflexibility and COVID-19 stress (n = 90).

Variable	*M* [95% CI]	*SE*	*SD*	*Range*
Age	28.61 [26.43, 30.79]	1.10	10.42	41
Psychological Flexibility	85.75 [81.51, 89.98]	2.13	20.09	100
Mental health & wellbeing	44.12 [41.73, 46.52]	1.21	11.44	49
Psychological inflexibility.	31.46 [29.87, 33.05]	.80	7.59	37
COVID-19 stress	14.87 [13.61, 16.14]	.64	6.04	24

Kolmogorov Smirnov tests of normality were conducted to identify normality for all variables reported in Table 2. All variables indicate normal distribution within the acceptable range of +2 and -2. However, the data appear to be quite positively skewed for the variable Age; it is within the acceptable range of +2 and -2.

Based on the histograms (Appendix K) evidence, Kolmogorov Smirnov tests of normality, it can be inferred that the assumption of normality has been violated, and the data are non-normally distributed for the variable Age. Based on the evidence (Appendix L), it can be assumed that the data is normally distributed for the variable's psychological flexibility, COVID-19 stress, Mental Health and psychological inflexibility. Three outliers were identified within the data; however, scores were within the acceptable range of possible scores Analysis was conducted without the outlier scores, and results indicated no difference. Therefore, the three outlier scores were included in the final analysis.

The average score for the psychological flexibility scale was 66.66; high scores indicate more significant levels of psychological flexibility; this score indicates that the

sample in this study had high levels of psychological flexibility. The average score for the mental health and well-being scale was 44.12; high scores indicate greater mental health and well-being levels, the score for the current sample indicates that this study had moderate levels of mental health and well-being. The average score for the psychological inflexibility scale was 31.46; high scores indicate greater levels of psychological inflexibility; this score indicates that the sample in this study had moderate levels of psychological inflexibility. The average score for the COVID-19 stress scale was 14.87; high scores indicate greater levels of perceived COVID-19 stress; this score indicates that this study had low levels of perceived COVID-19 stress.

Inferential statistics.

Hypothesis 1.

A correlation matrix (Table 3) was conducted to investigate the relationships between psychological flexibility, psychological inflexibility, COVID-19 stress and mental health. A significant moderate positive relationship was identified between psychological flexibility and psychological inflexibility ($r = .54$, $p < .001$), as scores increased for psychological flexibility, scores increased for psychological inflexibility. There was a significant moderate positive relationship between psychological flexibility and COVID-19 stress ($r = .49$, $p < .001$). Individuals who scored higher in psychological flexibility scored higher in COVID-19 stress. There was a negative relationship between psychological flexibility and mental health and well-being ($r = -.70$, $p < .001$). As individuals scored higher in psychological flexibility, they scored lower in mental health and well-being. There was also a significant weak positive relationship between COVID-19 stress and psychological inflexibility ($r = .38$, $p < .001$). As individuals scored higher in COVID-19 stress, they scored higher in psychological inflexibility. There was also a significant weak positive relationship between psychological inflexibility and mental health and well-being ($r = -.42$, $p < .001$). As individuals scored

higher in psychological inflexibility, they scored higher in mental health and well-being. See Table 3 below for reported figures.

Table 3.

Pearson product-moment correlations between variable psychological flexibility, psychological inflexibility, mental health and well-being, and COVID-19 stress.

Variable	1.	2.	3.
1. Psychological Flexibility	-		
2. Psychological inflexibility	.54**	-	
3. COVID-19 stress	.49**	.38***	-
4. Mental health and wellbeing	-.70**	-.42**	-.44**

Note: $n = 89$.* p < .05; ** p < .01; *** p < .001

Hypothesis 2.

A correlation matrix was conducted for analysis to address the second research question. As the data were non-normally distributed for the variable age (Appendix K), a non-parametric Spearman's Rho correlation coefficient analysis was conducted to investigate a relationship between the variables age and psychological flexibility COVID-19 stress and mental health and well-being (Table 4).

There was a significant weak negative relationship between psychological flexibility and age (r = -.30, p = .004). As age increased, scores in psychological flexibility decreased. Analysis indicated no significant correlation between age and psychological inflexibility (r = -.05, p = .662). There was a significant weak negative relationship between age and COVID-19 stress (r = -.27, p = .010). As age increased, scores in COVID-19 stress decreased. There was also a significant weak positive relationship between age and mental health and well-being scores (r = .31, p = .003). As individuals scored higher in age, they also scored higher

in mental health and well-being. The analysis identified a significant weak positive relationship between COVID-19 stress and psychological flexibility ($r = .45$ $p < .001$), as individuals scored higher in psychological flexibility, scores increased in COVID-19 stress. Analysis indicated a significantly strong negative relationship between psychological flexibility and mental health and well-being ($r = -.70$ $p < .001$), as individuals scored higher in psychological flexibility, they scored lower in mental health and well-being. There was a significant weak positive relationship between COVID-19 stress and psychological inflexibility ($r = .37$ $p < .001$), as scores of COVID-19 stress increased, scores in psychological inflexibility increased. There was a significant weak positive relationship between psychological inflexibility and mental health and well-being ($r = .37$ $p < .001$), as scores in psychological inflexibility increased, scores in mental health and well-being decreased. The analysis also indicated that there was a significant weak negative relationship between mental health and well-being and COVID-19 stress ($r = -.42$ $p < .001$), as scores in mental health and well-being increased, scores in COVID-19 stress decreased. See Table 4 below for reported figures.

