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Contents

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Higher Secondary Commerce Students' Engagement and Attitude towards Blended Learning Environment

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ABSTRACT

At present, classroom instruction should be a self-regulated process and the learner who is self-motivated to explore problems and situations. For learning, the students are learning through the web as a source of knowledge, the learning environment should be shifted to a learner-centered rather than teacher-centered environment. Commerce education is to be directed towards mastery in its conventions and principles, towards thinking and solving problems in scientific ways, towards developing a positive outlook to the discipline at the higher secondary level. Attitude towards learning is associated with the academic performance of commerce-related tasks and improving achievement. It should be one of the basic features in designing effective commerce classroom instruction. In the present study, students' attitudes can be enhanced by using a blended learning instructional strategy targeting the variables of learner attitude towards learning of instructional transaction, learning task, classroom interaction, and assessment. The study employs pretest-posttest non-equivalence control group design under the quasi-experimental method. The sample consists of 80 students of standard XII, 40 students each in the experimental group and control group. Statistical techniques of descriptive statistics, t-test, and Cohen's d were used for comparing the pretest and posttest scores of attitude towards learning and measuring the effect size between experimental and control groups. The findings of the study showed that there is a significant difference in the mean posttest scores of attitude towards learning between the experimental group and control group and the blended learning instructional strategy is more beneficial in developing the attitude of higher secondary school students when compared to constructivist teaching strategy.

1. Introduction

Teaching technology is one of the sub-types of the system of educational technology. It concerns the systematization of the process of teaching and provides necessary theory and practice for the teachers to bring improvement in the task of teaching. It includes the means and material concerning individualized instructions and self-learning including teaching machines and computer-assisted learning, independent of the teachers and their acts. The essence of the application of technology lies in getting more and better output with the least input in terms of time and

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1

labor. Teaching technology as suggested by [6], equipped with technological skills like communication skill, the skill of interaction with students, the skill of making the students learn and think independently, and the skill of evaluating and reinforcing pupil learning behavior, etc. besides having a good knowledge or mastery over the subject matter. According to [6], e-learning situations are of three types. They are support learning, blended learning, and complete e-learning. In blended learning mode, attempts are made for making use of a combination of traditional and ICT enhanced learning practices. Thus, one can harvest the benefits of both the practices of traditional and e-learning.

1.1 Rationale of the Study

The foundation of commerce education is laid in the higher secondary level associated with the underlying principles of commerce and accountancy. Every topic in commerce cannot be taught alike and each learner has a unique way of collecting and organizing information, depending upon their cognitive structure. A different topic is needed a different type of strategies. The use of blended learning instructional strategy is more effective in classrooms than the use of traditional single strategy. Using a single strategy in one class will usually be monotonous and a continuous usage of the same strategy in transacting the content makes the learners lazy and exhausted. Combining or mixing the conventional methods with e-learning practices is an important and purposive approach as it helps to cross and examine the commerce outcomes at the higher secondary level. This study considered the topic of 'marketing' as it was perceived as the most important and interesting one by higher secondary school students. Marketing includes topics like marketing management, marketing mix, the concept of product, pricing, place, and promotion, which engender difficulty for a learner with a low IQ. These topics might be difficult for a higher secondary commerce learner with low field independence and low working memory capacity. So the higher secondary commerce curriculum needs the inclusion of a blended learning instructional strategy based on the content and cognitive structure of the learner. So the present study is to analyze the effect of blended learning instructional strategy in developing the attitude towards learning among higher secondary school students.

1.2 Objectives of the Study

● To compare the mean pretest scores of attitude (dimension wise) towards blended learning between experimental group and control group.

● To compare the mean pretest and posttest scores of attitude (dimension wise) towards blended learning of students in the experimental group.

● To compare the mean pretest and posttest scores of attitude (dimension wise) towards blended learning of students in the control group.

● To compare the mean posttest scores of attitude (dimension wise) towards blended learning between experimental and control group.

● To compare the effect of blended learning instructional strategy in developing the attitude towards learning among higher secondary school students.

1.3 Variables of the Study

The variables selected for the study were the following:
Independent Variable: Teaching strategy was selected as the independent variable. Two levels of the teaching strategy were
● Blended learning instructional strategy
● Constructivist teaching strategy
Dependent Variable: The dependent variable selected for the study was attitude towards learning.
Control Variable: The control variable selected for equating the two groups before the experimentation of the study was pretest scores.

1.4 Method in Brief

To understand the attitude towards learning among higher secondary commerce learners, the investigator used an experimental method for the study. Experimentation is intended to test the effect of blended learning instructional strategy on higher secondary learners' attitude towards learning. The study employed a pretest-posttest non-equivalence control group design under the quasi-experimental method. Analysis was done based on the data obtained in experimentation.

1.5 Sample for the Study

The investigator selected the sample from Govt. Higher Secondary School, Cheruthuruthy, Thrissur district. Students of standard XII were selected for experimentation. The selection of two groups for the experimentation was based on the technique of Randomization which means selecting a group of individuals for observation who are representatives of the population about which the researcher wishes to generalize or equating experimental and control groups in an experiment. Assigning individuals by random assignment, the investigator randomly selected a total of 92 students from two divisions of standard XII with 46 students each. The two groups were equated based on

their pretest scores by eliminating the extreme values and finally selected 40 students from each division.

1.6 Tools Used for the Study

The following tools used for gathering relevant data for the study:
● Lesson transcript based on blended learning instructional strategy (for experimentation)
● Lesson transcript based on constructivist teaching strategy (for experimentation)
● Attitude scale (for measuring the effectiveness of intervention strategy after experimentation)

1.6.1 Lesson transcript based on blended learning instructional strategy

The investigator developed lesson transcripts of a unit of XII commerce syllabus 'Concept of marketing' for teaching through 'Blended learning instructional strategy'. The construction of instructional strategy involves three phases. They are:
● Specification Phase
● Drafting Phase and
● Try out Phase

The construction and its effectiveness of an instructional strategy depend on the first phase that is a specification of the topic and others. From the analysis of the various theories and suggestions from experts, the following steps were considered as important for specification. They are the specifications of the (i) unit/topic, (ii) target population, (iii) entering behavior, (iv) terminal behavior, and (v) construction of criterion test. After the above specifications and their preparations are over, the second major phase of drafting the frames will be taken up. The draft was made according to the nature of students' needs and interests. After the completion of the preliminary draft of all the frames, it requires editing and reviewing. Editing has been done concerning the accuracy and relevance of the material, style, vocabulary, and content interest. In editing the frames, the continuity of the package, the sequence, the principles of construction of the package, etc. was checked. The content in each frame was also verified by the subject experts in this phase.

