Exercise and gender predict levels of academic and perceived stress

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Abstract

Aim: The aim of the current study is to determine if exercise and gender predict levels of perceived stress, including to determine if exercise and gender predict levels of academic stress amongst a population of college students. The examination of previous literature has demonstrated the effect of exercise on stress. In contrast the current study was conducted to analyse if a relationship exists between the variables. The target population consisted of college students to account and measure academic stress. **Method:** Participant (*n* =78) were recruited via online social media platforms such as Instagram and Facebook. All participants were required to fill out an online questionnaire, which consisted of three separate questionnaires. Which measured levels of academic and perceived stress including an average account of exercise completed per week. The scales included Perception of academic stress, the Perceived stress scale and the Godin leisure-time questionnaire. **Results:** Results found to support the second hypothesis exercise and gender predict levels of academic stress, controlling for age and years of education. Exercise and academic stress demonstrated a positive correlation with a ($p < .011$). **Conclusion:** The current findings display a greater understanding of the factor that exercise, and gender predict academic stress further examination is required into determine what factors of exercise cause a positive or negative relationship between these two variables.

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Introduction

The current study will examine stress which is found to be a prominent factor within society, due to the demand and increasing pressure experienced daily which in return is caused primarily by environmental factors (McEwen, 2012). The literature review will examine all areas within this topic and will begin by providing a general overview of the current research on this particular topic, such as the relationship between exercise and stress. It is found that 62% of adults report exercise as a mechanism in reducing stress ("Exercise: A healthy stress reliever", 2020). Findings have demonstrated to support this statement, among a sample of adults exercise is beneficial due to the production and secretion of chemicals to produce an adverse effect meaning prevent stress from occurring (TSATSOULIS & FOUNTOULAKIS, 2006).Additionally, it was found that Stress may be determined as a threatened homeostasis due to internal or external factors which cause a physical or psychological response (Kyrou et al., 2006). To counteract and control this response many forms of treatment have become prevalent such as yoga, which has demonstrated to improve stress levels and overall mental wellbeing by a form of meditation in return this decreases hypertension (Smith et al., 2007). However, mindfulness has found substantially to have a greater impact in the reduction of environmental stress than yoga (Hunt et al., 2017). Significant findings in relation to mindfulness therapy found that the reduction of perceived stress reduced among a category of adults diagnosed with mental health conditions and is a beneficial treatment (Díaz-González et al., 2018). Additionally, exercise may be found to decrease stress. According to Jackson (2013), exercise is a common form of treatment in the reduction and control of psychological stress. A vast amount of research has been constructed to determine the relationship of exercise in decreasing stress (Stults-Kolehmainen & Sinha, 2014).

Neuroscientific findings

Due to existing research within this field, previous literature has provided a greater understanding of the beneficial contribution of physical activity on psychological well-being and regulation of physiological stress (salmon, 2001). Such research which has established a series of key findings demonstrated that physical activity has a contribution to the regulation of neuroendocrine which produces hormones of the adrenal gland, the amount of physical activity provides stability of psychological functioning and contributes to the response of behavior to stress and regulating stress levels (Rimmele et al., 2009). In relation to the adrenal gland and the pituitary gland including the hypothalamus of a child is found to produce greater levels of hormones, in this case which is due to substantially less exercise (Martikainen et al., 2013). The hypothalamus is positioned under the thalamus, the function is to control the release of hormones throughout the body which produces positive reaction thought-out the body (Kami et al., 2018). Additional establishments within this research have found to support the findings, that exercise has a positive correlation in the secretion of neuroendocrine to stress and in return is beneficial in the function of psychological health (Nabkasorn et al., 2005). It is found that high levels of daily activity are substantial in promoting psychological wellbeing (Garcia, et al., 2012). Specifically, the effects of stress on the hippocampus are found to promote a reduction in memory retention within the older population and this is found to population and this has demonstrated in the completion of regular exercise can counteract this reduction by reducing stress (Head, et al., 2012).

Benefits of exercise

Aerobic exercise is found to have the greatest impact in improving psychological health as this method can delay time in reducing effect of age on memory and cognition by hormone from adrenal gland (Drogos et al., 2019). This form of activity in correlation with both depression and stress improves both categories over a period of time and helps to

regulate psychological wellbeing (Gerber, et al., 2014). Extensive research following on from these findings a study examined participants prior to completing aerobic activity, over a period of five-months of completing this activity participants displayed improvements in stress and in cognitive ability (Bernstein & McNally, 2017). In periods of stressful circumstances such as a pandemic, that exercise during this time has a positive correlation in reducing stress (Jurak et al., 2020). Depression and stress were decreased amongst a target population of college students over a period of two-months, the long-term were not examined and longitudinal study would be required to assess the extent of this form of treatment (Roth & Holmes, 1987). Prior research in contrast found that aerobic exercise did not have an impact on the effect in reducing either stress or depression (Dua & Hargreaves, 1992). The findings are unclear to whether this form of exercise is beneficial, there is an indication that in the case of occupational stress aerobic exercise is found to reduce this form of stress (Alderman, Arent, Landers & Rogers, 2007). Overall, the findings demonstrated to beneficial and therefore may reduce stress within a stress induced environment (Hamer, Taylor & Steptoe, 2006).