Table 4.

Spearman's Rho correlation coefficient between variables age, psychological flexibility, psychological Inflexibility, COVID-19 stress and mental health and well-being.

Variable	1.	2.	3.	4.	5
1. Age	-				
2. Psychological Flexibility	-.30**	-			
3. Psychological Inflexibility	-.05	.51**	-		
4. COVID-19 stress	-.27*	.45**	.37**	-	
5. Mental health	.31**	-.70**	-.42**	-45**	-

Note: $n = 89$.* p < .05; ** p < .01; *** p < .001

Hypothesis 3.

A standard multiple regression analysis was used to investigate if psychological flexibility and COVID-19 stress will predict third-level students' mental health outcomes. Preliminary analysis was conducted to ensure there were no violations of normality, multicollinearity, and homoscedasticity. The model explained 51.4% of the variation in total mental health and wellbeing, F (3, 85) = 29.12, $p < .001$. As shown in Table 5, psychological flexibility was the only variable to reach statistical significance and is a strong negative predictor of mental health and well-being ($\beta = -.618$, $p < .001$). Variables Covid-19 stress ($\beta = .126$, $p = .157$) and psychological inflexibility ($\beta = -.041$, $p = .658$) did not reach statistical significance.

Table 5.

Standard Multiple regression table for variables psychological flexibility, COVID-19 stress, and psychological inflexibility.

Variable	R^2	*B*	*SE*	β	*t*	*p*
	51.4%					
Psychological flexibility		-.35	.05	-.618	-6.38	.000***
COVID-19 stress		-.18	.16	-.126	-1.43	.157
Psychological inflexibility		-.07	.14	-.041	-.45	.658

Note: $n = 89$. R^2 (R squared), *B* (unstandardised beta value), *SE* (standard error), β (standardised beta value)* $p < .05$; ** $p < .01$; *** $p < .001$

Hypothesis 4.

A two-way between-groups ANOVA was conducted to explore the impact of gender and year of college on mental health and well-being levels. Participants were divided into categories according to gender (Female and Male). Participants were also divided into categories according to their year of college (first, second, third and fourth). The interaction effect between gender and year of college was not significant, F (3, 89) = .02, p = .995. There was no statistically significant main effect for gender, F (1, 89) = .01, p = .909. The main effect for the year of college, F (3, 89) =.08, p =.970, did not reach statistical significance.

A two way between groups ANOVA was conducted to explore the impact of gender and year of college on levels of COVID-19 stress. Participants were divided into categories according to gender (Female and Male). Participants were also divided into categories according to the participant's year of college (first, second, third and fourth). The interaction effect between gender and year of college was not significant, F (3, 89) = 2.04, p = .114.

There was no statistically significant main effect for gender, F (1, 89) = 3.76, p = .056. The main effect for the year of college, F (3, 89) =.18, p =.911, did not reach statistical significance.

Results from the correlation analysis should be interpreted with caution and do not infer a causal relationship. Pearson's product correlation coefficient indicated that psychological flexibility is associated with lower scores for mental health, and higher levels of psychological flexibility can also be associated with higher levels of COVID-19 stress. Greater scores in COVID-19 stress were also associated with lower scores in mental health. Higher scores of COVID-19 stress were associated with higher scores in psychological inflexibility. As individuals scored higher in psychological flexibility, scores also increased for psychological inflexibility. Spearman's Rho Correlation coefficient also indicated that as age increased, scores in psychological flexibility decreased. As age increased within the current research study, COVID-19 stress scores decreased. Higher scores for age were associated with higher mental health and well-being scores. The analysis concluded that as COVID-19 stress increased, scores in psychological inflexibility also increased. Higher scores for psychological inflexibility were also associated with lower mental health and well-being scores. Results from the standard multiple regression indicated that the model explained a large variance in mental health and well-being scores (51.4%), indicating that psychological flexibility, psychological inflexibility, and COVID-19 stress contributed significantly to mental well-being scores. Psychological flexibility was the only variable to reach statistical significance and was a strong negative predictor of mental health and well-being. COVID-19 stress, and psychological inflexibility were not significant predictors of mental health and well-being in the current study. Results from the two-way between ANOVAs indicate that students did not differ by year of college and gender in relation to

COVID-19 stress and mental health and well-being as the interaction effect and the main effect were not significant within the current study.