1.6.2 Lesson transcript based on constructivist teaching strategy

The investigator developed lesson transcripts of a unit of XII commerce syllabus, 'Concept of Marketing' for teaching through 'Constructivist teaching strategy'. Constructivist instruction, which has been followed in Kerala schools, was used to teach the content in the control group. For the use of lesson transcripts of constructivist strategy, the investigator consulted with the school teachers who are working in the field of commerce teaching.

1.6.3 Attitude Scale

In the present study, the investigator developed an attitude scale for assessing the effect of blended learning instructional strategy on students' attitude towards learning. The criterion variables (dimensions) selected to collect information regarding students' attitude towards learning viz; attitude towards the instructional transaction, attitude towards learning task, attitude towards classroom interaction, and attitude towards assessment.

The data collected from the attitude scale to be evaluated based on the criterion variables of the attitude scale such as instructional transaction, learning task, classroom interaction, and assessment. To confirm the internal consistency of each item of the scale, the scores of each statement are summed up and the correlation of each statement with the total score was examined. Those statements, which do not show a substantial correlation with the total score were eliminated. The internal consistency of those items lies in between 0.35 to 0.85 were taken for the final study, and the criterion validity of the scale was found to be 0.85. The reliability of the attitude scale was established through the split-half method. To execute the split-half method, the investigators systematically split the questions into two sets and estimate the reliability co-efficient of the items from two sets. The Guttman split-half coefficient of correlation was found to be 0.88, showed that the scale is highly reliable.

1.7 Statistical Techniques Employed for the Study

Statistical techniques used for data analysis were the following:
● Descriptive statistics
● Test of significance of the difference between means
● Effect size (Cohen's *d*)

2. Analysis and Interpretation of Data

2.1 Compare the Mean Pretest Scores of Attitude (Dimension Wise) towards Learning between Experimental Group and Control Group

Comparison of mean pretest scores was carried out to test whether a significant difference exists between the experimental group and control group for their attitude towards learning before the experimental intervention. Test of significance of the difference between means (t-test) was used for comparison. The data were analyzed

and the results are given in Table 1.

Table 1. Test of Significance of Difference between mean Pretest Scores of Attitude (Dimension wise) towards Learning between Experimental and Control Groups

Variable/ Dimensions		Experimental Group		Control Group		Critical ratio (t-value)
		Mean (M_1)	SD (SD_1)	Mean (M_2)	SD (SD_2)	
Attitude	Instructional transaction	25.93	5.98	25.70	5.36	0.18*
	Learning task	21.25	7.00	21.60	6.88	0.23*
	Classroom interaction	16.35	3.44	17.13	2.51	1.15*
	Assessment	21.68	5.95	21.73	5.80	0.04*

N=40 *$P > .05$

Table 1 shows that the t-value obtained for the pretest scores of attitude towards learning; instructional transaction (t=0.18), learning task (t=0.23), classroom interaction (t=1.15), and assessment (t=0.04) between the experimental group and control group, which is not significant at 0.05 level. It shows that there is no significant difference in the mean pretest scores of attitude towards learning between the experimental group and control group before their experimental intervention.

2.2 Compare the Mean Pretest and Posttest Scores of Attitude (Dimension Wise) towards Learning of Students in the Experimental Group

Comparison of mean pretest and posttest scores of attitude towards learning of students in the experimental group was carried out to test whether a significant difference exists in these two tests. Test of significance of the difference between means (t-test) was carried out for comparison. Data were analyzed and the results are shown in Table 2.

Table 2. Test of Significance of Difference between mean Pretest and Posttest Scores of Attitude (Dimension wise) towards Learning of Experimental Group

Variable/ Dimensions		Pretest		Posttest		Critical ratio (t-value)
		Mean (M_1)	SD (SD_1)	Mean (M_2)	SD (SD_2)	
Attitude	Instructional transaction	25.93	5.98	31.77	5.19	19.05**
	Learning task	21.25	7.00	25.40	6.08	8.85**
	Classroom interaction	16.35	3.44	20.25	3.15	17.05**
	Assessment	21.68	5.95	25.35	5.18	11.74**

N=40 **$P < .05$

Table 2 shows that the t-value obtained by comparing pretest and posttest mean scores of experimental group at-titude towards learning; instructional transaction (t=19.05), learning task (t=8.85), classroom interaction (t=17.05), and assessment (t=11.74), which is significant at 0.05 level. It shows that there is a significant difference between mean pretest and posttest scores of attitude towards learning of students in the experimental group.

2.3 Compare the Mean Pretest and Posttest Scores of Attitude (Dimension Wise) towards Learning of Students in the Control Group

Comparison of mean pretest and posttest scores of attitude towards learning of students in the control group was carried out to test whether a significant difference exists in these two tests. Test of significance of the difference between means (t-test) was carried out for comparison. Data were analyzed and the results are shown in Table 3.

Table 3. Test of Significance of Difference between Pretest and Posttest Scores of Attitude (Dimension wise) towards Leaning of Control Group

Variable/ Dimensions		Pretest		Posttest		Critical ratio (t-value)
		Mean (M_1)	SD (SD_1)	Mean (M_2)	SD (SD_2)	
Attitude	Instructional transaction	25.70	5.36	28.18	5.43	12.42**
	Learning task	21.60	6.88	23.23	6.69	5.64**
	Classroom interaction	17.13	2.51	20.68	2.28	11.77**
	Assessment	21.73	5.80	25.85	4.75	15.23**

N=40 **$P < .05$

Table 3 shows that the t-value obtained by comparing pretest and posttest mean scores of control group attitude towards learning; instructional transaction (t=12.42), learning task (t=5.64), classroom interaction (t=11.77), and assessment (t=15.23), which is significant at 0.05 level. It shows that there is a significant difference between mean pretest and posttest scores of attitude towards learning of students in the control group.

2.4 Compare the Mean Posttest Scores of Attitude (Dimension Wise) towards Learning between Experimental Group and Control Group

Comparison of mean posttest scores of attitude towards learning was carried out to test whether a significant differences exists between the experimental group and control group. Test of significance of the difference between means (t-test) was used for comparison. The data were analyzed and the results are given in Table 4.

