Investigating The Effect of Physical Activity on Stress and Anxiety

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Abstract

The present study aimed to investigate the effect of physical activity on stress and anxiety while also exploring the three relevant research questions identified. Research has provided us with evidence that physical activity benefits our stress and anxiety levels but for some more than others. Within this study we aimed to examine gender differences in stress, anxiety, and physical activity, how age may play a role in stress levels and physical activity and finally by examining how physical activity may have benefitted participants anxiety levels during COVID-19 as well as looking at how it benefits stress. A total of 126 participants completed questionnaires regarding physical activity, stress, and anxiety. Findings from t-tests found that there was a gender differences with females reporting worse mental health and lower physical activity. A correlation revealed that as age increased, stress levels went down but with physical activity benefitting people of all ages. Finally, a regression analysis revealed that physical activity decreased stress levels more than it did for anxiety regarding COVID-19. Implications regarding the findings that have been found within this study are discussed.

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Introduction

Physical activity (PA) is a bodily movement by skeletal muscles that includes subsets such as exercise and sport (Halliday et al., 2019). The topic of PA and mental health is of huge importance because the more research that has been carried out, the more evidence is if PA is seen as a tool for people's mental health, and that it is associated with a better quality of life (McAuley & Morris, 2007). Consistent research suggests that PA does link with our mental health in a positive way, improving self-esteem, as well as reducing anxiety, and stress related issues (Callaghan, 2004). The following literature review will address gender differences in male and females regarding PA, stress, and anxiety. This will be followed by age differences in individuals and seeing if age plays a role in stress reduction and PA. Finally, the literature review will address COVID-19, and seeing if PA appeared to benefit stress and anxiety levels using both the Perceived Stress Scale and Coronavirus Anxiety Scale.

Gender differences

Examining male and females is important for this topic of discussion. Females do not associate themselves with PA as much compared to males with female's reporting higher levels of negative mental health issues as well (Halliday et al., 2019). Enjoyment plays a key role for men regarding PA, displaying a better overall quality of life for males (Markland & Hardy, 1993). Females, however, appear to partake in PA for appearance reasons and how they look, making it understandable that males would partake in more PA as it is more for social and competitive reasons (Crawford & Eklund, 1994). The differences in gender regarding PA and mental health begins during adolescence years into adulthood (Trost et al., 2002). Past studies carried out found that males and females report differing levels of PA (Bauman et al., 2009; Halliday et al.,2019). In one study using the International Physical Activity Questionnaire males reported higher levels of PA across 17 different countries (Bauman et al., 2009). In their study Bauman et al. (2009) also found that the generality of low PA was 7-41% for

males and 6-49% for females with the gender gap happening from a young age for more vigorous activities. Males also report engagement of up to 19% compared to 11% for females (Australian Bureau of Statistics, 2013). While many studies have shown similar results, one study found that females engaged in more PA than males (Craft et al., 2014). This study was however cross-sectional in nature and has yet to be replicated. Further research is therefore required to determine whether differences between male and female levels of PA are consistent, and what variables may impact the differences that emerge.

As well as differences in levels of PA, research suggests gender differences in mental health outcomes (Halliday et al., 2019; Lehtinen et al., 2005). In one study covering 11 EU countries, males reported more positive mental health compared to females (Lehtinen et al., 2005). This finding regarding gender differences in mental health has been supported by a recent systematic review (Otten et al., 2021). Knowing that males engage more in PA and report more positive mental health compared to females, Halliday et al. (2019) examined the interplay between PA and mental health to determine if PA is the answer to improving mental health, and to which gender does it appeal to most.

Using four years of cross-sectional data, with PA going between gender and mental health, data was collected (Halliday et al., 2019). Results showed that females did engage less in PA compared to males as well as reporting worse mental health related symptoms (Halliday et al., 2019). With PA being associated with all aspects of mental health, the finding from this study displays the value of PA as a great intervention for mental health and the aspects along with it such as stress and anxiety. A more recent study has also found that amongst Chinese university students, examining gender differences in PA and mental health, a significant increase in happiness was seen amongst female students as well as across the whole sample due to their involvement in physical exercises (Jiang et al., 2021). However, more re-

search is required due to the inconsistency of female's engagement in PA and how looking at the number of hours females partake in future research should be considered.

Anxiety

Specifically speaking about anxiety, research has found that the bond between frequent exercise and anxiety related issues is a sufficient one, with past literature suggesting that the slightest bit of exercise can have such a positive impact in reducing anxiety problems (Van Minnen et al., 2010). PA will reduce anxiety related symptoms as well as improving self-esteem and overall cognitive function of the individual (Sharma, 2006). Exercises that involve the individual moving about more frequently and the way they would burn more calories, causing an increase in heart rate beats per minute will help the individual experiencing anxiety related symptoms in a better way (McWilliams & Asmundson, 2001). Regarding the issue of anxiety, females report a higher prevalence (McLean et al., 2011). This was examined in a large population of both male and female participants when the prevalence ratios were examined for both genders (McLean et al., 2011). Now examining PA and anxiety together, in a sample of secondary school student's females had reported less PA than their male occupants (DeWolfe et al., 2018). In a study to compare the two, results showed that females reported less PA and higher anxiety rates (DeWolfe et al., 2018). More research should be carried out regarding the amount of physical education students do each week and seeing if this will influence these figures. Similarly, conducting more research on a sample of people who are not from a school setting should also be considered to see if there is a resemblance.

When examining types of PA, aerobic exercise which involves being associated with cues experienced during reactions individuals may be having with anxiety, has been sought out in prior research (Broman-Fulks and Storey, 2008). One study investigated how brief exercise can be used as an intervention for high anxiety issues across 24 participants (Broman- Fulks

and Storey, 2008). After 20 minutes of exercise, participants reported less anxiety sensitivity compared to individuals who did not do exercise at all (Broman-Fulks and Storey, 2008). The more PA that was performed by participants the better the outcome was in controlling their problems. Similarly in another study, the same outcome was evident in a group of schizophrenic patients carrying out a physical condition program (Fogarty et al., 2004). Programs and routine schedules seem to have a positive impact on the effectiveness PA has, therefore more research should look further into this, possibly seeing preferences people have regarding certain physical activities and seeing which is the most successful.