Environmental factors

Among young adults it is found that individuals that take part in physical activity demonstrate greater scores in psychological resilience and therefore is found to influence phycological health (Gerber et al., 2012). Limitations may be established from the findings due to the lack of examination of each factor that contributes to this form of wellbeing and exercise, this meaning that specific areas within psychological health shall be examined (Annerstedt et al., 2012). Areas such as exercise relating specifically to stress management have examined the source contributing to the production of stress (Blumenthal et al., 2005). It was found that a primary factor in which increases stress levels, is environmental factors (Michie, 2002). In which individuals spend a majority of their time in

such as occupational stress, which demonstrates a significant relationship in influencing personal fatigue (Chalder & Nolan, 2000). Findings indicated that levels of stress were reduced over a period due to the physical activity (Baghurst & Kelley, 2013). A contributing factor of inducing environmental stress is primarily due to the individual's occupation. Findings of individual's working within a stressed induced environment demonstrate significantly higher levels of psychological stress, whereby a lack of physical activity is not completed (Kouvonen et al., 2013). In relation to this research the findings are those in higher position within a workplace displayed greater stress levels and which then produced a negative impact on an individual's psychological health, then those of a lower position (Schieman, Whitestone & Van Gundy, 2006).

Gender

A cross examination of occupation and gender relating to stress demonstrated that equally both genders displayed high levels of stress within a working environment, in this case those that did not complete exercise daily (Ng & Jeffery, 2003). However, several differences were displayed such as women demonstrated a greater level of stress by equalizing work and personal life in comparison to men, such as males increase in stress is due to a position within a job and job loss (Loosemore & Waters, 2004). Stress levels in correlation with gender demonstrates the occurrence of stress due to maintaining the highest position within a working environment (Vagg et al, 2002). Various findings relating to gender and stress have focused on the factors that promote stress within each group (Bruning, 1991). Further examination on comparing the two genders under one criterion should be examined to determine which gender may experience greater levels of stress and a comparison the effects of gender as a demographic variable on stress may be examined then comparing the factors cause stress to occur (Klaperski et al., 2013).

University sample

In contrast a vast amount of research was conducted on stress amongst college students, during an exam period (Robotham & Julian, 2006). Within this period of time the rate of exercise levels was examined and determined as having a positive impact on the reduction of stress (Crozier & Spink, 2016). Furthermore, these findings were only beneficial if a physical activity took place serval days prior to an exam, the results indicated that exercise before period of high intensity stress has a greater impact on the reduction of stress (Giacobbi, Tuccitto &Frye, 2007). Additionally, a control was taken prior to the study on student's stress levels, and it was found that after five-month period of exercising that all groups displayed similar findings of stress reduction prior to their levels before the assessment (von Haaren et al., 2015). Second findings indicate those that take part in physical activity during examination period displayed lower levels of stress and psychological wellbeing during examination (Baghurst & Kelley, 2013). Recent findings according to Garber (2017), have found university students that take part in physical activity have greater outcomes in monitoring and controlling stress levels, academically have greater outcomes in organization. Exercise has displayed for student's serval positive effects as promotes feelings of reduction in stress and overall satisfaction (Renshaw & Rock, 2018).

Observation of findings

Gender differences were not found to be different in exercise treatment for psychological health and over a large target population (Garcia et al., 2012). Recent findings of a longitudinal study showed similar results however, in this case did not consist of exercise as a treatment and found generally across a student population this demographic of differences in gender did not impact stress (Gao, Ping & Liu, 2020). In population of college students, results have found that females have a greater impact in self participation then males to cope with stress experienced daily (Kilpatrick, Hebert & Bartholomew, 2005). Among female's exercise was only beneficial when completed the activity in additional

environments other than the gym, it was also noted that stress was reduced while exercising in the company of others (Plante et al., 2007). In relation to the above findings further examination and research is required in determining whether exercise and gender predict levels of perceived stress and academic stress amongst college students. Gender within this line of research must be considered, to test and gain a greater understanding of the difference in which group produces higher levels and express stress levels and academic stress experienced. It is important to investigate the relationship between exercise and gender in relation to both academic and perceived stress. The research indicated all factors that cause stress and the management of this stress. However, did not investigate whether exercise has a relationship with perceived stress and academic stress.

This would be beneficial to current research as provided the importance in accorporating exercise within an academic setting to reduce stress. The second gender related to perceived and academic stress. These factors perceived variables should be considered to determine is there a positive correlation in relation to overall stress. The following will contain the rational of the study, the aim and the hypothesis of the current study. The rational focus primarily on the gaps demonstrated the gaps in the above literature and findings.