Table 4. Test of Significance of Difference between mean Posttest Scores of Attitude (Dimension wise) towards Learning between Experimental and Control Groups

Variable/ Dimensions		Experimental Group		Control Group		Critical ratio (t-value)
		Mean (M_1)	SD (SD_1)	Mean (M_2)	SD (SD_2)	
Attitude	Instructional transaction	31.77	5.19	28.33	5.41	2.88**
	Learning task	25.40	6.08	23.31	6.76	1.45*
	Classroom interaction	20.25	3.15	20.74	2.27	0.80*
	Assessment	25.35	5.18	25.95	4.77	0.53*

N=40 *P>.05 **P< .05

Table 4 shows that t-value obtained for attitude towards learning; the value of the instructional transaction (t=2.88), which is significant at 0.05 level. It shows that there is a significant difference in the mean posttest scores of attitude towards learning of instructional transaction between experimental group and control group. The t-value was obtained for other dimensions of attitude towards learning; learning task (t=1.45), classroom interaction (t=0.80), and assessment (t=0.53), which is not significant at 0.05 level. It shows that there is no significant difference in the mean posttest scores of attitude towards learning between the experimental group and control group on their attitude scores of the learning task, classroom interaction, and assessment.

2.5 Compare the Effect Size of Attitude (Dimension Wise) towards Learning between Experimental Group and Control Group

Comparison of attitude towards learning was carried out to test the effect size between the experimental group and control group. Test of Cohen's *d* was used for data analysis. Results of the analysis are given in Table 5.

Table 5. Effect size of Attitude (Dimension wise) towards Learning between Experimental and Control Groups

Variable/ Dimensions		Experimental Group		Control Group		Cohen's *d*	Cohen's Category
		Mean (M_1)	SD (SD_1)	Mean (M_2)	SD (SD_2)		
Attitude	Instructional transaction	31.77	5.19	28.18	5.43	.67	Medium
	Learning task	25.40	6.08	23.23	6.69	.34	Small
	Classroom interaction	20.25	3.15	20.68	2.8	-.30	Very small
	Assessment	25.35	5.18	25.95	4.77	-.12	Very small

Table 5 shows that the Cohen's *d* value obtained for the instructional transaction and learning task (Cohen's d=.67

& .34) has a significant effect on students' attitude towards learning between experimental group and control group. But the Cohen's *d* value of classroom interaction and assessment (Cohen's d=-.30 & -.12) indicate that students' have a nominal effect (very small in Cohen's category) on their attitude towards learning after the experimental intervention of blended learning instructional strategy.

3. Major Findings of the Study

● The mean pretest score of attitude (dimension wise) towards learning between the experimental group and control group does not differ significantly.

● There is a significant difference in the mean pretest and posttest scores of attitude (dimension wise) towards learning of students in the experimental group.

● There is a significant difference in the mean pretest and posttest scores of attitude (dimension wise) towards learning of students in the control group.

● There is a significant difference in the mean posttest scores of attitude learning, i.e., the instructional transaction between the experimental group and control group.

● The mean posttest scores of attitude towards learning; dimensions of learning task, classroom interaction, and assessment between experimental group and control group do not differ significantly.

● Blended learning instructional strategy has a significant effect on students' attitude; dimensions of instructional transaction and learning task towards learning when compared to constructivist teaching strategy.

● Higher secondary commerce students' have a nominal effect on their attitude; dimensions of classroom interaction and assessment towards learning when compared to constructivist teaching strategy.

4. Discussion

The results of the significance of the difference between the mean posttest scores of the experimental and control groups of attitude towards learning in commerce show that there is a significant difference between the groups. So, the blended learning strategy and constructivist teaching strategy which were used for the content transaction in the experimental group and control group was also found success in making a significant difference between mean posttest scores of attitude towards learning in commerce. But the mean scores of attitude towards learning in commerce (dimension wise) for the experimental group (Instructional transaction M_1=31.77, and learning task M_1=25.40) were found high when compared to that of the control group (Instructional transaction M_2=28.33, and Learning task M_2=23.31). It showed that the experi-

mental group which was taught using a blended learning instructional strategy is in an advantageous position when compared to the control group which was taught using a constructivist teaching strategy.

Previous studies also revealed a significant effect on blended learning environment – Students' perception in a blended learning environment based on learning styles [1], Student perception of social preference and satisfaction in a blended learning environment [3], Learners' perceptional typology and relationship in blended e-education environment [4], Attitude, satisfaction and academic performance in blended learning [5], Student perception in blended learning strategic initiative [7] and Students opinion on Facebook supported blended learning environment [2]. It showed that the strategy of instruction developed for experimental group classroom instruction has a significant effect on students' attitude towards learning in commerce when compared to control group constructivist teaching strategy.

5. Educational Implications of the Study

● The use of multiple strategies is more effective for classroom instruction than the use of a single strategy.

● Blended learning instructional strategy should add more information to classroom interaction. These need to be supported teachers' handbooks.

● Teacher education curriculum should pay due consideration to integrate innovative instructional strategies.

● The blended learning instructional strategy used in this study, should focus on the need of incorporating ICT in the classroom.

6. Conclusions

This study highlights the value of bringing instructional strategy, which gives a variety of learning experiences into the classroom, creates interest and develops a positive attitude towards learning. So the systematic application of blended learning instructional strategy in classroom instruction highlight the need for researchers and teacher educators to pay due consideration to create a better learning environment with a long term effect. Hence, the blended learning instructional strategy used in this study could enhance the attitude towards learning and resulted in learning outcomes of higher secondary school students over and above the extent of constructivist classroom instruction.

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ARTICLE

Impact of Coronavirus Anxiety on Depressive Tendencies among Emerging and Young Adults

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ARTICLE INFO	ABSTRACT
	Coronavirus, our new chemical enemy, have become successful in changing our lives to an extent that now we have to think twice before stepping out of house. It has impacted negatively on not only our physical health but also psychological health. The current study was done to see the impact of coronavirus related anxiety on depressive tendencies. Further, it was assessed whether there is any interaction between gender and coronavirus anxiety on depressive tendencies. The linear regression indicated that coronavirus anxiety is strongly related to depressive tendencies and that the coronavirus anxiety is a predictor of depressive tendency. However, two-way ANOVA indicated that there is an insignificant difference as to how males and females face depressive tendencies. Finally, there is insignificant interaction between gender and coronavirus anxiety on depressive tendencies. The implications, limitations and future suggestions are also given on the basis of the findings so obtained.

1. Introduction

The world has faced a lot of pandemics from time to time. But this time we have got a chemical enemy which spreads with touch and there is no chance that it will stop itself any sooner. The coronavirus (COVID-19) has been declared as a pandemic by the World Health Organization on March 11, 2020 [1]. Governments around the world had to take stringent measures, like the implementation of lockdown, to break its chain. All educational institutions, huge organizations, and factories had to shut down as a result of lockdown. People who were going out of their houses had to behave differently because of social distancing. All of this led to a sudden shift in daily routine, with which some people were able to cope, and some faced difficulties and adjustment issues [2].