Using the International Physical Activity Questionnaire (IPAQ) in studies has shown strong results. For one, it was seen that the overall population of people who participated had a total of 11.4% of anxiety, with PA engagement being relatively high with 62.5% (Stubbs et al., 2017). Results found that the participants who engaged in lower PA, were more prone to depression and an increase in anxiety problems (Stubbs et al., 2017). Therefore, it is important that PA is a continuous process regarding tackling anxiety related issues as it is seen as a positive intervention for it (Stubbs et al., 2017). Using the IPAQ within another study, it too displayed the benefits of PA on anxiety in a sample of female patients suffering from breast cancer (Kang et al., 2017). Although the IPAQ was seen as a valuable measure to use, it is important to see if the same positive results gathered will be consistent in a population of non-clinical participants and seeing if there will be the same correlation.

Stress

Speaking about stress, it can have drastic effects on the body both physically and psychologically (Goodheart et al., 2011). Evidence from past studies suggests that the relationship between stress and PA causes stress reducing effects for individuals (Buckworth & Dishman, 2002; Skully et al., 1998). For mature adults, maintaining an active lifestyle is such an important contributor in their overall health at the age they may be (Pate, 1995). This

was examined through a 4-year longitudinal study where the aim was to see the interplay between PA and how it may decrease stress problems in a mature population (Rueggeberg et al., 2013). Across the sample of 157 participants, results showed that PA significantly reduced stress levels for participants involved showing that among the mature population the benefits of PA were evident (Rueggeberg et al., 2013). Another study found similar results in a group of adults where PA benefitted peoples stress levels compared to individuals who did not take part in PA (Aldana et al., 1996). More research such be carried out using a different design strategy and seeing if results will be similar with one another. Examining a population including all ages and seeing if results will be consistent with past literature is important. Looking at different variables and seeing how that may affect results will be important to look it in future research in this area.

Adolescence means transitioning from childhood into adulthood and it comes with a lot of pressure and responsibilities, which come across as being very stressful, categorising it as being an unstable psychological state (Byrne, 2000). Examining youths was carried out in a sample of 170 Korean adolescent students who responded to an established survey (Kim et al., 2019). Using a logistic regression analysis, results from this study found that almost all participants (78.9%), had difficulties with stress and students who engaged in performing PA for most of the week, were less likely to have the same stress problems as their peers who did not perform PA at all (Kim et al., 2019). Results suggested overall that PA was seen to be an efficient stress management intervention amongst this population of adolescent male and females (Kim et al., 2019). A similar study requiring 147 adolescents to perform 30 mins of aerobic exercise twice a week found that it decreased stress levels participants were experiencing prior to the study (Norris, 1992). Although PA benefitted adolescents, more research is required to see if these benefits are consistent in a sample which does not consist of just adolescents and whether past literatures results will prove to coherent in a sample open

for participants of all ages. Carrying out more tests will also be beneficial in seeing accurate results as it may it could perhaps find something that has not been found in prior literature.

COVID-19

From early 2020 to present, the world has been dealing with a global pandemic due to the coronavirus disease. As a result of this many individuals are experiencing increased mental health symptoms (Churchill et al., 2020). To combat this, PA has been seen to relieve these issues, with studies showing that people who are physically active, will experience fewer issues regarding anxiety and stress related problems (Churchill et al., 2020). PA has been linked with reducing symptoms of anxiety and providing an adequate level of wellbeing for many individuals (McMahon et al., 2017). A cross sectional study carried out in the UK investigated PA and its association with people's mental health (Jacob et al., 2020). Results showed that those who were physically active were less inclined to experiences poor mental health issues, but it is recommended that those who reported low levels of PA, go on to have a routine in exercising regularly to maintain better overall mental health status (Jacob et al., 2020). This is consistent with past literature with mental health improving immensely due to the impact PA had on the participants involved (Maugeri et al., 2020). There is a consistent flow in the way routines help people. Future research should look further into the routines people have regarding PA and seeing how this may be enhanced in any way. Since prior literature has focused on the early onset of the pandemic, future research should also examine if results will be the same two years after the pandemic began.

These studies that have been carried out over recent months sheds light on the fact that even the slightest bit of exercise during the pandemic proved to have helped people who are experiencing negative mental health symptoms (Callow et al., 2020). Although past literature provides evidence of the benefits PA has on anxiety, in some cases it does not have any effect. Mental health issues are on the rise globally particularly in Ireland with

approximately half of all adolescents reporting anxiety related issues (Murphy et al., 2020). Many people throughout the pandemic would have lost their routine of getting out and exercising due the restrictions which were put in place, particularly in Ireland where a travel distance of 5km maximum was put in place by the government (Murphy et al., 2020).

Research has pointed out changes in PA levels since the beginning of the pandemic in Ireland due to government restrictions in programs which have been set up but closed due to the pandemic (McGrath et al., 2020). These negative changes in PA levels and people losing their normal routine with certain exercises they would have caried out post COVID is phenomenal (Murphy et al., 2020). The negative changes that are occurring in PA has reportedly shown increases in anxiety related symptoms across a variety of different populations (Faulkner et al., 2021; Murphy et al., 2020). A recent study on a group of Irish adolescents was carried out to examine PA and mental health during COVID-19 (Murphy et al., 2020). Results showed that there was a reduction of 8% in individuals who took part in sports and amazingly, people who used to be more active would increase their levels of activity more but report a higher level of mental health (Murphy et al., 2020). This consistent with previous research where PA was negatively associated with mental health (Grasdalsmoen et al., 2020). This concludes that PA in these cases did not seem to influence mental health and its accompanied issues.

Rationale

The area of PA and its association with reducing stress and anxiety levels has been thoroughly analysed. Prior research has mainly focused on PA and overall mental health (Mikkelsen et al., 2017). More research is required to focus on what people may consider two of the most common mental health problems in stress and anxiety and seeing if PA influences them. Previous research has not examined gender differences as much as it should, this is important as there is a significant difference seen in previous research that females report

worse mental health and PA levels compared to males (Halliday et al., 2019). Therefore, more research is required to run more tests and receive accurate results on the gender differences in the variables associated with this study. Examining age differences among a population is also an important consideration when studying the relationship between PA and mental health. Previous research failed to consider age as a factor in their studies, therefore, further testing and analysis is required to see if age plays a role in levels of stress and PA. Despite the results of earlier research accurately showing the effect PA can have on mental health, stress, and anxiety levels (Jacob et al., 2020), there is a lack of consideration into the effect of other external factors, for example, the COVID-19 pandemic. This is understandable as this type of factor is not necessarily a typical influence on anxiety levels, however, given the unprecedented circumstances the pandemic poses upon the global population today, a gap has been provided to conduct more research using a scale particularly aimed at COVID and anxiety, will provide more concise and accurate results and will enable researchers to see the relationship between the two due to the type of questions which will be asked to participants. By doing this as well as seeing the impact PA had a stress, will provide a good understanding of the importance PA has on these two common mental health issues.