Discussion

The current study aimed to investigate the impact of the COVID-19 pandemic on mental health outcomes for third level education students in Ireland and aimed to investigate a significant relationship between psychological flexibility, COVID-19 stress and mental health and well-being. Based on previous literature, this study also aimed to investigate a relationship among the variables age, psychological flexibility, COVID-19 stress and mental health while also aiming to identify if psychological inflexibility, psychological flexibility, and COVID-19 stress were predictors of mental health outcomes among third level students. The study also aimed to identify significant differences among gender and college year groups in relation to COVID-19 stress and mental health outcomes. Four Hypotheses were formulated throughout this research based on previous literature.

It was first hypothesised that there would be a relationship between psychological flexibility, psychological inflexibility COVID-19 stress and mental health outcomes among third level education students. The first hypothesis was explored using a Pearson's product correlational coefficient matrix analysis and indicated that as levels of COVID-19 stress increased, scores in mental health and well-being decreased. This finding is consistent with numerous studies that suggest COVID-19 stress negatively impacted third-level students' mental health (Al-Rabiaah et al., 2020; Burns et al., 2020; Kecojevic et al., 2020; Kumar & Nayar. 2020). Results indicate that as psychological flexibility increases, COVID-19 stress also increases. This finding is inconsistent with previous literature, which found that psychological flexibility was an influential protective factor for distress during the COVID-19 pandemic (Browne et al., 2022; Chong et al., 2021). The analysis also found that as scores in psychological inflexibility increased, scores for COVID-19 stress also increased. Results also suggested that higher scores for psychological inflexibility resulted in lower mental health and well-being scores. Findings indicated that as psychological flexibility increased,

mental health and well-being decreased. This result is inconsistent with previous literature, which suggests psychological flexibility can promote positive mental health and well-being (Lucas & Moore, 2019). The inconsistent findings may be due to larger sample sizes in previous research and methodological differences. The Warwick- Edinburgh Mental Wellbeing Scale (WEMBWS) scale is a well-established and reliable scale that has been distributed among Irish third-level students; however, research suggests that individuals experiencing negative emotions can relate more adequately to negatively phrased items, unlike the positively phrased scale used in this study (Lindwall et al., 2012; Zeng et al., 2020).

The second hypothesis aimed to identify significant relationships among the variables age, COVID-19 stress, psychological flexibility, and mental health and well-being, which was explored using a Spearman's Rho correlation coefficient matrix, and results should be interpreted with caution. As scores in age increased, psychological flexibility scores decreased, consistent with the limited research investigating this relationship (Viglund et al., 2013; Boman et al., 2017). Results concluded that as age increased, COVID-19 stress scores decreased. This conclusion is inconsistent with previous research that indicated older adults were also susceptible to COVID-19 stress (Mistry et al., 2021; Wu, 2020). This inconsistent finding could be partially due to the sample population as the average age within the study was 29 and failed to recruit participants over the age of 60 who were considered older adults in previous literature (Janiri et al., 2020). There was no significant correlation between age and psychological inflexibility in the current study. Results also indicated that mental health scores increased as age scores increased. This finding is consistent with previous literature that suggests younger adults are more susceptible to developing adverse mental health outcomes (Varma et al., 2021). Results surprisingly found that as psychological flexibility scores increased, psychological inflexibility scores also increased, which is inconsistent with

previous literature and homogeneity among the questions could be the reason for this. The analysis also found that as scores in psychological inflexibility increased, scores in COVID-19 stress increased, which is consistent with previous literature (Hernández-López et al., 2021). Results indicated that as scores in psychological inflexibility increased, scores in mental health and well-being decreased, which is consistent with a systematic review that identified psychological inflexibility as a mediator of adverse mental health outcomes during the COVID19 pandemic (Salari et al., 2020).

The third hypothesis used standard multiple regression to identify if psychological flexibility, psychological inflexibility, and COVID-19 stress were predictors of mental health and well-being scores. The final model accounted for 51.4% of the variance, and psychological flexibility was the only predictor variable to reach statistical significance and was a strong, negative unique predictor (-.62) of mental health scores. This result would indicate that as scores in psychological flexibility increased, scores in mental health and well-being decreased, which is strongly inconsistent with previous literature (Marshall & Brockman, 2016; Tyndall et al., 2020). A complimentary measurement of well-being such as life satisfaction and burnout may have been appropriate to use in conjunction with the WEMBWS (Lucas & Moore, 2019). Longitudinal studies identified that the COVID-19 pandemic may have been impactful among different aspects of well-being, which could have influenced conflicting results with previous literature (Prudenzi et al., 2022). The variables psychological inflexibility and COVID-19 stress did not reach statistical significance and were not associated with any changes to mental health and well-being scores which is inconsistent with previous literature.