The stress of lockdown and coronavirus has affected

a lot of people in many different ways. Many pieces of research have been done around the world to assess the mental health of people during these difficult times. A study with a huge sample, done in Italy found that a huge proportion of their sample was facing anxiety and depressive symptoms along with sleep disturbances [3]. A similar study done in Italy reported problems of insomnia, anxiety, depression, adjustment problems, and high perceived stress [2]. Similar results were observed in Austria [4] and China [5,6]. Many studies have also been done in the Indian context to assess the mental health of the Indian population in the time of coronavirus. Sathyamurthi et al reported that anxiety and stress are the most common coronavirus reactions [7].

Studies are also done to examine gender differences. Most of the studies reported that females are facing more mental health issues [2,3]. Studies done in India also found that the mental health of women is affected more as com-

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pared to men [8,9]. Some studies have tried to explain why women are more affected. A study by Beri explained that the period of lockdown has increased the work load on women, especially on employed women. Now they are "working from-for home" that is they are doing their official work and their household work simultaneously which has affected their mental health [10].

The study was done to assess whether depressive tendencies are predicted by coronavirus anxiety. Further, whether gender has any role to play in it or not. The study was done in one part of India (Delhi-NCR), however, the finding will be helpful for various places across the world since all parts of the world are fighting with coronavirus. This study is important because it showed whether people are facing anxiety due to this new phenomenon of coronavirus and whether that in turn is leading to depressive tendency. There are many other challenges like fight for living, efforts for improving financial conditions, occupational workload and so on that the emerging and young adults are facing. Now in addition to those challenges, the imposition of lockdown and a total change in the way of living has further added to their problem, which is leading to deterioration in their mental wellbeing. People who have not been diagnosed with any physical or psychological problems were taken, therefore, depressive tendencies among people who were earlier fine, indicate a gradual decline in health. The study also contributed to the literature of clinical psychology and advancements in the literature of coronavirus.

H1: There would be a significant prediction of depressive tendencies by coronavirus anxiety.

H2: There would be significant interaction between gender and coronavirus anxiety on depressive tendencies.

2. Method

2.1 Population

Simple random sampling method was employed to reach the participants. A total of two-hundred ten participants took part in the study out of which two-hundred four met the inclusion criteria and were therefore included in the study. The demographic details of the participants are given in Table 1.

Table 1. Demographic Details of the Participants

	N (n=204)	%
Gender		
Females	103	50.5
Males	101	49.5
Age		
20-25	73	35.8
26-30	83	40.7
31-35	48	23.5

2.2 Instruments

Coronavirus Anxiety Scale.

The scale is the first published scale validated on large population by Lee [11]. It is used to assess COVID-19 related dysfunctional anxiety. The scale consists of five items which are simply added to give a total score. A score of nine and above indicates dysfunctional anxiety. The scale is highly reliable with Cronbach alpha of 0.93 and is highly correlated with other similar scales [11]. For the study, english version of the scale was used.

Patient Health Questionnaire-9

The Patient Health Questionnaire-9 (PHQ-9) is a 9 item self-report questionnaire which is used to assess depressive symptoms [12]. The items are simply added to obtain a total score. A low score does not indicate depressive tendency whereas a high score signifies presence of depressive tendencies. The internal consistency of the questionnaire is 0.83 and the correlation between PHQ-9 and other two similar scales was 0.63 [13]. For the study, English version of the scale was used.

Design and Procedure

A google form was formulated using two questionnaires, which were circulated to people over LinkedIn through a simple random sampling method. Participants who met the inclusion criteria (in Table 2) were included in the study. Any past difficulty might contribute to the anxiety or depressive tendency therefore people who were not diagnosed with any physical or psychological disturbances were taken into consideration. The data of the included responses were analyzed using linear regression and two-way ANOVA in SPSS (20).

Table 2. Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria
1	20- 35 years-old	19 and below; 36 and above.
2	Residing in Delhi-NCR	Outside Delhi-NCR
3	People who were not diagnosed with any physical or psychological disturbances	People who were diagnosed with any physical or psychological disturbances

3. Results

A simple linear regression was calculated to predict depressive tendencies based on coronavirus anxiety, b= .899, t(202) = 6.57, p = .000. A significant regression equation was found (F (1, 202) = 854.60, p = 0.00) with an R^2= .809. The output is given in Figure 1.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899a	.809	.808	1.304

a. Predictors: (Constant), Coronavirus Anxiety

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1452.877	1	1452.877	854.604	.000b
	Residual	343.412	202	1.700		
	Total	1796.289	203			

a. Dependent Variable: Depressive Tendencies

b. Predictors: (Constant), Coronavirus anxiety

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.281	.195		6.570	.000
	CAS_Total	.634	.022	.899	29.234	.000

a. Dependent Variable: Depressive Tendencies

Figure 1. Coronavirus anxiety and depressive tendency: linear regression

Further, two-way ANOVA was used to analyze interaction between gender and coronavirus anxiety on depressive tendencies. The results in table 3 indicate that there is an insignificant difference how males and females are facing depressive tendencies. Finally, there is insignificant interaction between coronavirus anxiety and gender on depressive tendencies.

Table 3. F value for interaction between gender and coronavirus anxiety on depressive tendencies.

	df	F	Sig
Coronavirus anxiety	13	81.23	.000**
Gender	1	.544	.462
Coronavirus Anxiety*Gender	10	.916	.520
Error	179		

Note: DV- Depressive Tendencies; **- p<0.001

4. Discussion

The chemical enemy, naming coronavirus has impacted life of each and every individual in different ways. Many researchers explored these different ways in which people got affected by this virus. The current research specifically focused on impact of coronavirus on mental health of people residing in Delhi-NCR. The analysis of the first hypothesis revealed that there is a strong relation between coronavirus anxiety and depressive tendencies and that the coronavirus anxiety is a predictor of depressive tendency. It means that people who are facing anxiety related to coronavirus are also likely to face depressive tendencies. The findings are consistent with the studies that were done

in the past in which people faced anxiety and depression [4,5,6] along with sleep disturbance, adjustment problems, and high perceived stress [2].

Many studies have found that people with chronic diseases are more likely to face anxiety [14,15]. However, the present study revealed that anxiety is becoming common among people who were not earlier diagnosed with any physical or psychological disturbance, which is further leading to depressive tendencies. There could be various reasons of why both the variables are so strongly related. For example, there are so many restrictions that are being placed on people in terms of their movement, their hobbies, food items and so on because of which people might feel sadness, unhappiness, heavy heart or bad temper. This might be the reason why coronavirus related anxiety is so strongly related to depressive tendencies.