The Current Study

The aim of the current study is to examine the relationship between PA on stress and anxiety whilst also examining the three research questions accompanied. The sample selected is due to the research questions being examined where individuals of all ages are welcome to participate as well as all genders particularly since prior research suggest that male and females differ hugely regarding this topic of discussion with females reporting worse PA and mental health related symptoms (Bauman et al., 2009). This study is important as it will help identify the impact PA has on stress and anxiety in a more in-depth scenario due to the type of scales being used and the research questions that are being tested. The research questions

being examined are is there a gender difference between male and females in PA and mental health, does age influence levels of PA and stress, and finally does PA have a positive effect on improving anxiety levels during COVID-19 as well as checking if PA improved stress levels using both the CAS-21 and PSS. It is hypothesised based on past literature that there is a gender difference in PA, stress, and anxiety levels with females reporting higher scores for all three variables. Hypothesis two is that PA will have benefitted participants of all ages, reducing their stress and anxiety levels in the process. The final hypothesis is that PA will have improved stress and anxiety levels during COVID-19

Methodology

Participants

The overall sample for this study was 126 participants (Females: *n*= 81; Males: *n*= 44; non-binary: *n*=1) The age range for the participants involved in this study was 18-76 with participants being instructed to type in their exact age before participation. The average age for participants involved was 32 with a standard deviation of 12.25. For females the percent-age frequency was 64.3% and for males it was 34.9% with non-binary being 0.8% (n=1) of the study. A convenience sampling method was used for this study and participants as they were recruited online.

Design

This study used a quantitative approach as well as implementing a cross sectional research design. For the first research question a between participants design was used as gender differences was examined for both groups. The independent variable was gender, and the three dependent variables were the scores from the IPAQ, PSS and CAS. For the remaining two questions a within participants design was used so as the relationship between different outcomes for each participant could be examined. For the second research question age was the independent variable with the dependent variable being score from the IPAQ,

PSS and CAS. For the final research question the dependent variable was stress and anxiety with the two predictor variables being the scores form the IPAQ, gender and age.

Materials

The current study was hosted on Google forms where all participants were required to have some form of technological device to carry out the attached questionnaire. The questionnaire consisted of demographic questions as well as three distinct scales. For the demographics, it was to get a profile of the participants involved asking their age and gender (see Appendix D).

IPAQ (High internal consistency of .76-1.00) (Helou et al., 2017). The International Physical Activity scale was developed by the international consensus group in 1998 and was designed to measure mental health related physical activity in individuals. It has been tested numerous times across the world (Hagstromer et al., 2006). The IPAQ is a 7-item scale which provides open end responses; however, due to the survey being on Google forms amendments were made. Different options regarding the number of hours participants took part in PA in accordance with each of the questions was asked, to see more concise results (see Appendix A). Some sample items included "During the last 7 days, on how many days did you do vigorous activities such as running, walking, cycling or go to the gym?", and "How much time on those days do you usually spend on doing vigorous activities". Options varied for the different questions, due to the nature of the questions being asked. For question one and three there were four options which included 1-3, 3-5, 5-7, and none. Indicating the number of hours participants took part in the PA. (see Appendix A). For questions two and four there were five options available, and this included 1-3 hours, 3-5 hours- 5-8 hours, 8-10 hours, and N/A. For question six, with the type of question that was being asked, there was an option appropriate for each participant. This included 1-3 hours, 3-5 hours, 5-8 hours, and 8-10 hours. This scale was scored by calculating the number of hours each participants took

part in PA in accordance with the option they chose. A higher number of hours clicked indicated a higher level of PA participation. The Cronbach's alpha for this scale was (*a*= .55) showing a moderate internal consistency with the current sample.

The Perceived Stress Scale (PSS); Cronbach's alpha: .70 (see Lee, 2012 for further detail). Within the current study the Cronbach's alpha was (*a*= .82). The PSS is a well-known tool used for measuring stress and people's mental health and will require participants to speak about their thoughts and feelings over the last month (Cohen et al., 1983). The scale consists of 10 items with the consistency reliability of it showing an adequate reliability (*a*=.78) (Baik et al., 2017). Some of the sample items include "In the last month how often have you been upset because of something that happened unexpectedly", "In the last month, how often have you felt that you were unable to control the important things in your life". The way of scoring the answers received are reverse responses with the answer to the questions asked being as follows. O= Never, 1=Almost Never, 2=Sometimes, 3= Fairly Often 4= Very Often, on a 5-point Likert scale (see Appendix B). A high score of fairly often indicates a sufficient increase in stress levels and vice versa for a score of never, indicating a low degree of stress. Results were added together to get an overall score the participants perceived stress. Scores to the four positively stated items (4,5,7 & 8) are reversed.

The Coronavirus Anxiety scale: This is a screener for anxiety associated with the ongoing coronavirus pandemic and was created by Sherman (2020). This scale was formed for professionals to see cases with individuals who are experiencing anxiety relating to the coronavirus disease. Within this scale, each item associated with it captures the unique aspects of anxiety including worry, emotion, and fear. Each item on the CAS is rated on a 5-point scale which ranges from 0 (not at all), 1(rare, less than a day or two), 2(several days), 3 (more than 7 days) and 4 (nearly every day) over the prior two weeks (see Appendix C). A low score of "not at all" indicates the lowest level of anxiety that person experienced. A high

level of "nearly every day" indicates the highest level of anxiety that was experienced by that individual for this scale. The format regarding scaling is consistent with the DSM-5s cross cutting symptom measure. The Cronbach's alpha within the current study was (a= 0.83)

Procedure

All participants who took part in the study were provided with an information sheet explaining everything that needs to be known (see Appendix E). Before participants completed the questionnaire, the first thing that came up on their screens was both the information sheet and consent form where a box was provided for participants to tick so as there is proof that they have read both forms (see Appendix F). Participants were not able to proceed to the questions provided until this was completed. Most participants were recruited through social media such as Facebook and Instagram, and a link was provided which brought each participant straight to the questionnaire on Google forms once it was clicked. After doing this, participants were greeted with a list of 23 questions regarding the research questions that are being explored in this study, evolving around PA and the affect it has on stress and anxiety.

Participants first came across a demographics section asking about their age and gender. Regarding the participants gender this consisted of three boxes for the three options available which were male, females, and non- binary. For age there was a question which instructed participants to write down their name by giving a number (see Appendix D). They were instructed to tick the box that applies to them regarding the question that is being asked. After this was complete, participants were asked to answer questions using the three measures which will be used to assess stress anxiety and PA. Regarding the IPAQ questionnaire assessing levels of PA, it required participants to answer a total of six questions surrounding the individual's involvement in PA in the last seven days (see Appendix A). A variety of options were available for participants to choose from which included the number of hours of PA that was carried out, regarding each of the six questions asked. After this was

complete, the participants moved on to the next questionnaire which was the perceived stress scale (PSS).