Current study

From examining previous literature based on the effects of exercise on stress it is evident that there is opening for further examination within this area of research (Felver, Morton & Clawson, 2018). Prior research was primarily focused on those who exercised regularly and taken an account of this target groups effect on stress (Kim & Leem, 2016). Recent literature has demonstrated that individuals that complete a form of exercise that is in the category averages between high and low intensity has a greater impact on psychological wellbeing (Paolucci et al., 2018). In contrast to this study will primarily focus on whether exercise and gender predicts academic and perceived stress amongst a target population of

college students. An examination of each participant's level of exercise will be considered and the overall findings will be displayed as total exercise to determine, does exercise and the demographic gender predict academic and perceived stress. From examining the above findings, it is evident that prior literature has examined a target population of those that attended university. However, the existing literature on this particular sample population did not target academic and perceived stress which is the aim formulated for the current study. Additional demographics that will be examined are age and years of education. The aim of the study is to determine if exercise and gender predicts levels of perceived and academic stress. The literature provides additional means in investigating different areas under the current topic, two separate hypotheses. Exercise and gender predict levels of perceived stress, controlling for age and years of education. Secondly, Exercise and gender predict levels of academic stress, controlling for age and years of education.

Method

Participants

The sample size of the current study consisted of 78 participants, of this contained Females (n = 58) Males (n = 20). Convenience sampling was required in recruiting participants, this was completed by the use of social media platforms. The target population for the study were individuals over the age of 18 and currently attending third level education. The age range of participants within the study were 18 to 49 years, consisting of a mean age of 22.17 years (SD= 4.92). Additional demographics required of the participants were years of education such as the number of years from primary level to further education, these results demonstrated the mean is 15.74 years. In recruiting participants each induvial was informed of the nature of the study and the right to withdraw from participating prior to submitting the questionnaire due to the anonymity in data collection.

Materials

Google forms data base was used in formatting the questionnaire for the current study, the website provided security in the data collect process due to password protection which could only be assessed by the research in the act of data protection. Social media platforms such as Facebook and Instagram displayed advertisement which added in the recruitment of participants. Within the questionnaire a number of demographics were displayed in the format of questions these included age, gender and years of education. The study entailed tree separate scales in which added in the collection of data for the rationale. The scales included are the Godin leisure-time exercise questionnaire (Amireault & Godin, 2015), Perceived stress scale (Cohen, 1988), Perceptions of academic stress.

Godin Leisure-time exercice questionnaire (Amireault & Godin, 2015). In order to measure the level of activity completed by the participant per week the Godin leisure-time exercise questionnaire was used, as this questionnaire enables a calculation the average of

activity completed . Which then enables an overall sore for each participants level of exercise. This questionnaire contained a series of three separate sections titled strenuous, moderate, and light. The layout consists of one question under each heading, an example includes strenuous activity, see Appendix I . Under this heading strenuous activity examples are given such as running and jogging. In order to answer the question an estimated number of times that week the particular activity took place can be typed into the answer box. Once the data is collected the researcher therefore is required to multiple each answer given by each participant according to the scale. Strenuous activity answer is multiplied by 9, moderate is multiplied by 5 and light exercise is multiplied by 3. The calculations are added for each participant which gives an overall score. The rationale of the study is to measure exercise the application of the Godin leisure-time exercise questionnaire which enables a satisfactory method in collecting data appropriately in according to the rationale. This provides a total score for each participant which is beneficial in collecting data directly associated with exercise.

Perceived Stress Scale (Cohen, 1988). This scale measures the participants stress, in relation to the current rational of the study in which aim is to measure perceived stress among university students. The scale presents a concise representation of the individuals stress experienced over periods of time. The scale is found to be reliable and is a common form of measurement of stress. The scale measures from 0 to 4, each number represents a clear statement to describe the individuals answer to the question. Such examples include “in the last month, how often have you been upset because of something that happened unexpectedly?”. In response to this the individual will answer according to the scale an example response is 0 which is equal to never, the answer will be represented by a number see Appendix II.

Perceptions of academic stress (Bedewy & Gabriel, 2015). The design of the scale is to measure academic stress throughout the academic period. The scale comprises an 18-questionnaire scale, the response statement is based on scale 1 to 5, see Appendix III. The scale is measured from strongly agree which is equal to 1 and strongly disagree the reliability of the scale is found to be successful in the measurement of academic stress. There are three subheadings which cover all areas in which may provoke stress from an academic setting. Stresses related to academic expectations, stress related to faculty work and examinations, stresses related to students' academic self-perceptions. An example under the subheading stress related to academic expectations is "competition with my peers for grades is quite intense" I n response to the statement the individual will rate the statement on a scale from 1 to 5.