Further the study revealed that there is an insignificant difference in the level of depressive tendencies faced by males and females. This means that both males and females are experiencing depressive tendencies with the same intensity. Further there is insignificant interaction between gender and coronavirus anxiety on depression tendencies. This means that irrespective of gender, who so ever is facing anxiety related to coronavirus is likely to face depressive tendency. These findings contradict researches done in the past. Most of the research found that females are more likely to face mental health issues as compared to males [8,9,2,3]; especially depression [14,16]. As per my knowledge, there was no study reporting that both males and females are facing depression and anxiety with the same intensity. Everyone is going through the same problem of sitting inside their homes, fear of going outside and so on. There is a change in the living style of everyone, be it a male or a female. No one can go out or enjoy doing whatever one might be doing earlier. Since everyone is going through more or less the same situation, therefore, they might be facing the same issues and problems. It is difficult for everyone to adjust with the changes that we all are going through.

5. Implications, Limitations and Future Suggestions

This paper highlights that the coronavirus related anxiety is leading to depression in both males and females. The emerging and young adults who participated in the study were the one's who did not have any physical or psychological problem but are now facing depressive tendency because of coronavirus related anxiety. This shows how the current scenario is impacting our young gener-

ation. It is important to spread awareness regarding how our mental health is getting affected due to this situation.

There are a few limitations of this paper. Firstly, the paper did not take into consideration factors like marital status, economic condition and so on. Future researchers can include these variables.

6. Conclusions

The current study was done to see the impact of coronavirus related anxiety on depressive tendencies. The findings indicate that the coronavirus anxiety is strongly related to depressive tendencies and that the coronavirus anxiety is a predictor of depressive tendency. However, two-way ANOVA indicated that there is an insignificant difference as to how males and females face depressive tendencies. Finally, there is insignificant interaction between gender and coronavirus anxiety on depressive tendencies.

Acknowledgement

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ARTICLE

Impact of Levels of Education on Perceived Academic Stress and Mental Wellbeing: An Investigation into Online Mode of Learning during Pandemic

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ARTICLE INFO	ABSTRACT
	A sudden outbreak of the current pandemic COVID-19 has switches the learning to online mode which leads to an increase in perceived academic stress and a serious threat to the mental well-being of the students across the globe. The aim of the current study was therefore, to examine the impact of online learning on perceived academic stress and mental well being of the students with moderating effects of levels of education, during the current pandemic. Measures of the constructs were obtained by the online Google form which consists of the Perceptions of Academic Stress Scale (PASS) by Dalia Bedewy and Adel Gabriel (2015) and Warwick- Edinburg Mental Well-being Scale (2008), from a sample of 150 undergraduate students aged 19-25 years studying in different colleges of Bengaluru, India. Mental well -being constituted the criterion variable whilst academic stress and levels of education were treated as predictor variables. Two-way ANOVA were employed. Results show that academic stress is a significant negative predictor of mental wellbeing (r = -.083; p < 0.05), there is a significant difference in the perceived academic stress (df=2; F=2.72; p < 0.05)which increase in hierarchy (Third year & first year MD= -3.7; Third year & second year MD= -3.2) and mental well being (df=2, F= 5.314 p < 0.05) which decreases in hierarchy (Third year & first year MD= -5.8; Third year & second year MD= -5.860) of the students at different educational levels and a combination perceived academic stress and educational levels predicts variance in mental well being of the students(R2=0.052 ; p>0.05). It was concluded that combined academic stress and educational levels have an impact on mental wellbeing of students in online mode of learning during the current pandemic, but this impact is low (only 5.2%).

1. Introduction

Education is considered as the vital part of one's life but in recent times, academic performance and societal demands has become the cause of academic stress in students. Academic stress can be defined as the bodily response to academic-related demands that exceed adaptive capabilities of students [1]. It has been estimated that 10–30% of students experience some degree of academic stress during their academic career [2]. Academic stress is

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found to be associated with several psychological concerns among students. Depression, anxiety, behavioral problems, irritability, etc. are few of the many problems reported by students with high academic stress [3]. Incidences of depression were also found among students especially adolescences as it is linked with inability to concentrate, fear of failure, negative evaluation of future, etc. [4]. Students were also found to be indulging in various risky behaviors such as increased consumption of alcohol and drugs, unprotected sexual activities, physical inactivity, poor eating and sleeping patterns due to academic stress [5,6]. The academic pressure these students face is so severe resulting in five-fold increase in suicide attempts. According to the statistics published by National Crime Records Bureau, India among 8% students who committed suicide is usually due to failing in examinations and academic pressure [7].

Mental well-being is defined by the World Health Organization (2014), as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" [8]. Mental well-being includes our emotional, psychological, and social well-being and affects the way we think, feel, and act. It also helps to determine how we handle stress and workout the coping strategies. In the current scenario of pandemic- COVID-19, from March 25, 2020, in order to restrict mass gatherings and maintain social distancing, countries around the globe had closed schools and educational institutions nationwide resulting in more than 80% of students all over the world to switch to online mode of learning [8]. This transformation from traditional mode of learning to online mode has found to be associated with higher level of academic stress [9,10,11]. Fawaz and Samaha (2020) surveyed 520 undergraduate Lebanese University Student regarding their satisfaction with e‑learning and the prevalence of depression, anxiety, and stress symptomatology during the current pandemic and found that online learning platforms has given rise to depression and anxiety disorders among students [12]. In a survey carried out by the Boar Features on US College students 61% of participants said that their mental health had deteriorated over the past six months as a result of online classes during this pandemic [13]. From April 2020, Indian educational system had also switched to online mode of learning. In October 2020, Y Chandra did a study on 94 Indian college students under online mode of learning and found significant level of perceived academic stress among them [14]. Now nearly two semesters are over with this online mode of education and students seems to be quite adapted to this, the current study aim to study the impact of academic stress on mental well-being of students with the moderating effects of levels of education in online mode of learning during the current pandemic, COVID-19. The study looked at four specific objectives with four corresponding hypotheses. The first objective was to study the impact of academic stress on mental well-being of students in online learning mode during the current pandemic and the corresponding hypothesis was

H_1: There will be a significant negative impact of academic stress on mental well-being of students in online learning mode during the current pandemic.

The second objective was to study the impact of academic stress with regards to the level of education, and its corresponding hypothesis was

H_2: There will be significant difference in the level of academic stress of students at different levels of educations-first, second and third year of under-graduation in online learning mode during the current pandemic.