For the PSS, which assessed participants stress levels, participants had five options to choose from and this asked general questions about participants stress levels and more during the last month. For the final questionnaire, anxiety levels during COVID-19 were assessed through the Coronavirus Anxiety Scale (CAS). Participants were instructed to answer a total of five questions related to the scale which asked how often people experiences certain activities over the last two weeks during as the pandemic was still happening. There was a total of five different options available to participants when filling in their answers. The duration of the questionnaire should not have lasted any longer than 10 mins and this was stated on the information sheet so as participants had an idea of how long participation was likely to take. Once the sections related to the questionnaire were complete, a debrief form was provided to all participants where contact details of both my supervisor and I were available along with helplines (see Appendix G).

Ethical considerations

Data for this study was collected by obeying the rules obtained from the NCI ethical guidelines. All participants provided informed consent as well as seeing the advantages and disadvantages of the study. Helplines were also provided within the debriefing sheet if any participant felt distressed after there involvement (see Appendix G).

Results:

Descriptive Statistics

The current data is taken from a sample of 126 participants (*n*=126). This consisted of 64.3% females (*n*=81) and 34.9 % males (*n*=44) and .08% non-binary. There are three continuous variables which include Perceived Stress Scale (PSS) (M=19.20), Coronavirus Anxiety Scale (CAS) (M=1.85), and International Physical Activity Questionnaire (IPAQ) (M= 16.4). Mean, standard deviation, maximum and minimum scores are displayed in Table 1 below.

Table 1

Descriptive statistics of all continuous variables

	Mean	SD	Skewness	Kurtosis	Maximum	Minimum
PSS	19.20	6.29	.237	.521	40	6
CAS	1.85	3.05	2.32	6.168	16	.00
IPAQ	16.42	3.06	.091	.359	27	9
Age	31.68	12.25	.933	.209	76	18

Inferential statistics

Preliminary analyses were conducted to determine the distribution of the continuous variables. Due to the lack of equality of variances, the one induvial who was non-binary was excluded from the analysis. Due to this a non-parametric Mann- Whitney U test was carried out to compare anxiety levels amongst male and females. The results gathered from this test indicated that anxiety level scores were significantly higher for females (M= 66.77) compared to males (M= 56.07), U= 147.7, *p*=.085. The result was not significant.

Preliminary analyses were conducted to determine the distribution of the continuous variables. For perceived stress, Levene's test for equality of variances was significant (p= .001)

and for the other variable which was PA was also significant (p= .026). Therefore, the data does not violate the assumption of homogeneity of variance. The two variables IPAQ and PSS were normally distributed with the other variable CAS being non normally distributed. To assess gender differences in relation to PA and stress, an independent samples t-test was conducted. Firstly, looking at scores from the IPAQ, there was a significant difference in scores for males (*M*= 17.29, *SD*= 3.42) and females (*M*= 15.92, *SD*= 2.76; *t* (123) = -2.42, *p*= .017, two tailed). The magnitude of differences in means (mean difference = -.136, 95% *CI*: -2.48 to -.25) a small effect size (0.02).

An additional independent samples t-test was conducted where PSS scores were compared for both male and females. There was a significant difference in scores for males (*M*= 16.75, *SD*= 5.73) and females (*M*= 20.61, *SD*= 6.19; *t* (123) = 3.41, *p* = .01, two tailed). The magnitude of differences in means (mean difference = 3.8, 95% *CI*: 1.62 to 6.10) a moderate effect (eta squared = 0.08).

A Spearman's correlation was performed to investigate the relationship between age, PA levels (IPAQ), coronavirus anxiety (CAS) and stress levels (PSS). Preliminary analyses were used to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. There was a strong, negative correlation between age and stress, *r* = -.345, *n*= 125, p< .001, a negative correlation between PA and stress, *r* = -.188, *n*=125, *p*=0.035, and a significant positive correlation between coronavirus anxiety and stress, *r* =.219, *n* =125, *p* =.014. Overall, the analysis shows that greater age and higher levels of PA is associated with lower levels of stress and higher levels of coronavirus anxiety are associated with higher levels of stress with higher levels of PA associated with lower levels of perceived stress.

To understand the relationship between PA and its impact on stress, a hierarchical linear regression was conducted to evaluate the prediction of stress from PA, gender, and age. Within the first block analysis using the predictor variable gender, it was statistically

significant ($p<.01$). The R2 value of .087 suggest that gender accounts for approximately 8.7% of variation in stress, leaving 92.3 % of variation unexplained by gender (see Appendix H).

Within the second block analysis, the predictor variable age was added to the analysis. This model was statistically significant ($p<.001$). The R2 change value of .116 within this model suggests that with the addition of age to the first block model, 20.3% of the variation in stress is accounted for, also showing that 79.7% of the variation is stress cannot be explained by gender and age alone. The regression coefficient B= -0.176, t=-4.214, $p<.001$ associated with age shows that with each additional unit change in gender, that stress decreases by approximately -0.176 units when controlling for gender. Controlling for age, the regression coefficient B = -4.399, t = -4.116, $p < .001$ associated with age, suggests that with each additional unit change in gender, that stress decreases by approximately -4.399 units. A similar outcome was found from the third block analysis (see Appendix H)

For the third block analysis, the predictor variable PA was added to the analysis. The results of the second block hierarchical linear regression analysis revealed a model to be statistically significant ($p < .001$). Additionally, the R2 change value of .031 associated with this regression model suggests that the addition of physical activity to the second block model accounts for 23.4% of the variation in stress, which means that 76.6% of the variation in stress cannot be explained by gender, age, and physical activity alone (see Appendix H). Controlling for gender and age, the regression coefficient B = -0.370, t = -2.215, $p < .05$ associated with PA suggests that with each additional unit change in PA, that stress decreases by approximately -0.370 units (see Appendix H). Controlling for gender and PA, the regression coefficient B = -0.178, t = -4.329, $p < .001$ associated with age, suggests that with each additional unit change in age, that stress decreases by approximately -0.178 units. Finally, controlling for age and physical activity, the regression coefficient B = -3.899, t = -

3.623, p < .001, associated with gender suggests that with each additional unit change in gender, that stress decreases by approximately -3.623 units. See table 1 for the appropriate figures from the regression conducted

Table 2

Hierarchical multiple regression table for stress

Variable	R^2	R^2 *Change*	*B*	*SE*	*β*	*t*	*p*
Gender (Model 1)	.087	.087	-3.867	6.04	-.295	-3.419	.001
Age (Model 2)	.203	.116	.042	5.66	-.343	-4.214	.000
IPAQ (Model 3)	.234	.031	.167	5.57	-.180	-2.215	.029

In addition, to see the impact physical activity has on anxiety another hierarchical linear regression was conducted. From the first block analysis revealed model to be not statistically significant (p>.073). Additionally, the R2 value of .026 within this model suggests that gender accounts for approximately 2.6% of variation in anxiety with 97.4% unexplained by gender alone.