It was lastly hypothesised that there would be significant differences between year groups and gender in relation to COVID-19 stress and mental health outcomes. 2 x 2-way between-group ANOVAs were conducted for analysis, and results indicate that there were no

differences in gender and year groups in relation to COVID-19 stress and mental health outcomes. These results are inconsistent with previous literature that suggested students in their final year of college were more susceptible to adverse mental health outcomes and COVID-19 stress (Deng et al., 2021). This finding could be partially due to the methodology used within the study. The COVID-19 student stress scale (CSSQ) only possessed six items in the current study as one question was left out of the analysis. Cronbach's alpha for the current study nevertheless indicated excellent internal reliability. The CSSQ has also not been previously investigated among third level students within Ireland and therefore may not have been an appropriate measure. A more culturally validated measurement may provide a more robust analysis. Participants also took part in the study when the COVID-19 restrictions began to ease within Ireland, possibly influencing scores related to COVID-19 stress (Rainford et al., 2022). Based on the concluding results from analysis within the study, hypotheses 1, 2 and 3 can be partially accepted. The fourth hypothesis is rejected within the current study.

The current study was the first to investigate levels of COVID-19 stress among a general student population within Ireland. This study expands upon previous research that identifies the COVID-19 pandemic as a prolonged stressful experience that can exacerbate levels of psychological distress. Literature has continuously reiterated the importance of protective factors such as social support, which can mitigate the impact of distressing situations and possibly prevent the formation of psychological disorders. While the literature emphasises the importance of social support among third-level education students and peers as a protective factor in preventing adverse mental health outcomes, the COVID-19 pandemic highlighted the frailty of reliance on peer support when contact was limited to online environments, and socialisation was restricted. Although individuals could communicate and connect with support systems via technology, it has been suggested that prolonged screen

time can negatively impact mental health among young adults (Allen et al., 2019; Rahman et al., 2020). Qualitative analysis identified that individuals felt like a burden among their peers and refrained from overtly vocalising their mental health difficulties during the lockdown (Dedryver & Knai, 2021). Individuals have also reported experiencing social media fatigue, anxiety, and depression due to time spent online and communicating primarily through technology (Cockerham et al., 2021). Future research could conduct qualitative research among third-level education students in Ireland, providing a more in-depth understanding of mental health experiences and outcomes during these challenging times and the possible impact of the COVID-19 pandemic among this population (Hammarberg et al., 2016). In addition, future research could also investigate the reliance on social media and networking sites for communication and support among peers to develop a more thorough understanding of how impactful the changes to social support were during the COVID-19 pandemic and if this was an influential component among COVID-19 stress among third-level education students.

The significant correlation between COVID-19 stress and mental health outcomes was not reflected in the more robust standard multiple regression analysis. This finding would indicate that although there is a significant relationship among the two variables, a confounding variable such as the cross-sectional design of the study could have been a factor in the non-significant result obtained within the analysis. The current study's design did not facilitate the ability to directly capture the experience of lockdowns and isolation regarding their influence on mental health. As society begins to reopen and reconnect with peers in third-level education, they may experience a new appreciation of socialisation among peers. The return to “normal” and physically reconnecting with the previous support system may have influenced the non-significant result of COVID-19 stress as a unique predictor of mental

health outcomes and could explain the low prevalence of COVID-19 stress within the current sample population (O'Donnell et al., 2022).

Results have indicated that high levels of psychological inflexibility are negatively correlated with mental health scores, and future research should identify if this can be replicated in a robust measure among a larger sample. Although high levels of psychological flexibility predicted adverse mental health and well-being scores in the current study, this contrasts with numerous studies that have identified psychological flexibility as an influential component in predicting positive mental health outcomes during the COVID-19 pandemic (Dawson & Golijani-Moghaddam, 2020; Prudenzi et al., 2022; Tindle & Moustafa, 2021). The COVID-19 pandemic has highlighted societal frailty that needs further research to understand the extent of the impact on mental health outcomes among vulnerable populations such as third-level education students. Research can only benefit from the further investigation regarding protective psychological factors to improve coping and resiliency among this sample population during challenging times when socialisation and physical contact is prohibited.

Practical implications.