The third objective was to study the level of mental well-being with regards to the level of education, and its corresponding hypothesis was

H_3: There will be significant difference in the level of mental well-being of students at different levels of educations-first, second and third year of under-graduation in online learning mode during the current pandemic.

The fourth objective was to study the combined effect of academic stress and levels of education on mental well being of students during the current pandemic, and its corresponding hypothesis was

H_4: A combination of academic stress and levels of education will predict a significant variance in the mental well-being of the students during the current pandemic.

2. Methods

The current study used a quantitative and non-experimental research design which lay emphasis on perceived academic stress and levels of education as predictor variable and mental well being of the students in online classes during the current pandemic as criterion variable. The sample consists of students aged 19-25 yrs, who are enrolled in full time under graduate program taking online classes, in different colleges of Bengaluru, India. The study was undertaken non-random sampling techniques such as convenience and snowball sampling.

An informed consent sheet and the socio-demographic sheet-including the participant's age, gender, location, class and mode of education were prepared [refer Appendix A]. The current study used Perceptions of Academic Stress Scale (PASS) by Dalia Bedewy and Adel Gabriel (2015) [15] (refer Appendix B) and Warwick- Edinburg

Mental Well-being Scale (2008) [16] (refer Appendix C) to access the variables. The data were collected online through Google Forms, a questionnaire was constructed for the purpose which includes the informed consent, socio-demographic sheet followed by both the scales (refer Appendix-A, B & C). The collected data was scored and interpreted based on the norms specified. The data obtained was analyzed by using two-way ANOVA to study the impact of academic stress and levels of education on mental well-being of the students in online mode of learning during the current pandemic, COVID-19.

3. Results

The analysis of the socio-demographic variables indicates that the sample consisted of 150 undergraduate students (50 in each year of graduation), including males (47%) and females (53%) in the age group 19-25 years (M=19.91; SD=1.81), enrolled in various colleges of Bengaluru, India, taking online classes during the current pandemic.

Descriptive Analysis of the total sample (N=150) shows that the mean score of perceived academic stress among students irrespective of their education level is found to be M=56.93; SD= 8.82, which indicates that participants is experiencing above average level of academic stress and the mean score for mental well-being M=48.79; SD=10.62 which indicates that participants mental wellbeing is also average during online mode of education [Refer Table-1]. This shows that students are experiencing substantial level of academic stress during online classes but it is not affecting their mental wellbeing much. After the descriptive statistics were calculated, Pearson product–moment correlation coefficient was carried out between the academic stress and mental wellbeing variables of the students regardless of their education level, to establish the direction and magnitude of association between them. The correlation coefficient between academic stress and mental wellbeing for students was calculated to be r = -.083; p < 0.05 which clearly indicate a negative correlation between them (refer Table 2), which means that increase in the level of academic stress for students taking online classes will lead to decrease in their mental wellbeing. Results shown by the descriptive statistics and Pearson product–moment correlation coefficient seems to provide support for *hypothesis H1: There will be a significant negative impact of academic stress on mental well-being of students in online learning mode during the current pandemic* proving that academic stress is affecting mental wellbeing of the students negatively in online mode of learning during the current pandemic.

Table 1. showing descriptive Statistics for perceived academic stress and mental wellbeing variables

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Academic Stress	150	38	90	56.93	8.821	.453	.198	.705	.394
Mental Wellbeing	150	19	70	48.79	10.620	.011	.198	-.151	.394
Valid N (listwise)	150								

Table 2. showing the results of Pearson product–moment correlation coefficient between the perceived academic stress and mental wellbeing variables

		Academic Stress	Mental Wellbeing
Academic Stress	Pearson Correlation	1	-.083
	Sig. (2-tailed)		.314
	N	150	150
Mental Wellbeing	Pearson Correlation	-.083	1
	Sig. (2-tailed)	.314	
	N	150	150

In order to compare the academic stress among students of different educational levels -first, second and third year of under graduation, one way ANOVA was employed. Results show that for first year UG students (N=50; M=58.38; SD=7. 99); second year UG students (N=50; M=57.80; SD=8.40) and third year UG students (N=50; M=54.60; SD=9.65), df=2, F=2.72 is significant at 0.05 level (refer Table 3& 4). Therefore the hypothesis *H2: There will be significant difference in the level of academic stress of students at different levels of education-first, second and third year of under-graduation in online learning mode during the current pandemic* is accepted indicating that different education level had an impact on the amount of academic stress experienced by the students in online mode of education during the scenario of current pandemic. Further to know which educational level of UG students are experiencing high level of academic stress multiple comparison is done with one way ANOVA-Tukey and it was found that third year UG students are experiencing more academic stress as compared to first and second year [first year& third year & M_D= 3.7; second year & third year M_D= 3.2][refer Table 4].

In order to compare the mental wellbeing among students of different educational levels-first, second and third year of under graduation, again one way ANOVA was employed. Results shows that for first year UG students (N=50; M=46.88; SD=9.97); second year UG students (N=50; M=46.82; SD= 10.08) and third year UG students (N=50; M= 52.68; SD= 10.89), df=2, F= 5.314 is sig-

nificant at 0.05 level (refer Table 5 & 6). Therefore the hypothesis *H₃: There will be significant difference in the level of mental well-being of students at different levels of educations-first, second and third year of under-gradua-tion in online learning mode during the current pandemic* is accepted which indicates that different education levels had an impact on the mental wellbeing of the students in online mode of education during the current pandemic. Further to know which educational level of UG student's mental wellbeing has been affected the most, multiple comparison is done with one way ANOVA- Tukey and it was found that third year UG students are having low level of mental wellbeing as compared to first and second year [Third year & first year M_D= -5.800; Third year & second year M_D=-5.860][refer Table 6].

Table 3. Showing the results of ANOVA of perceived academic stress among students at different educational levels -first, second and third year of under graduation course during the current pandemic

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	414.413	2	207.207	2.725	.069
Within Groups	11179.780	147	76.053		
Total	11594.193	149			

F=2.72, p>0.005

Table 4. Showing the results of multiple comparisons of perceived academic stress among students at different educational levels -first, second and third year of under graduation course during the current pandemic

(I) UG Year	(J) UG Year	Mean Differ-ence (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.580	1.744	.941	-3.55	4.71
	3	3.780	1.744	.080	-.35	7.91
2	1	-.580	1.744	.941	-4.71	3.55
	3	3.200	1.744	.162	-.93	7.33
3	1	-3.780	1.744	.080	-7.91	.35
	2	-3.200	1.744	.162	-7.33	.93

Table 5. Showing the results of ANOVA of mental well-being of students at different educational levels -first, second and third year of under graduation course during the current pandemic

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1133.053	2	566.527	5.314	.006
Within Groups	15671.540	147	106.609		
Total	16804.593	149			

F= 5.314, p>0.005

Table 6. Showing the results of multiple comparisons of mental wellbeing of students at different educational lev-els -first, second and third year of under graduation course during the current pandemic

(I) UG Year	(J) UG Year	Mean Differ-ence (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.060	2.065	1.000	-4.83	4.95
	3	-5.800*	2.065	.016	-10.69	-.91
2	1	-.060	2.065	1.000	-4.95	4.83
	3	-5.860*	2.065	.014	-10.75	-.97
3	1	5.800*	2.065	.016	.91	10.69
	2	5.860*	2.065	.014	.97	10.75

*. The mean difference is significant at the 0.05 level.