For the second block analysis the predictor variable age was added to the analysis. The result from the second model revealed a non-significant result (p>.230). The R2 change value of .011 within this model suggest that with the addition of age, it only accounts for 13.6% of the variation in anxiety, showing that 86.4% cannot be explained by gender and age. Controlling for gender the regression coefficient B= -0.27, t=-1.207, p>.05 associated with age shows that with the additional change in gender, anxiety will decrease by approximately -0.27 units. Controlling for age, the regression coefficient B =-1.112, t= -1.943, p>.054 associated with age, suggests that with an additional change in gender, that anxiety decreases by approximately -1.112 units.

A similar outcome was found from the third block analysis. For this one, the predictor variable physical activity was added to the analysis. The results from the second block hierarchical linear regression analysis revealed a model to not be statistically significant (p>.517). Additionally, the R2 change value of .003 associated with this regression model suggest that the addition of physical activity to the second block model accounts for 14% of the variation in anxiety, which means that 86% of the variation in anxiety cannot be explained by gender, age, and physical activity alone. Controlling for gender and age, the regression coefficient B= -0.59 units, t= -6.49, p>.05 associated with physical activity suggest that with an additional unit change in physical activity, that anxiety decreases by approximately -0.59 units (see Appendix) Controlling for gender and physical activity, the regression coefficient B= -0.27, t=-1.218, p>.226 associated with age suggest that with each additional unit in age, that anxiety decreases by approximately -0.27 units. Finally, controlling for age and physical activity, the regression coefficient B = -1.032, t=-1.759, p>.081, associated with gender suggests that with each additional unit in gender, that anxiety decreases by approximately -1.759 units. See table 2 for the appropriate figure from the regression conducted

Table 3

Hierarchical multiple regression table for anxiety

Variable	R^2	R^2 *Change*	*B*	*SE*	*β*	*t*	*p*
Gender (Model 1)	.026	.026	-1.030	3.03	-.161	-1.810	.073
Age (Model 2)	.037	.011	-.027	3.03	-1.08	-1.207	.230
IPAQ (Model 3)	.041	.003	-.059	3.04	-0.59	-.649	.517

Note:

Discussion

The current study aimed to the investigate the effect of PA on stress and anxiety levels. Prior findings suggest that PA influences people's stress and anxiety in a way that it will reduce these mental health symptoms individuals are experiencing (Mikkelsen et al., 2017). Previous research has found that the more PA people take part in, the less stress and anxiety problems these people will have in the future (Hegberg & Tone, 2015). With prior literature showing the importance of PA for stress and anxiety, it can be classified as a positive intervention for treating mental health related issues (Andermo et al., 2020). Within this research three hypotheses were formed alongside the three research questions that were set out to address the aims in this study; H1 stated that there would be a gender difference amongst male and female participants on levels of stress, anxiety scores and PA; H2 states that there will be an age difference amongst participants stress levels and its association with PA and H3 states that PA will have improved both anxiety during COVID-19 and stress. Overall, H1 and H2 can be accepted with H3 being partially accepted as PA did not have much of an overall effect on anxiety levels which is not what was anticipated. However, PA did have a significant effect on perceived stress.

It was hypothesised from prior research that (H1) there would be a gender difference amongst male and female participants with females scoring higher on levels of stress, and anxiety scores and females scoring less on PA. This was explored using a Mann Whitney-U test and an independent samples t-test. From carrying out these tests, it was found that there was a non-significant relationship in examining anxiety levels. However, there is a gender difference in anxiety scores, with females scoring higher than males. This indicates that females appear to have more anxiety than males. For the t-test there was a significant difference in scores on stress and PA levels, with females scoring higher on levels of stress

and lower on levels of PA. This suggests that females appear to have more stress related problems and do not participate in as much PA compared to males. This is consistent with previous research which shows female participants reporting higher levels of stress and anxiety as well as lower levels of PA (Halliday et al., 2019; Hou et al., 2020; Kubaisy et al., 2015).

For H2, a correlation analysis was conducted to examine age differences and whether age influenced stress, and PA levels. This model shows a negative correlation between PA and stress and a significant positive correlation between coronavirus anxiety and stress. This model suggests that the greater the age of participants and the more PA they did, the less stressed they are. The correlation also shows that younger participants are more stressed. Older adults being less stressed is consistent with previous research (Stawski et al., 2008). Higher levels of coronavirus anxiety are associated with higher levels of stress concluding that the more active people are, the less stressed they feel.

Moving on to the final hypothesis, H3 stated that for the overall sample, PA did influence on reducing stress and anxiety levels during COVID-19. A hierarchical linear regression analysis was performed. Firstly, looking at stress with physical activity being the predictor variable, it revealed a model to be statistically significant, with PA accounting for 23.4% of the variance in stress when adding to the already existing variables gender and age. This is consistent with previous literature (Kim et al., 2019; Rueggberg et al., 2013). Secondly, looking at coronavirus anxiety using PA as the predictor variable, the model revealed a non-significant result with PA accounting for 14% of the variance in anxiety also including gender and age. Anxiety decreases by approximately -0.59 units with the addition of PA, showing that it did not have much of an effect on anxiety levels compared to perceived stress. This is consistent with previous research as PA does not always improve anxiety levels particularly during the ongoing pandemic (Murphy et al., 2020; Grasdalsmoen et al., 2020).

Based on our finding's females reporting worse stress and anxiety compared to males as well as reporting lower levels of PA is concerning. This is consistent with previous research (Halliday et al., 2019). Particularly since more females participated in the study shows that more research may need to be done to see in detail, the factors that may be causing this decline for woman. Poor social support may be a possible reason for this mental health deficit for females. Droogenbroeck et al. (2018), reported this in a study among young adults where poor social support was seen as a probable cause for this decline in mental health as results found that males reported lower scores in mental health. Life at home could be another cause for this decline. Females who do not work, tend to have more physical and mental health problems as they may provide full time care to family members which may take its toll on the person and take up enough of their time and cause more strain on their mental health (Mayor, 2015). Due to this, further research should look further into employment status for females as well as whether they are a parent or not as this could be a factor for the decline in both stress and anxiety as seen in this study.