Design

A cross-sectional design was constructed for the current study, which examined the two hypotheses. Quantitative approach in data collection occurred. Exercise and gender predict levels of perceived stress, controlling for age and years of education. The criterion variable (CV) is perceived stress. The four-predictor variable (PV) are age, years of education, exercise and gender. Additionally, the second hypothesis of the study is exercise and gender predict levels of academic stress, controlling for age and years of education. The criterion (CV) is academic stress. The four-predictor variable (PV) are age, years of education, exercise and gender.

Procedure

Data was collected via google forms, which displayed the online questionnaire for the current study. The self-report questionnaire was accessible by a link advertised on various online platforms, which included the researchers personal Facebook and Instagram accounts.

Prior to participating within the study, the advertisement displayed general information which outlined the requirements to take part within the study. Participants were informed of the time period that the questionnaire would take in order to be completed and breaks within answering was not included in the participation. From clicking the link displayed on the online platform participants were required to read the information sheet present, see Appendix IV. This information outlined all areas of what was required by the participant. Such information included the participant would not have the right to withdraw from the study once the questionnaire was submitted due to anonymity of each participant within the study. In completion of this, consent was required in the collection of data. Each participant that agreed to continue to participate within the study read the consent statement and clicked the consent box, see appendix V. In addition to the studies requirements the participants must have been over the age of 18 and are currently attending third level education, to confirm these participants clicked the box provided to proceed to the questionnaire.

A series of demographics were displayed such as questions relating to gender, age, years of education. Following these questions, the participants proceeded to complete tree separate questionnaires. Instructions were present at the beginning of each section each of the questionnaires which enabled the participant to have clear understanding in answering the questions correctly. The first questionnaire, Godin leisure-time exercise questionnaire measure the level of exercise completed weekly. The completion of each question was mandatory to procced to the next section of the questionnaire. Following this a second questionnaire was displayed in which measured the participants perception of stress, this scale was the Perceived stress scale. The final questionnaire design calculated the perception of academic stress experienced, in completion of this participants encountered a debriefing sheet which informed each participant of various steps to take in the circumstance of distress experienced see appendix VI.

The completion of data had occurred the researcher accessed goggle forms were the data was stored via a password. The data was then transferred to an excel spread sheet, where an examine of all the variables were done to ensure no data was missing. The transfer of this spreadsheet to the IBM SPSS statics spreadsheet allowed for the analysis to begin. The descriptive were run including the inferential descriptive, a conclusion was drawn from the results.

Ethical considerations

The data collected for the current study was completed according to the ethical considerations and guidelines formed by the National College of Ireland. All participants were informed of the nature of the study and their right to withdraw the data prior to submitting the questionnaire. Each participant was informed that once the questionnaire was submitted the data could not be withdrawn due to the anonymity of the study. The participant was presented with a information sheet prior to beginning the questionnaire, once knowledge was gathered by the participant about the nature of study the participant could then proceed to the consent form Consent was granted to collect data of all participants of the study, see Appendix V. Participants were not to experience any harm or distress from completing the study. The debriefing sheet informed the participant of additional services in which may help in the case of distress caused from completing the study, see Appendix VI.

Results

Descriptive Statistics

Descriptive statistics were carried out for the current study, including all variables Gender, Age, Years of education, Exercise, Perceived stress and Academic stress. The data obtained for the study contained 74.4% of current sample were female (n =58) and 25.6% were male (n =20). Analysis for all continuous variables is displayed in Table 1.

Table 1

Descriptive statistics for all continuous variables

Variable	*M* [95% CI]	*SD*	Range
Age	22.17[21.06, 23.28]	4.92	31
Years of Education	15.79[14.81, 16.78]	4.35	20
Exercise	38.18[32.95, 43.41]	23.2	121
Perceived Stress	23.90[22.92, 24.88]	4.34	26
Academic Stress	52.40[50.46, 54.33]	8.58	36

Inferential statistics

Hypothesis 1

Hierarchical multiple regression was performed to investigate if exercise and gender predict level of perceived stress, controlling for age and years of education. A preliminary analysis was conducted to ensure no violation of the assumptions of normality, linearity and homoscedasticity. A correlation of the predictor variables was examined age, years of education, exercise and gender see table 2. Correlations ranged between r = .14 to .23. When running test for multicollinearity indicated that all the Tolerance and VIF were within range. The results demonstrated that no violation of assumption multicollinearity. Multiple linear regression analysis was a suitable analysis to run due to the data.