Then multiple regression analysis was performed to establish the combined effect of perceived academic stress and educational levels on mental wellbeing of students in online mode of learning during current pandemic. Multiple regression analysis reflects that both the predictor variables, academic stress and educational levels together predicted 5.2% of the variations in the mental well being of the stu-dents (R^2=0.052; p<0.05). The predictor variable academic stress is found to be significant negatively related to the mental wellbeing (β= -.045, t=-.551, p=0.05), which means that for every increase of 1 on the academic stress, mental wellbeing of the students will decrease by 0.045 (refer Ta-ble 7). Therefore, *H₄: A combination of academic stress and levels of education will predict significant variance in the mental well-being of the students during the current pan-demic* is accepted indicating that a combination of academ-ic stress and educational levels has a negative impact on the mental wellbeing of the students in online mode of learning during current pandemic, but this impact is low (5.2%).

Table 7. Regression analyses of predictor variables-aca-demic stress and educational levels onto mental wellbeing

Model	Un-standardized Coeffi-cients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	46.279	6.372		7.263	.000
Academic stress	-.054	.098	-.045	-.551	.582
Educational levels	2.798	1.057	.216	2.646	0.009

R^2=.052, F=4.032 ; p<0.05; a. Predictors: (Constant), Academic Stress, UG Year; b. Dependent Variable: Mental Wellbeing

4. Discussion

Since the shifting of the mode of learning to online classes across the globe during the current pandemic COVID-19, several researchers have detected negative associations of academic stress with mental well being

of the students [9,10,11,12,13,14]. This study aims to investigate the effects of perceived academic stress on mental wellbeing of the students in online mode of learning with the moderating effects of educational levels during the current pandemic, COVID-19. In consistent with the previous researches, the empirical findings of the current study also found a significant negative correlation between perceived academic stress with mental wellbeing of the students (r = -.083; p < 0.05). This inverse relationship between perceived academic stress on mental wellbeing of the students can be explained as academic stress can be defined as the body's response to academic-related demands that exceeds adaptive capabilities of students [1] in the current scenario of pandemic as well, students are finding it difficult to adapt with the online mode of learning- increased screen timing, internet and technical glitches, physical inactivity, low sociability, unfamiliarity with technology etc.

The relationship between educational levels with academic stress and mental wellbeing is found to be significant as the educational level is increasing from first to second to third year, the perceived academic stress is found to be increasing in hierarchy (Third year & first year MD= -3.7; Third year & second year MD= -3.2) whereas mental well being was found to be decreasing in hierarchy (Third year & first year MD= -5.800; Third year & second year MD= --5.860). This can be explained as the educational level increases academic demands and societal pressure also increases leading to an increase in academic stress and consequently leading to poor mental wellbeing of the students.

The combined interactional effect of educational levels and academic stress on mental wellbeing of the students is found to be quite low (5.2%) thus, we can say that now after almost a year of online mode of learning students has developed *psychological adaptation*- defined as a functional, cognitive or behavioral traits that benefits an organism in its environment [17]. Indian students has started developing functional, cognitive and behavioral capabilities in response to the ongoing online classes during the current pandemic that is helping them to cope with the academic stress associated with it but as the educational level increases the academic demands also increases leading to the increase in perceived academic stress consequently leading to a decrease in mental well being of the students in hierarchy of the different educational levels.

5. Conclusions

5.1 Limitations and Directions for Future Research

The current study has few limitations; the sample consists of students, who are enrolled in different streams (arts, humanities, science, commerce) of under graduate program , educational streams may exert influence on the level of academic stress and the corresponding mental wellbeing of the students. This should be taken into consideration in future researches, which can be conducted with the same educational stream. All the participants were currently studying in various colleges of Bengaluru, India thus, future studies can be directed to see the impact of variables on students from other cities of India or around the globe as well. A reason that suggests that these problems are not widespread in the study because the findings depicted by the current study are found to be consistent with the previous researches.

5.2 Implications of the Study

The present study contributes to the understanding of the academic stress on mental wellbeing of the students in online mode of learning with the mediating effects of educational levels during the current pandemic, COVID-19. The empirical findings show that the academic stress in online mode of learning in the current pandemic is still above average and is having a significant negative impact onto mental wellbeing of the students. Educational levels are also found to be affecting the academic stress which increases in hierarchy consequently deteriorating the mental well being of the students. Students now, after almost a year in online mode of learning have developed several traits that are helping them to adapt with it effectively but still its negative impact is evident on their mental wellbeing.

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Appendix

Appendix A:

a) Socio Demographic Sheet:
Age:
Gender:
Location:
College
Educational Course Enrolled in:
Full time / Part-time
Mode of learning: Online / offline in college

Appendix B: Perceptions of Academic Stress (PASS) scale.

Please rate your perception about the following statements in contributing to academic stresses 1=Strongly disagree 2=disagree 3=Neutral 4=agree 5=Strongly agree

1. Am confident that I will be a successful student

2. Am confident that I will be a successful in my future career

3. I can make academic decisions easily

4. The time allocated to classes and academic work is enough

5. I have enough time to relax after work

Please rate your perception about the following statements contributing to Academic Stresses 1=Strongly agree 2=agree 3=Neutral 4=disagree 5=Strongly disagree

1. My teachers are critical of my academic performance

2. I fear failing courses this year

3. I think that my worry about examinations is weakness of character

4. Teachers have unrealistic expectations of me

5. The size of the curriculum (workload) is excessive

6. I believe that the amount of work assignment is too much

7. Am unable to catch up if getting behind the work

8. The unrealistic expectations of my parents stress me out

9. Competition with my peers for grades is quite intense

10. The examination questions are usually difficult

11. Examination time is short to complete the answers

12. Examination times are very stressful to me out

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

Perceptions of Academic Stress Scale (PASS) by Dalia Bedewy and Adel Gabriel (2015) is an 18-item scale to measure perceptions of academic stress and its sources. It has been validated and shown to possess good psychometric qualities in studies of participants from multiple countries. More specifically, reliability values such as internal consistency (α =0.7) were acceptable. Item scores are combined into a sum score with higher scores indicating higher levels of perceived academic stress.