Regarding PA, it is important for future research to address factors that may influence participation in PA for females. Seeing whether females enjoy doing PA could be examined in more detail as past studies have found that enjoyment plays a big factor in PA for everybody (Mao et al., 2020). Future research should investigate reasons why people exercise and the gender gap behind this as this could have a drastic effect on the benefits of exercise for individuals. This study has contributed to this topic as it shows that there is still an issue with females regarding mental health and PA and it is important for people to act now rather than later as PA is such a positive intervention. Due to this study being carried out during a global pandemic, future research should address how PA can be carried out if another health crisis was to occur. Seeing what physical activities may be more popular for woman or

anybody for that matter, may be a possible route to look at in further detail and seeing which activities may be more beneficent for mental health across all genders (Ai et al., 2021).

Within this study, after seeing that older participants experience lower levels of stress was interesting in ways as some may consider them to be more stressed compared to younger adults. Stawski et al. (2008) shows consistent results regarding this. It is important to take younger people's lives into consideration and how for some, life may be coming at them at a fast pace. Differing developments play a role in why younger people are more stressed than older adults with work-related stress seen as being a common factor affecting younger adults in a recent study (Wang et al., 2018). Prior research also finds that young workers view work as a disruption to do things such as exercise and social interaction (Sawang & Newton, 2018). Restrictions that were put in place could have affected younger adults particularly around remote learning in colleges the past two years. Research suggests that remote learning during the pandemic and the amount of screentime students encounter will increase stress levels (Mheidly et al., 2020). Providing coping strategies regarding this may be beneficial for this and since we are coming out of the pandemic, encouraging classes to be in person many be a better solution for students. Future research should look at screentime usage amongst a sample and seeing if results from that could explain the reason why younger adults tend to be more stressed. This can be carried out using a screentime questionnaire with prior research showing adequate results (Vizcaino et al., 2019).

Another possible cause for younger adults being more stressed is sleep deprivation. Prior research has found that younger adults and more vulnerable to sleep deprivation (Zitting et al., 2018). Research also suggests that sleep deprivation is linked with increased stress levels (Schwarz et al., 2018). To tackle this issue, future research should examine sleep levels through the Pittsburgh Sleep Quality Index which is a valid measure that has been used to assess sleep quality and disturbances (Buysse et al., 1989). Within the current study however,

PA did prove to be beneficent across the entire population with higher levels of PA being associated with lower levels of perceived stress. This was consistent with previous research as PA was seen to improve stress levels in both a young and older population (Kim et al., 2019; Rueggberg et al., 2013). Results from the current study may be consistent with prior literature, due to the same kind of measures used. Cao et al. (2021) uses the 14-item PSS, where PA is seen to improve levels of perceived stress. The current study highlights the benefits of PA on the overall sample, adding to the importance of PA as an intervention for relieving stress. By employing suggestions for future research as outlined above, may give more insight into why this age difference is occurring and will give people a better understanding.

Regarding the last test run for the current study, the two regressions display different results to what was anticipated prior to collecting data. The first regression indicates that with the inclusion of PA it accounts for 23.4% of the variance in stress levels showing the benefits performing PA has on the sample which is consistent with previous research (Kim et al., 2019; Rueggberg et al., 2013). The second however, displays a much lower result as with the addition of PA to gender and age, it only accounts for 14% of the variance in anxiety levels which is quite concerning since prior research shows PA as being a huge contributor to decreasing anxiety levels (Van Minnen et al., 2010). PA not improving anxiety levels is consistent with previous literature (McMahon et al., 2020). This opens a gap as to why the other 76% for stress and 86% for anxiety is unaccounted for. A possible cause of this could be the role COVID-19 had on people's daily routines. The impact of the early stages of the pandemic had such a drastic effect on everybody. Due to many facilities shutting down because of restrictions put in place, social lives would have been affected. Low levels of social support having a negative effect on stress and anxiety is consistent in a recent study carried out during COVID-19 (Guo et al., 2021). The impact social support has on stress is

evident as positive social support is seen to enhance resilience to overall mental health (Ozbay et al., 2007). Future research should examine social interaction during COVID-19 and after since restrictions are lifted. Using the same measures within the current study as well as examining social support would provide key insight in this area and may close a gap in this literature. COVID-19 would have disrupted routines for people which may have stopped them from seeing their friends and family which should be taken into consideration as to what may be causing the unaccounted variances within this study. The impact COVID-19 had on many people's leisure routines and work schedules where people may have got used to not being able to go to the gym or play sports anymore due to restrictions could all have played a role within the current study as to why PA only accounted for some of the variance in stress and anxiety. This study has contributed to this topic as most data collected was when some restrictions were still in place, therefore the study could be compared to future research carried out since all restrictions are now lifted.

This study identifies several limitations. Regarding the scales used, perhaps they did not accurately measure the variables in a way which was initially anticipated. The IPAQ was utilized for this study, and it only consisted of six items, and it had to be tweaked in some ways as the original IPAQ asked participants to provide open ended answers. By making these changes regarding how participants will respond to the questions asked could have been sought out more concisely and sticking to the same amount of response suggestions for each question asked. For this scale the response suggestions which consisted of the number of hours each person participated in PA was different for a variety of questions and could have influenced peoples scores. Despite these critiques future studies should stick to this scale as it provides good reliability (Helou et al., 2017). This scale has been well sought out in recent years, however a better solution regarding how participants will respond to each questions asked should possibly be considered. Despite the possible faults, this scale as it is appeared to

be a success as valid results were identified as a decrease in stress and anxiety levels in some degree is visible.

The CAS was also employed which measures anxiety levels throughout COVID-19. Many limitations can be gathered from this scale particularly due to the type of questions being asked. This 5-item scale consisted of questions related solely to COVID-19 that some may say were not of a realistic nature and therefore this could have had a huge effect on the results. A better scale to get a thorough understanding of the impact of PA on anxiety may be a better solution. The DASS-21 scale has proven to be a reliable measure used to examine the impact PA has on anxiety levels (Rajoo et al., 2019). Therefore, future research should consider this. A strength within this study however regarding this scale is that it was used. The CAS-21 may not have provided the anticipated results, however, it gave a good insight into how participants would respond to the given questions. Future research should also consider employing a pilot study if this scale was to be used to see if the CAS-21 along with the other scales which may be used, will make sense to people. The scales used within the study were self-reported and this may have been a flaw as although anonymous, participants may have been hesitant to answer some of the questions asked. Employing a different design strategy may be beneficial for future research as longitudinal studies have proven to show sufficient results (McDowell et al., 2018).