The present study did not conclude results in congruence with previous literature that argues psychological flexibility can be a unique predictor of positive mental health. However, psychological flexibility, COVID-19 stress and psychological inflexibility as a whole model predicted a large amount of variance in mental health and well-being scores. This finding identifies that the three possible predictors explain a significant impact on mental health and well-being scores. Student support services within third level education institutions in Ireland should adopt a more proactive response to mental health and well-being among the student population. Guest speakers addressing mental health within campuses can promote an environment that enables students to vocalise any distress they may be experiencing and

prevents stigma associated with mental health (Perron et al., 2011; Theriot, 2013). The HSE has recently launched the application Silver Cloud, an online CBT platform that can help individuals with feelings of anxiety or depression if a conventional treatment method cannot be accessed. Currently, not all third-level institutions in Ireland are offering this service free of charge to their student population despite the evidence that it has been a beneficial source for students experiencing mental health difficulties, with a reported improvement rate of 65% among users (Richards et al., 2020). Promoting mental health services free of charge, such as Silver Cloud, could eliminate the financial burden of mental health resources, benefiting the student population. Literature states that third-level students within Ireland are vulnerable to mental health distress (Union of Students in Ireland, 2019). Services such as Silver Cloud could be beneficial if resources such as face to face counselling cannot be accommodated in the future, as was experienced during the COVID-19 pandemic.

Strengths and Limitations.

A limitation of the current study is the reliance on self-report scales utilised throughout the study, which could have introduced response bias within the study (Haeffel & Howard, 2010). Participants within the study may have selected answers that they believed to be more socially acceptable. Although the number of participants reached acceptable data saturation in the current study, a larger sample size within the current study could have also identified possible outliers within the sample. An unequal variance among gender could have possibly influenced contrasting results with previous literature. As the study's design was cross-sectional, this could have influenced the ability to capture direct feelings from participants as confounding variables such as the reopening of society may have influenced results. The sample had a mean score of ($M = 14.87$) for COVID-19 stress, indicating that COVID-19 stress was not strongly represented in the current sample and could have possibly influenced scores. The measurement of mental health and well-being could have been

improved with complementary measures to investigate different aspects of well-being (Tyndall et al., 2020). Future research should conduct qualitative and longitudinal analysis to understand students' personal experiences during the COVID-19 pandemic and the possible long-term impact on mental health, as suggested by previous literature (Liu et al., 2012).

The current study had many strengths and was the first study to investigate the impact of the COVID-19 pandemic on the general population of third-level education students within Ireland to infer generalisability. Previous research has primarily investigated sub-populations of the student population. The current sample had a mean age of (M =29), and research has shown that young adults under the age of thirty-five were more susceptible to psychological distress during the COVID-19 pandemic (Huang & Zho, 2020). A more established measurement of COVID-19 stress may have concluded different results within the current study as previous research has identified this age group as a target population where it would be expected to see congruent results with the literature. There was a relatively equal variance among the four different year groups, which is a strength of the current study, and possible statistical differences may have been identified due to this strength. A simple mathematical equation was also designed within the study to increase participants' engagement and prevent repetitive selection among responses.

Conclusion

Overall, it can be inferred that the COVID-19 pandemic has impacted mental health among the general population and particularly among vulnerable groups such as third-level education students. The current study has identified relationships between COVID-19 stress and adverse mental health outcomes, and future research should establish a more robust measure to explore this relationship further. Qualitative and longitudinal studies could offer further understanding regarding the relationship between COVID-19 stress and mental health among third level students. Psychological inflexibility, psychological flexibility, and COVID-

19 stress explained significant variance in mental health and well-being scores, indicating that all variables together significantly impacted mental health. Although the current study identified psychological flexibility as a predictor of adverse mental health and well-being scores, substantial research contradicts this finding, and results could be due to methodology or confounding variables within the current study, future research should utilize appropriate measures and control for confounding variables.

"Mental health is not merely the absence of mental illness." (World Health Organisation, 2004, p.11). Providing accessible mental health and well-being resources within third-level education institutions could help mitigate the development of adverse mental health outcomes, particularly as a precautionary measure if physical resources are prohibited in the future (Browning et al., 2021). Ireland currently has one of the highest rates of mental illness among young adults within Europe (O'Connor et al., 2020), which should be recognised by all education institutions and appropriate prevention measures put in place to mitigate adverse outcomes.

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Appendix A

Poster for recruitment

Appendix B

Demographic questionnaire

1. Please indicate your Age: ____

2. Please indicate your Gender:
    - Male (including trans males).
    - Female (including trans females).
    - Non-binary.
    - Other.

3. What year of college are you currently enrolled in?
    - First.
    - Second.
    - Third.
    - Fourth.

Appendix C

CompACT, Questionnaire *(*Francis et al., 2016)