The criterion variable (CV) Perceived stress was entered into the model. Firstly step1, the two predictor variables (PV) age and years of education were entered into the model, block 1. The model was non-significant F (2, 75) = .822; p > .444 and the variance of perceived stress at 2.1% (Table 2). Secondly step 2, gender and exercise were entered into the model, block 2. This model was non-significant F (4, 73) = 1.103; p > .362 variance of perceived stress at 5.7%. Additionally, to age and years of education, gender and exercise then add an extra 3.6% variance to perceived stress which non-significant (R^2 Change = .036; F (2, 73) =1.37 p > .259). Due to the presents of 2 (CV) the overall significance of the model will be determined as significant whereby the p value is less than (p > .025) The overall model found that all predictor variables were non-significant, one predictor variable displayed a significant finding which is exercise (B = -.12) and (p > -1.04) .All variables are displayed in Table 2. (see appendix VII, for SPSS output)

Table 2

Hierarchical multiple regression model of Perceived stress

Variable	R^2	R^2 Change	*B*	*SE*	*β*	*t*	*p*
Step 1	.15	.021**					
Age			-.122	.10	-.139	-.14	.25
Years of Education			.096	.12	.096**	.11	.42
Step 2	.24	.057*					
Age			-.107	.11	-.121	-.12	.31
Years of Education			.094	.12	.095**	.11	.42
Exercise			-.023	.02	-.122	-.12	.30
Gender			-1.172	1.16	-.119	-.12	.31

Note: * $p < .05$; ** $p < .01$; *** $P < .001$

Hypothesis 2

Hierarchical multiple regression was performed to investigate if exercise and gender predict level of academic stress, controlling for age and years of education. A preliminary analysis was conducted to ensure no violation of the assumptions of normality, linearity and homoscedasticity. A correlation of the predictor variables was examined age, years of education, exercise and gender see table 3. Correlations ranged between $r = .14$ to .35. When running test for multicollinearity indicated that all the Tolerance and VIF were within range. The results demonstrated that no violation of assumption multicollinearity. Multiple linear regression analysis was a suitable analysis to run due to the data.

The criterion variable (CV) academic stress was entered into the model. Firstly step1, the two predictor variables (PV) age and years of education were entered into the model, block 1. The model was non-significant F (2, 75) = .820; $p > .444$ and the variance of perceived stress at 2.1 % (Table 3). Secondly step 2, gender and exercise were entered into the model, block 2. This model is significant F (4, 73) = 2.662; $p < .039$ variance of perceived stress at 12.7%. Additionally, to age and years of education, gender and exercise then add an extra 10.6 % variance to academic stress which is significant (R^2 Change = .106; F (2, 73) = 4.43 $p < .015$). Due to the presents of 2 (CV) the overall significance of the model will be determined as significant whereby the p value is less than ($p > .025$) .The overall model found that all predictor variables were non-significant with perceived stress, exercise was found to have a significant finding, value of exercise (B = .30) and ($p > .011$). All variables are displayed in Table 3.

Table 3

Hierarchical

Variable	R^2	R^2 Change	*B*	*SE*	*β*	*t*	*p*
Step 1	.146*	.021**					
Age			.10	.21	.16**	.49	.63
Years of education			-.30	.23	-.15	-1.27	.21
Step 2	.357	.127*					
Age			.03	.20	.02	.17	.87
Years of education			-.30	.22	-.15	-1.30	.20
Exercise			.11	.04	.30**	2.60	.01
Gender			1.73	2.20	.09*	.80	.43

Note: *Note*: * $p < .05$; ** $p < .01$; *** $P < .001$

Discussion

The aim of the current study was to determine whether exercise and gender predict levels of perceived stress. Secondly to determine whether exercise and gender predict levels of academic stress. In both cases controlling for age and years of education. In relation to the criterion variable perceived stress, a higher article multiple regression was conducted. The findings displayed that all predictor variables in the overall model had a non-significant relationship with perceived stress, ($p >$. 444). However, the predictor variable exercise was found to have a non-significant correlation in relation to perceived stress with a (B = -.12) and (p > .30). Within the current findings, the null hypothesis can be rejected due to the results presenting a non-significant finding. Previous literature has demonstrated the beneficial impact of exercise in reducing stress, due to the biological secretion of hormones which has found to improve mood and stress (TSATSOULIS & FOUNTOULAKIS, 2006). Key findings in relation to secretion of hormones such as the effect of neuroendocrine in correlation with exercise provides a greater impact in the regulation of psychological health (Nabkasorn et al., 2005). Such studies displayed a positive correlation in the reliability of exercise as a form of treatment, in improving overall psychological wellbeing and the reduction of stress in a longitudinal aspect (Spalding et al., 2004). The vast amount of research in the area of neuroscientific findings, has proved greater evidence in understanding the relationship between exercise and stress. The objective of the study was to determine is there a significant corelation between both factors meaning to establish whether a relationship does exist based on the data provided. The results have shown that exercise and perceived stress may not a have a direct relationship. Further examination may be need as literature has demonstrated that exercise reduces stress in the case of this study has demonstrated that there is no relationship between the two variables.