Overall, the results are consistent with previous literature in most aspects and show that physical activity does influence stress and anxiety. However, these findings do have implications particularly with research question one where females reported worse stress and anxiety scores as well as lower levels of PA. This finding has an implication for further development of physical activities aimed specifically at woman. From a societal perspective, females tend to be more full-time caregivers compared to males and may experience poor social support (Mayor, 2015). Greater community support schemes should be more available

or daily exercise routines such as walking clubs. It is also important for communities to communicate with one another about how important this is. This will have a positive effect on the female population enhancing both their mental health and physical wellbeing. Knowing that people of a lower age experienced higher levels of stress within this study, this kind of information may influence policy decisions in leaving college and universities open with certain restrictions in place such as mask wearing if another health crisis was to occur. Social interaction is vital for both education and mental health as remote learning does not have the same positive effect, in person learning would have. Similarly for sporting facilities and gyms, the kind of information received about the importance of PA may also influence policy decisions due to the importance of PA for the psychological wellbeing of people because they know the outcry for these facilities and the positive extracts from them.

Conclusion

Overall, there is consistent evidence to suggest that PA is associated with positive stress and anxiety levels with our study adding to the already existing literature available proving that. There is room for future research to implement different strategies such as utilising different measures which may give a better understanding of what is affecting stress and anxiety as well as the measures within the current study. Studies should also consider different design approaches such as longitudinal as this may give a better understanding of PA and its association with the two mental health variables. Mental health is one that is of a delicate nature, and it is something that changes for everybody so it is important to look at other factors that may be causing downfalls in stress and anxiety and implementing it in future research carried out. Keeping up to date on the knowledge of this area is crucial for the wellbeing of individuals. The implications of this study mainly consisted of the government implying new policies regarding sporting facilities and gyms in the way that they should be remained open for a duration of time if another health crisis was to occur. The benefits of

employing a new policy will be important for the wellbeing of the entire population. As for college students and younger adults, measures should be put in place to leave colleges and universities open due to the negative effects coming from remote learning.

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Appendices
Appendix A
(IPAQ Questionnaire)

1. During the last 7 days, on how many days did you do vigorous activities such as running, walking, cycling or go to the gym?

   1-3

   3-5

   5-7

   None

2. how much time on those days do you usually spend on doing vigorous physical activities?

   1-3 Hours

   3-5 Hours

   5-8 Hours

   8-10 Hours

   N/A

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, cycling at a regular pace?

   1-3

   3-5

   5-8

   None

4. How much time did you usually spend doing moderate physical activities on one of those days? Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

   1-3 Hours

   3-5 Hours

   5-8 Hours

   8-10 Hours

   N/A

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

   1-3

   3-5

   5-7

   None

6. The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television. During the last 7 days, how much time did you spend sitting on a weekday?

   1-3 Hours

   3-5 Hours

   5-8 Hours

   8-10 Hours

Appendix B

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by ticking the box, how often you felt or thought a certain way.
0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1.In the last month, how often have you been upset because of something that happened unexpectedly?..... 0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4

3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4

4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4

5. In the last month, how often have you felt that things were going your way?..... 0 1 2 3 4

6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4

7. In the last month, how often have you been able to control irritations in your life?..... 0 1 2 3 4

8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control?..... 0 1 2 3 4

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Appendix C

Coronavirus Anxiety Scale (CAS) Questionnaire

How often have you experienced the following activities over the last 2 weeks?

0= Not at all, **1**= Rare, less than a day or two, **2**= several days, **3**= more than 7 days, **4**= nearly every day over the last 2 weeks.

1. I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus. 0 1 2 3 4

2. I had trouble falling or staying asleep because I was thinking about the coronavirus. 0 1 2 3 4

3. I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus. 0 1 2 3 4

4. I lost interest in eating when I thought about or was exposed to information about the coronavirus. 0 1 2 3 4

5. I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus. 0 1 2 3 4

Appendix D
Demographics

1. What is your gender?

   Male □

   Female □

   Nonbinary □

2. What age are you (please write a number) _____?

Appendix E
Participant information sheet

You have been provided with an invitation to participate in a research study. Before making your decision about whether to take part, please take the time to read the provided document before participation. The document provides the answers to important information you should know and answers many of the questions you may have. Any queries you may have, do not hesitate to contact my details are provided at the end of this document.

What is the purpose of the study?

I am a final year student at National College of Ireland who is completing a BA in psychology programme. As part of my final year, we must carry out a research project. The main purpose of this study is looking at the affect physical activity has on an individual's stress and anxiety levels. There will be three research questions which will be investigated. The first is gender, and how physical activity may be different for both male and females and seeing which gender participates more as well as examining differences in stress and anxiety levels. Examining how age may play a role in physical activity, stress and anxiety will also be looked at comparing how older people may be more stressed and vice versa, as well as seeing how physical activity contributes to that. The impact of COVID-19 on our nation has taken its toll on many people, which will bring us to our third question of examining how physical activity has helped peoples stress and anxiety using both the Perceived stress scale and Coronavirus anxiety scale.

Can you take part in this study?

This study is applicable to anyone over the age of 18 years, who wishes to take part in it, and this study is applicable to both male and female participants also. If you are associated with any form of clinical group, then you are not obliged to take part in this study due to the nature of some questions asking about your mental health.

Do you have to take part?

This study is completely voluntary, and you do not have to take part in it if you do not want to. If you decide not to participate, there will be no consequences or sanctions. Your data unfortunately will be submitted straight away for the questionnaire, but since the questionnaire is anonymous your data will not be identifiable to anyone including myself. If you have a problem after submitting your answers, you can contact me directly through email which is attached at the end of this form.

What is involved in taking part in this study?

If you decide to participate in this study, you will be asked to complete an online questionnaire which will be on Google forms. All participants will be greeted with a list of 23 questions relating to the research questions outlined above. The duration of this questionnaire would take no longer than 10 mins to complete as we know how scarce time can be for some individuals.

What are the disadvantages associated with this study?

Mental health is always a sensitive subject, and it is something that is taken very seriously in our community. For this study, there are going to be some questions that participants may find distressing to answer as it will ask about their own mental health. If this was the case, you can withdraw at any stage during the study and there will be no problem. Helplines will also be provided on the debriefing sheet regarding mental health and my email address will be available if you have any problems after your participation in the study and we can approach what the problem is in the most respectful manner

What are the advantages of this study?

With your participation in this research study, key insights into the background behind the topic of physical activity and mental health will be answered. There may not be any direct benefits to you for taking part in the study but, with the answers you submit we will be able to find the answers to the research questions asked which is so important to see accurate results. The possible findings from gathering results at the end of this, may give people a clearer picture of the importance of this topic.