1 Strongly disagree	2 Disagree	3 Somewhat disagree	4 Neutral	5 Somewhat agree	6 Agree	7 Strongly agree

1. I try to stay busy to keep thoughts and feelings from coming **OE**
2. I tell myself that I shouldn't have certain thoughts **OE**
3. One of my big goals in life is to be free from painful emotions. **OE**
4. I go out of my way to avoid situations. that might bring difficult thoughts, feelings, and sensations. **OE**
5. Even when something is important to me, I'll rarely do it if there is a chance that it will upset me. **OE**
6. I work hard to keep out upsetting feelings. **OE**
7. I can take thoughts and feelings as they come, without attempting to control or avoid them. * **OE**
8. I get so caught up in my thoughts that I am unable to do the things that I most want to do. **OE**
9. I find it difficult to stay present in the current moment. **BA**
10. Thoughts are just thoughts- they do not control what I do.* **OE**
11. I rush through meaningful activities without paying attention to them. **BA**
12. I do jobs or tasks automatically without being aware of what I am doing. **BA**
13. I make choices based on what is important to me, even if it is stressful.* **VA**
14. My values are really reflected in my behaviour * **VA**
15. I am able to follow my long terms plans including times when progress is slow.* **VA**
16. I can keep going with something when it's important to me. **VA**
17. I behave in line with my personal values.* **VA**
18. I undertake things that are meaningful to me, even when I find it hard to do so.* **VA**
19. I act in ways that are consistent with how I wish to live my life.* **VA**
20. I can identify the things that really matter to me in life and pursue them.* **VA**

21. I am willing to fully experience whatever thoughts, feelings and sensations come up for me, without trying to change or defend against them**.* OE**
22. It seems I am "running on automatic" without much awareness of what I'm doing **BA**
23. Even when doing the things that matter to me, I find myself doing them without paying attention. **BA**

OE: Open to experience

BA: Behavioural awareness

VA: Valued action

Appendix D

Warwick- Edinburgh Mental Wellbeing Scale (WEMBWS), (Tennant et al., 2007).

1	2	3	4	5
None of the time	Rarely	Some of the time	Often	All of the time.

1. I feel optimistic about the future
2. I feel useful
3. I feel relaxed
4. I feel interested in other people
5. I have energy to spare
6. I deal with problems well
7. I am able to think clearly
8. I feel good about myself
9. I feel close to other people
10. I feel confident
11. I am able to make my own mind up about things
12. I feel loved
13. I am interested in new things
14. I feel cheerful

Appendix E

Everyday Psychological Inflexibility Checklist (EPIC). (Thompson et al., 2019).

1 Never true	2 Very seldom true	3 Seldom true	4 Sometimes true	5 Frequently true	6 Almost always true	7 Always true

1. I try to avoid thinking about difficult topics [A]
2. I find I follow rigid patterns when doing some tasks [BR]
3. When awkward thoughts occur, I try and block them out [A]
4. Although I have never been told to, I find I perform certain activities in a set order [BR]
5. In my personal life I steer clear of conversations that I find uncomfortable [A]
6. I notice I do certain everyday tasks in a particular order [BR]
7. If unpleasant situations come to mind, I think about something else [A]

[A], Avoidance

[BR], Behavioural rigidity

Appendix F

Covid-19 student stress questionnaire (CSSQ), (Zurlo et al., 2020).

1	2	3	4	5
Not at all stressful	Somewhat stressful	Moderately stressful	Very stressful	Extremely stressful

1. How did you perceive the risk of contagion during the Covid19 pandemic?
2. How did you perceive the condition of isolation during the Covid19 pandemic?
3. How did you perceive the relationships with relatives during the Covid19 pandemic?
4. How did you perceive the relationships with your university colleagues during the Covid19 pandemic?
5. How did you perceive your relationship with your university lecturers during the Covid19 pandemic?
6. How did you perceive your Academic studying experience during the Covid19 pandemic?

Appendix G

Information sheet.

Thank you for your interest in participating in this research study.

Purpose of the study

I am a final year Psychology student at the National College of Ireland. Part of my final year undergraduate degree requires independent research to be conducted. This research study aims to investigate psychological flexibility and the effects of mental health and wellbeing for third level education students during the Covid19 Pandemic.

The supervisor on this research project is Dr Conor Nolan. Details for Dr Conor Nolan are included in the debriefing sheet.

Please read this information sheet which explains why this particular research is being carried out and what it will involve if you decide to participate in the study. Please feel free to contact me or my supervisor, Dr Conor Nolan, on the contact details that are included at the end of the information sheet and debriefing sheet.

What will happen during the study?

If you decide to take part in this research, you will be asked to answer an anonymous online questionnaire. A personal computer or mobile phone and internet connection will be needed to take

part in the study. The questions will be short, and the study should not take longer than 10 minutes to complete. The questions will focus on the topics of mental health and the Covid19 pandemic.

Can I take part?

Participants who wish to participate in the study must be 18 years or older.

Participants can only participate in the research study if they are currently enrolled in third-level education within Ireland.

Do I have to take part?

Participation in the study is entirely voluntary. If you choose to take part in the study and then decide to withdraw, you are free to withdraw at any stage without penalty. The data that will be collected is non-identifiable, and your answers will remain anonymous.

If you decide to participate in the study and wish to withdraw during the questionnaires, you can cancel out of the questionnaire and not submit any answers. This will allow you to withdraw from the study, and no data will be collected.