Gender in previous literature had found to display a correlation in relation to stress, the evidence provided however was determined by the report of both genders male and female to determine which gender would report higher levels of stress (Ng & Jeffery, 2003). As a vast amount of research examined these two factors, further examination was required in determining the effect of gender on stress, including the relationship of gender and stress (Klaperski et al., 2013). Gender was examined within the first hypothesis the aim was to establish the relationship of gender and perceived stress. The results found that gender did not predict levels of perceived stress with a non-significant finding of ($p > .31$). Many limitations can be found with these findings which may have an impact on the reliability of the outcome of the results which will be discussed in the limitations section. Gender is found as a factor in contributing to stress however, depending on environmental factors (Loosemore & Waters, 2004). Perceived stress measured under a target population does not provided an overall finding of stress. The factor of the target population cannot provide an accurate interpretation of the greater population outside of this current environment that was studied which is university students. A recent finding which can demonstrated the effect of stress and gender is the current pandemic on those within a healthcare environment have found that females within this line of work demonstrate greater levels of stress than males (Mavroudis et al., 2021).In contrast to the findings of the study gender has demonstrated to have a positive corelation with gender depending on environmental factors, in the case of the current findings of an academic setting does not effect gender to correlate with perceived stress levels.

The establishment of the second hypothesis was determined based on prior findings whereby stress was found to be a prominent factor in society due to environmental factors (McEwen, 2012). A critical examination of previous literature based on stress provided similar findings whereby the environment had a positive correlation in the production of stress (Chalder & Nolan, 2000). A second hypothesis was established using these key

findings, by examining a population which would experience a greater level of stress due to their environment, such as academic stress. The hypothesis is the following, exercise and gender predict levels of academic stress, controlling for age and years of education. A population such as college students were examined and found to experience greater levels of stress (Robotham & Julian, 2006). Due to prior findings, it was evident that environmental factors contribute to greater levels of stress. The results of the overall model found significant value ($p < .015$). However, all the individual predictor variable (PV) were found to not have correlation with levels of academic stress, exercise specifically demonstrated a significant value ($p < .011$). The null hypothesis can be expected, highlighting that exercise has a positive correlation with exercise. Recent existing literature has found in a population of student experiencing stress physical activity is substantial as a treatment of stress cause by college work (Moake & Patel, 2021). Prior literature has demonstrated to support these findings, university student which avail of physical activity as a form of treatment had a greater success rate in controlling stress (Garber, 2017). As previous literature has presented that exercise a beneficial form of reducing stress therefore an establishment can be drawn in correlation with the current result. That exercise may have an effect on stress and according to the current findings has a positive relationship with academic stress.

Gender and previous literature primarily focused stress according to an occupation and found stress levels differed in each gender (Loosemore & Waters, 2004). The aim was to understand does gender predict academic stress alone with exercise that predictor variable in this case produced a significant finding. Gender in correlation with exercise shows significant friends a further examination of the variable gender in relation to exercise should be examined in further research.

Implications

An examination of each finding of the study displays a number of implications associated in a theoretical and practical manner. As it is evident that exercise and gender do not have a relationship with perceived stress in contrast it is found that exercise and gender have a significant relationship with academic stress. In a sample of first year student within a university exercise was encourage as findings displayed that physical activity is substantially effective in structuring stress (Garett et al., 2017). The findings have highlight that a beneficial coping mechanism in the reduction of academic stress may be exercise. Such college have implemented activity as an important part of the psychological wellbeing of students and light activity such as walking times prevents long term burnout and stress (Chang et al., 2018). Interventions such as allocating a class time for students to take time way from academic studies would be appropriate. As students experience greater levels of stress produced within an academic setting, practical coping methods should be encouraged as this may produce structure to improving psychological wellbeing. The practical implications should involve universities. Funding should be established in supporting different alethic outgoings. The encouragement of scholarships associated with support will promote greater levels of interest in the area of physical activity. This funding method should be standard of acceptance in all universities (de Hoyos et al., 2019). Due to circumstances in relation to the pandemic gyms are closed within college campus. In a sample of university students, the factor of the pandemic has demonstrated to increased student stress up to seventy-one percent over the past year and reporting that eighty-nine of student feel that their ability to completed college work has been affected by the current situation (Son et al., 2020). As the recent data presents academic stress in which students are currently coping with has increased further measure are required to be established by providing alternative outlets to the gym.

For further research in the department of physical activity, it would be beneficial for researcher to conduct an experiment in a practical setting whereby would facilitate and to test different levels of exercise performed in a clinical setting and then account for participants stress scores. This would be a practical implication and would provide an accurate reading of physical activity performed as it would be in a monitored setting. As the current study was a questionnaire the next adaptation would be to test the hypothesis in a practical and clinical environment. Recent literature examined exercise in a clinical setting and measured active participants and non-active the results found that a greater correlation in reduction in stress with those of consistent activity (MOHAMAD et al., 2020). An experimental approach in conducting this study would be high beneficial in understanding the full extent in which exercise has in reducing and understanding all factors that contribute to the effect of the relationship. Differential impacts of each level of exercise measured separately to determine full effectiveness of exercise in a clinical setting and may establish new findings. Prior literature has demonstrated that yoga as physical activity is highly recommended to reduce stress and has a beneficial impact as a treatment (Hunt et al., 2017).