Will my information be kept confidential?

The questionnaire if you wish to participate, is completely anonymous and it will be impossible for anybody to know who the participants are and what answers they have submitted. The only people who will have access to the data gathers will be the researcher and the supervisor overseeing the study. All the data that will be gathered will be transferred to SPSS which will then be kept secure in a document file which will require a password to get into. In National College of Ireland, it is their policy to keep data gathered for a duration of 5 years.

Contact information:

Researcher: Ben Devereux/ x19470806@student.ncirl.ie

Supervisor: Dr Michelle Kelly

Appendix F

Consent form

The Effect of Physical activity on Stress and Anxiety

- I am over 18 years old.
- I understand what is involved in my participation regarding this study.
- I have read the information sheet attached and by signing and (or) ticking the box below, I consent to participate in the study.
- I understand that all information regarding this study will be kept confidentially and that my identity will not be known to others (apart from the researcher).
- I understand that I do not have to take part in this study and that is completely voluntary, and I can withdraw at any point.
- I understand that once my answers are submitted for the online questionnaire, that the data will not be able to be withdrawn.
- I understand that I can contact whoever oversees the study, if I have any queries about information or clarification etc.
- I understand what my data is being used for and the importance of my participation in this study.
- I understand that I will not be compensated for my involvement in this study.

Appendix G

Debriefing sheet

This study has examined physical activity and the association with stress and anxiety. This study examined three research questions which looked at gender difference for male and females regarding physical activity and mental health. Examining how age may play a factor in levels of stress, will be looked at and finally how COVID-19 and physical activity may have benefited people during the pandemic.

How was it tested?

Participants were asked to complete an online questionnaire which consisted of three parts. The first was a demographics, asking participants for their age range and gender, the second was the IPAQ which examined participants physical activity levels. The second part was the PPS, which examined the participants stress levels before concluding with the CAS which looked at participants anxiety during the pandemic.

What does this research expect to find?

What this study expects to find, is that there is a gender difference in physical activity and its association with stress and anxiety. This study also expects to find that age does play a part in how stress levels may be altered regarding levels of physical activity and that during COVID-19 physical activity proved to be beneficial for individuals.

Why is this study important to carry out?

Mental health and its aspects such as stress and anxiety are such a huge topic and affects everybody in some way and physical activity is a way of improving this for people. By carrying

out more research on the certain gaps that have been opened, we can get more insight into the improvement physical activity has for our overall mental health.

Confidentiality

All information gathered from this study is anonymous and your information will not be identifiable. All data that is generated is kept in a safe and secure document which requires a password to get access to. All results gathered will be submitted to National College of Ireland and it will be my responsibility to keep this data safe for a duration of 5 years, per NCI policy.

The following are a list of services available if you are feeling distressed after participation and these services are hugely beneficial for people.

24/7 Anxiety Support - For People in Crisis. Provides great assistance for people who are suffering from anxiety related issues

https://www.text50808.ie/

Support - Mental Health Ireland

https://www.mentalhealthireland.ie

Anxiety - Depression Support - Aware

https://www.aware.ie

Struggling With Stress? - Find A Helpline - findahelpline.com

https://www.findahelpline.com/

Any concerns you may have regarding participation in this study, please feel free to contact me (Ben Devereux) x19470806@student.ncirl.ie. or my supervisor (Dr Michelle Kelly)

Michelle.Kelly@ncirl.ie. Please also be aware that any questions or concerns you may have, will be kept confidential and as your privacy is our main priority.

Appendix H

Evidence of data and SPSS output

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	Gender	Numeric	6	0	Please tick the ...	None	None	6	Right	Nominal	Input
2	Age	Numeric	3	0	What age are y...	None	None	12	Right	Scale	Input
3	ipaq1	Numeric	4	0	During the last ...	{1, None}...	None	8	Right	Ordinal	Input
4	ipaq2	Numeric	10	0	How much time...	{1, N/A}...	None	10	Right	Ordinal	Input
5	ipaq3	Numeric	4	0	During the last ...	{1, None}...	None	4	Right	Ordinal	Input
6	ipaq4	Numeric	10	0	How much time...	{1, N/A}...	None	10	Right	Ordinal	Input
7	ipaq5	Numeric	4	0	During the last ...	{1, None}...	None	7	Right	Ordinal	Input
8	ipaq6	Numeric	10	0	This question is...	{1, N/A}...	None	10	Right	Ordinal	Input
9	pss1	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
10	pss2	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
11	pss3	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
12	pss4	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
13	pss5	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
14	pss6	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
15	pss7	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
16	pss8	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
17	pss9	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
18	pss10	Numeric	2	0	In the last mont...	{0, Never}...	None	12	Right	Ordinal	Input
19	cas1	Numeric	2	0	I felt dizzy, light...	{0, Not at all...	None	12	Right	Ordinal	Input
20	cas2	Numeric	2	0	I had trouble fall...	{0, Not at all...	None	12	Right	Ordinal	Input
21	cas3	Numeric	2	0	I felt paralyzed ...	{0, Not at all...	None	12	Right	Ordinal	Input
22	cas4	Numeric	2	0	I lost interest in...	{0, Not at all...	None	12	Right	Ordinal	Input
23	cas5	Numeric	2	0	I felt nauseous ...	{0, Not at all...	None	12	Right	Ordinal	Input
24	Total_cas	Numeric	8	2		None	None	11	Right	Scale	Input

Data View Variable View

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.161[a]	.026	.018	3.03864	.026	3.276	1	123	.073
2	.193[b]	.037	.022	3.03302	.011	1.457	1	122	.230
3	.202[c]	.041	.017	3.04023	.003	.422	1	121	.517

a. Predictors: (Constant), Please tick the appropriate box related to you

b. Predictors: (Constant), Please tick the appropriate box related to you , What age are you? (Please type a number)

c. Predictors: (Constant), Please tick the appropriate box related to you , What age are you? (Please type a number), ipaq_Total

ANOVA[a]

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	24.485	1.622		15.096	.000
	Please tick the appropriate box related to you	-3.867	1.131	-.295	-3.419	.001
2	(Constant)	30.769	2.131		14.442	.000
	Please tick the appropriate box related to you	-4.399	1.069	-.335	-4.116	.000
	What age are you? (Please type a number)	-.176	.042	-.343	-4.214	.000
3	(Constant)	36.224	3.235		11.198	.000
	Please tick the appropriate box related to you	-3.899	1.076	-.297	-3.623	.000
	What age are you? (Please type a number)	-.178	.041	-.347	-4.329	.000
	ipaq_Total	-.370	.167	-.180	-2.215	.029

a. Dependent Variable: pss_Total