If you submit your answers at the end of the questionnaire, there will be no way for me as a researcher to retrieve this information. Data that will be collected will remain anonymous and non-identifiable to the researcher.

Risks/ Benefits of taking part in the study

There are no direct benefits for taking part in this undergraduate study.

The questions that will be asked will not be invasive but could cause temporary discomfort or upset, for example, “I feel good about myself”.

Professional support services are listed on the debriefing sheet if you need to seek support, and the researcher's details are included at the bottom of this information sheet if you need further information.

If you wish to withdraw from the study during the questionnaire, you can cancel out of the questionnaire at any stage with no penalty, and there will be no data collected from your participation.

By participating in this study, you may contribute to Psychology and our knowledge regarding human behaviour and thought processes.

The Covid19 Pandemic is a unique history in time and gaining research about students' experience in this situation could enable us to implement better interventions throughout third level education if a situation similar to this arises in the future.

Will taking part be confidential, and what will happen to my data?

If you wish to participate in the study, the information you provide will be kept completely anonymous. The researcher will be the only person who has access to the information provided, and this information will be non-identifiable.

Once you submit your answers, the researcher will not be able to identify any information provided.

The collected data will form the basis of an undergraduate dissertation which may be stored in the NCI library database. The collected anonymous data will also be presented to NCI students and staff as part of my undergraduate dissertation.

The researcher will retain information that is collected throughout the research project for up to 5 years as per NCI guidelines. The data will be stored on a password-protected laptop, and only the researcher will have access to this.

Please contact me if you need further clarity about the research study or any questions concerning any element of the study.

Researcher: Mairéad O’ Farrell

Email address- psychflexstudy@gmail.com

Appendix H

Consent sheet.

Study title: Psychological Flexibility; The Impact of the Covid19 Pandemic for Third Level Education Students in Ireland.

- Informed consent is required to participate in this research study
- It is essential that you have read the information sheet and know the details involved in the research study. Please read the below points before agreeing to participate in the study.

• I understand that I am participating in research for a Psychology undergraduate final year project.

• I am over the age of 18 years old

• I am currently a third level education student in Ireland.

• I have read the information sheet and am aware of the nature of this research study.

• I understand that all data will be kept anonymous throughout the research.

• I understand that I am taking part in a voluntary research study, and I can withdraw at any stage prior to submitting data without penalty.

• I am aware that the data will be non-identifiable after I submit my responses and therefore unable to withdraw data from the research study.

By clicking accept and proceed, I confirm that I am 18 years of age or older, and I am currently a third level education student in Ireland.

I have read and understand the above information. I consent to participate in this study being conducted in the National College of Ireland.

Accept and proceed by clicking the button below that indicates "I consent."

Accept and proceed ☐

Appendix I

Simple Mathematical equation

What is 2 x 4?

1. 8
2. 12
3. 16
4. 20

Appendix J

Debriefing sheet.

Dear participant, thank you for taking the time to participate in this research study. Your contribution to this research is greatly appreciated. You have taken part in a questionnaire to explore the experiences of third level students throughout the Covid19 Pandemic in regard to mental health.

The data that is collected from participants will be analysed to identify if there are any isolated predictors of negative mental health among participants throughout the Covid19 Pandemic.

There is limited research surrounding this topic in Ireland at the moment. I hope that the contribution of participants will give further insight in regard to the experiences of third level students during this time.

This will hopefully enable more insight and better structures to be put in place if a situation similar to this arises in the future.

If you need any further clarity, information or wish to receive information about the results of the study, please feel free to contact me via email :psychflexstudy@gmail.com

Below, there are resources if you feel that you need support from a professional source

- https://www2.hse.ie/services/mental-health-supports-and-services-during-coronavirus/
- https://www.aware.ie/support/support-line/
- https://www.mentalhealthireland.ie/get-support/

• https://spunout.ie/education/college/mental-health-supports-for-people-in-college