Strengths and Limitations

A key limitation within the study is that exercise could not be measured in a practical setting as mentioned prior in the implications section, due to the current circumstances with the pandemic. This can be established as a limitation as exercise was not monitored in a clinical setting where an accurate account of data would be collecting by monitoring how many times per week physical activity had taken place. A comparison could then be drawn for those that take part in physical activity and those that do not. However, one of the strengths of the study was the effectiveness of applying the Godin leisure-time exercise questionnaire, this measures all individual levels of exercise accounting for strenuous, moderate, light exercise. As walking and yoga are accounted for as exercise this

questionnaire included all forms of physical activity as this could not be monitored in a clinical setting. The overall score provides the average score of exercise done per week.

Another limitation within the data collection was four participants data could not be taken into account due to a lack of understanding of the questionnaire. This accrued due one main factor which is associated with the Godin leisure-time exercise questionnaire an example is in the wording of the questionnaire. A sample question please fill in by using numbers the number of times per week take part in each of the groups, strenuous exercise (running, jogging) participants interoperated the question as asking the type of physical activity. In return reduced the number of participants within the study as this could not be accounted for in the current study.

Additionally, in requiting participants due to circumstances of the pandemic targeting a larger population of college students was difficult as being on the campus provides a greater network in making individuals aware of the study compared to using an online platform. Facebook including Instagram as an online platform in recruiting limits the number of participants that can take part in the study as it only reaches a certain number of individuals. Gender was a main demographic within the study, which can be found as a limitation as gender was measured as both male and female. The effect of having a greater number of female participants, female (n = 58) and male (n =20) this does not provide an accurate account as there is bias to females which was not intended the data collection. This has an impact on the variable gender as equal gender types would provide an accurate account of gender.

Conclusion

The current study has provided greater understanding to weather exercise and gender predict stress. Including recent literature in a period of time where stress is a prominent factor due to the pandemic these findings are beneficial in providing support to university students. Virtual classes provided by the campus gyms should be made a priority to help students regulate stress levels from home as gyms are not available in the current times in a line with government guidelines. Awareness of the benefits of exercise should be known to all students as listed as a support network within the college. Further examinations are need from an experimental aspect to understand the full extent of the effects of exercise on stress. Further examination in relation to perceived stress as literature supports exercise has an effect on stress however the findings of the study demonstrate that no relationship exist.

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Appendices

Appendix I

The following scale will measure levels of exercise, Godin Leisure- Time scale

Please fill in by using numbers the amount of times per week take part in each of the groups

STRENUOUS EXERISE (HEART BEATS RAPIDLY)

(e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long-distance bicycling) □

MODERATE EXERCISE (NOT EXHAUSTING)) (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing) □

MILD/LIGHT EXERCISE (MINIMAL EFFORT) (e.g., yoga, archery, fishing from riverbank, bowling, horseshoes, golf, snow-mobiling, easy walking) □

Appendix II

Perceived Stress Scale

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 ?
2) In the last month, how often have you felt that you were unable to control the important things in your life?
3) In the last month, how often have you felt nervous and stressed?
4) In the last month, how often have you felt confident about your ability to handle your personal problems?
5) In the last month, how often have you felt that things are going your way?
6) In the last month, how often have you found that you could not cope with all the things you had to do?
7) In the last month, how often have you been able to control irritations in your life?
8) In the last month, how often have you felt that you felt that you were on top of things?
9) In the last month, how often have you been angered because of things that were outside of your control?
10) In the last month, how often have you felt difficulties were pilling up so high that you could not overcome them?

Appendix III

Please rate your response on scale from 1= strongly agree to 5= strongly disagree.

Stresses related to academic expectations

Competition with my peers for grades is quite intense □

My teacher is critical of my academic performance □

Teachers have unrealistic expectations of me □

The unrealistic expectations of my parents stresses me out □

Stresses related to faculty work and examinations

The time allocated to classes and academic work is enough □

The size of the curriculum (workload) is excessive □

I believe that the amount of work assignment is too much □

Am unable to catch up if getting behind my work □

I have enough time to relax after work □

The examination questions are usually difficult □

Examination time is short to complete the answers □

Examination times are very stressful to me □

Stresses related to students' academic self-perceptions

Am confident that I will be a successful student □

Am confident that I will be successful in my future career □

I can make academic decisions easily □

I fear failing courses this year □

I think that my worry about examinations is weakness of character □

Even if I pass my exams, am worried about getting a job □

Appendix IV

Participant information sheet

Project Title

The effect of exercise engagement on academic and perceived stress.

Invitation

You are being asked to take part in a research study on whether different levels of exercise engagement such as low, moderate, and high have an impact on academic stress and perceived stress. The study will also determine is there a difference between males and females on the outcome of academic and perceived stress. Before deciding whether to take part, please take the time to read this document, which explains why the research is being done and what it would involve for you. If you have any questions about the information provided, please do not hesitate to contact me using the details at the end of this sheet.

What is this study about?

The experimenter of the study will be run by undergraduate student my name Jessica Tracey, I am a final year student part of the BA in Psychology programme at the National College of Ireland. The supervisor of the research Dr David Mothersill from the National College of Ireland. The study has been considered and approved by the psychology research Ethics Committee. In this study, you will be asked to complete a self-report questionnaire. As previously mentioned, the aim of the study in detail is do different levels of exercise engagement such as low, moderate, high have a differential impact on levels of academic and perceived stress. Secondly to determine will there be differences between males and females on outcomes of academic and perceived stress.

What will taking part in the study involve?

The study will take place once the information sheet is read and the consent form is filled. The procedure of the online questionnaire will contain several statements. Each of the scales within the study will measure different topics such as exercise, academic stress and perceived stress please be aware that the rating on a scale may change depending on the question. Ensure to read all directions given before rating on the scale. The study will take ten to fifteen minutes in total and there will be no breaks taking within the study, a consent form will be displayed on the following document if you wish to participate read and sign the document.

Who can take part?

You can take part in the study under the following terms, if you are aged over 18 and use or can grant access to one of the following form social of social media which are Instagram or Facebook. You can also take part in u attend third level education as the target population for this study is students attending college. You cannot take part in this study if your doctor has informed you that you have been diagnosis of dementia, or problems associated with your memory.

Do I have to take part?

You are not required to take part in the study as recruitment is completely voluntary. You do not have to participate in the study only if you wish to do so. If you wish to take part, you can withdraw from the study at any point before you submit your data by clicking the button to do so. Once the submission of your data has occurred , it will not be possible to retrieve this data or withdraw your information given due to the fact that every participant that completes the study are anonymous and can't be identified.

What are the possible risks and benefits of taking part?

If you chose to take part in the study there are no benefits from being a participant in the research, the information gathered from your data will enable a greater understanding if exercise engagement has an impact on academic and perceived stress. Questions within the study should not cause distress however if you experience any distress from taking part in the study you can contact support services by the contact details displayed at the end of the completed questionnaire.

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

All information and data collected will remain secured by the experimenter, measures will be taken to ensure only the experimenter and the supervisor will have access to this data. The information gathered is anonymous and can not be traced back to the participant however this data collected will be stored via an isolated file and will only be accessible via password. Those with knowledge of this password is only granted to the experimenter.

What will happen to the results of the study?

All results from the study will be found in my final dissertation and will be submitted via National College of Ireland.

Who should you contact for further information?

You can contact the researcher by email at x18416456@student.ncirl.ie including the supervisor of the study Dr David Mothersill by email at David.Mothersill@ncirl.ie .

Appendix V

Consent form

In agreeing to participate in this research I understand the following:

This research is being conducted by Jessica Tracey, an undergraduate student at the School of Business, National College of Ireland.

The method proposed for this research project has been approved in principle by the Departmental Ethics Committee, which means that the Committee does not have concerns about the procedure itself as detailed by the student. It is, however, the above-named student's responsibility to adhere to ethical guidelines in their dealings with participants and the collection and handling of data.

If I have any concerns about participation, I understand that I may refuse to participate or withdraw at any stage.

I have been informed as to the general nature of the study and agree voluntarily to participate.

There are no known expected discomforts or risks associated with participation.

All data from the study will be treated confidentially. The data from all participants will be compiled, analysed, and submitted in a report to the Psychology Department in the School of Business. No participant's data will be identified by name at any stage of the data analysis or in the final report.

At the conclusion of my participation, any questions or concerns I have will be fully addressed.

I may withdraw from this study at any time and may withdraw my data at the conclusion of my participation if I still have concerns.

If agree to the above terms and grant consent for your data to be collected click the box below to begin the study.

I agree to the above terms and give consent for my data to be collected □

Appendix VI

Debriefing sheet

Thank you for participating in this study. The aim of the research is to determine if exercise engagement has an effect on levels of academic and perceived stress amongst college students, also to determine if there will be a difference in gender to academic and perceived stress. The research question is as follows, do different levels of exercise engagement (low, moderate, high) have a differential impact on levels of academic and perceived stress. Secondly are there differences between males and females on outcomes of academic and perceived stress.

If you have experienced any level of distress from completing this study, can contact myself Jessica Tracey via email x18416456@student.ncirl.ie. Can also contact the supervisor of the study Dr David Mothersill by email David.Mothersill@ncirl.ie. Additional services to contact are your college student service department as be able to facilitate you with supports relating to stress management. Other services in which can offer confidential support such as the Samaritans Ireland which provide a call service the number is (01) 6710071, in particular for student support is NiteLine who also provide a confidential call option at 1800793793 , email info@niteline.org .Would like to thank you again for completing the study please do not hesitate to contact myself or the supervisor if you have any queries.

Appendix VII