Thank you,

Researcher- Mairéad O' Farrell

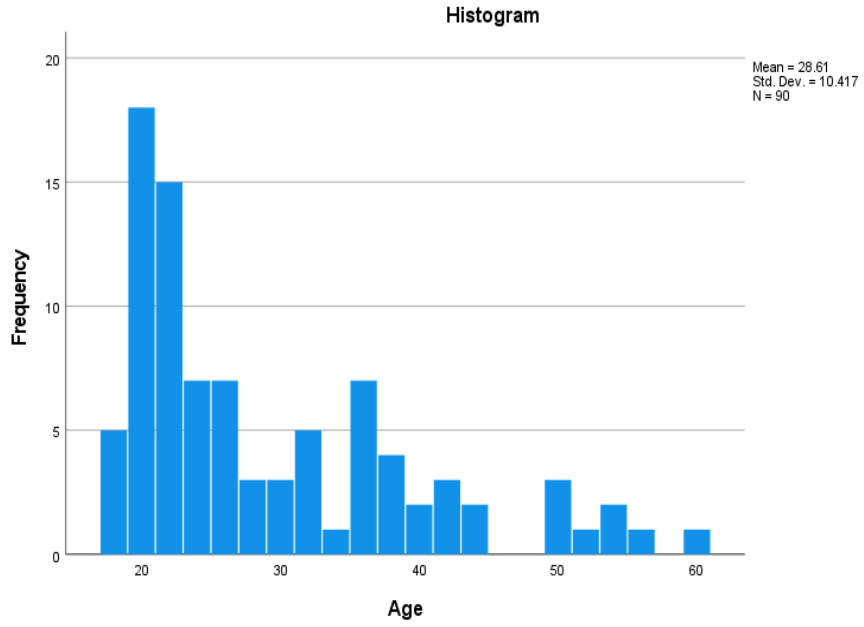
Email address-psychflexstudy@gmail.com

Supervisor- Dr Conor Nolan

Email address- Conor.Nolan@ncirl.ie

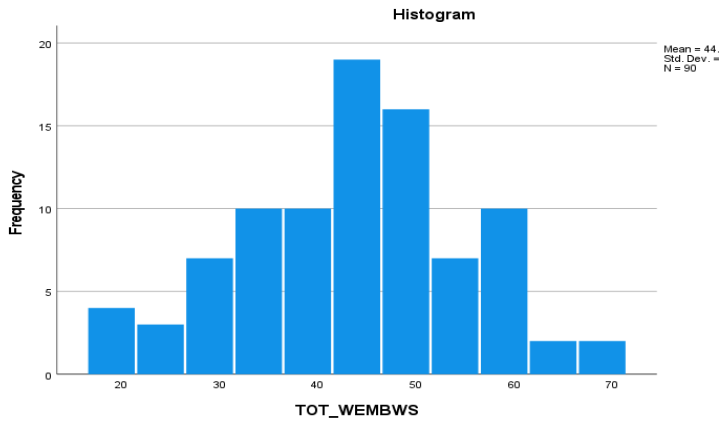
Appendix K

Histogram- Age

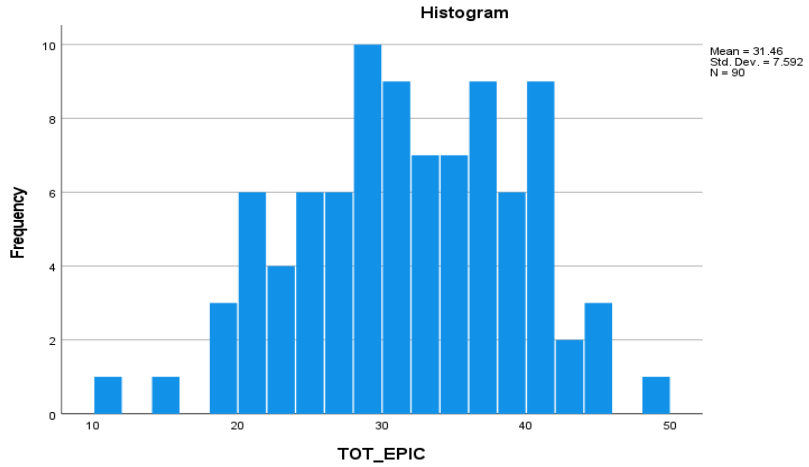


Appendix L

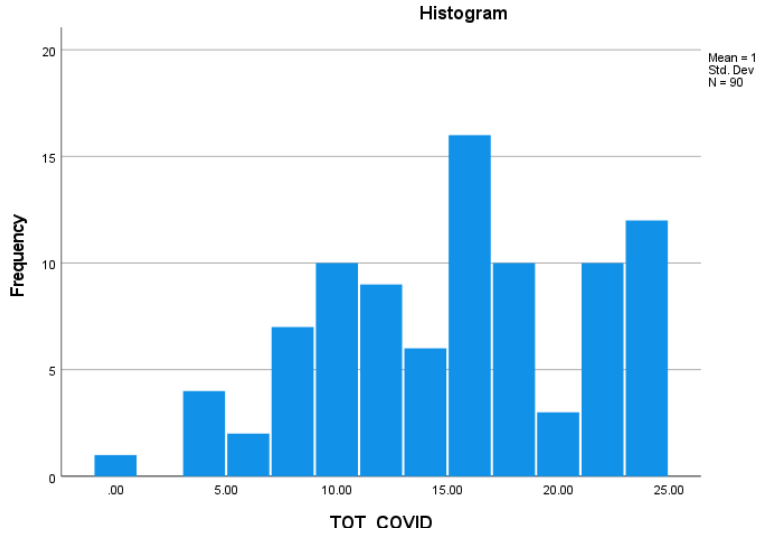
Mental Health & Wellbeing



Psychological inflexibility.



Covid-19 stress



Psychological flexibility.