Appendix C: Warwick- Edinburg Mental Well-being Scale (2008)

Below are some statements about feelings and thoughts. Please rate your feelings that best describes your experience of each over the last 2 weeks on the below mention scale.

Statements	None of the time	Rare-ly	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5

Statements	None of the time	Rare-ly	Some of the time	Often	All of the time
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Warwick- Edinburg Mental Well-being Scale (2008) is a 14-item scale to measure mental wellbeing focusing entirely on positive aspects of mental health. It has been validated on a student population and shown to possess good psychometric qualities, specifically, reliability values such as internal consistency (α =0.89) . Item scores are combined into a sum score with higher scores indicating higher levels of mental wellbeing and vice versa.

REVIEW

A Study on the Influence of Family Upbringing Style on Teenagers' Mental Health

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ARTICLE INFO	ABSTRACT
	With the frequent occurrence of adolescents' psychological problems, it is of great practical significance to study the mental health of adolescents. Because the family environment of different teenagers is different, the education method and educational environment of each family may have a huge impact on the mental health of teenagers. The article will study the impact of family parenting on the mental health of adolescents based on the comparative method and the literature research method.

1. Introduction

Teenagers are in adolescence. At this stage, their emotions and psychology are extremely unstable. Under the influence of many factors, many psychological problems have emerged. As one of the main influence objects on children's psychological formation, family's parenting style has a vital influence. To have a positive and good psychological state is the basic requirement of modern society for teenagers. Only with a healthy psychology can we study and live better.

2. Family Upbringing

2.1 Meaning of Parenting Style

The way of family parenting mainly refers to the comprehensive influence of family members' parenting attitude, behavior collection and family environment.

D. Baumrind, a famous American psychologist, divides family parenting methods into four categories according to different family parenting methods: authoritarian, authoritative, doting and neglecting [1]. As the psychological problems of adolescents in our country have become a hot topic in society, more and more scholars have conducted in-depth studies on family parenting methods and reclassified them according to their principles and characteristics. The article will study the mental health of adolescents based on Baumrind's classification of family parenting methods.

2.2 Influence of Parenting Style on Teenagers' Mental Health

Family upbringing has a very important impact on the physical and mental health of teenagers. Positive or negative parenting styles will make children grow up into teenagers with different characteristics.

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Authoritative parenting puts forward reasonable requirements for children. They give them full respect and love. Children who grow up in this way generally have a positive attitude and are not easy to have psychological problems. Authoritarian parenting has generally higher requirements for their children, usually "because I said, so you have to do it." Teenagers who grow up with autocratic upbringing are more anxious and withdrawn in the face of adversity. Doting parenting has no restriction and control over children. The teenagers who grow up with doting parenting style have no ability to resist pressure, and their mentality is easy to be out of balance, and they are prone to psychological problems. The neglect type of parenting has a direct impact on children's psychology, so that children grow up from an environment where they can't feel love [2].

3. Influence of Different Parenting Styles on Children

3.1 Autocratic Upbringing Has High Expectations and High Psychological Pressure on Teenagers

With the development of economy and the emergence of mobile communication tools, more and more parents want to show off their own capital with their children, so they have unreasonable demands on their children. Authoritarian parents generally believe that they have invested a lot of money and energy in their children, so the number of children's certificates and test scores are rewards for themselves. If the children's achievements do not meet the requirements of their parents, they will be severely treated by their parents, or even corporal punishment. [3] They think that all children must meet their own requirements, let them have to take the first place in school, but ignore the objectivity of competition and the differences of teenagers' intelligence. Results the weekend of the child is not used to adjust his or her state, but to learn in a different place, which leads to the child always living in a high pressure state, which leads to psychological problems.

3.2 Doting Upbringing Weakens Teenagers' Ability to Suffer Setbacks

The doting type of parenting method is "stretching hands with clothes, opening mouths with food." Nowadays, due to the high cost of raising children, although my country has opened the second-child policy, due to the impact of the one-child policy, some families treat their children as if they are. Treasure, responsive. In addition, most of the time, parents of children lack the company for their

children to grow up. They hope to meet material needs to make up for the lack of love for their children. Even if the child makes a mistake, someone will defend him on the grounds that he is still young. Long-term spoiling makes children lack the ability to withstand frustrations, especially in adolescence. Adolescents are in the early age of love. Once the relationship between the opposite sex breaks, it is extremely prone to psychological abnormalities such as revenge or self-harm.

3.3 Neglect Education Makes Teenagers Lack Love

"Love" is an important emotional factor for the healthy growth of teenagers. In this process, many parents ignore the emotional response to their children and only pursue the basic material needs of their children. Children who grow up in this way are prone to psychological problems. [4] As a response to the way of family education, children will show indifference, ignore the feelings of others, and children can't control their own emotions well, so they are easily moody. The serious consequence of neglecting education is that children can't feel the existence of "love" in the whole process of growing up. They are indifferent to life and life. Psychological distortions will have a strong offensive and antisocial tendency, which will have a serious impact on society and other families.

3.4 Authoritative Upbringing Makes Teenagers Grow up Healthily

Children in authoritative education have the good character of independence and positive development. In their youth, they will talk to their parents or friends when they encounter problems, so as to meet their inner language and emotional needs. They have their own independent opinions and opinions on different issues.[5] Because family upbringing encourages independence, they can balance their life and study, and ensure that their body and mind are not negatively affected by external pressure. When dealing with others, they will also adopt the principle of respect and understanding. Authoritarian parenting is different from authoritarian parenting. Authoritarian parenting is to set a good and firm goal for children, and take the excellent face of parents as an example for children. In this way, children can be guided positively by their own requirements.

4. Research State in China

In Xu Li's "Study on the Impact of Family Parenting on Adolescents' Mental Health", the study took junior high school students as the research object and used the

"Mental Health Diagnostic Test" (MHT) survey method to investigate nearly 400 adolescents. Through the analysis of the survey data, it is found that most of the problems in family education are doting, blind obedience, inconsistency and other negative factor indexes, which have an extremely important impact on the mental health of adolescents.

Table 1. Detection rate of each factor of poor parenting style of parents (%)[3]

factor	father (388)		mother (388)		total	
	Number of people	percentage	Number of people	percentage	Number of people	percentage
Negative rejection 1	92	23.71	100	25.77	192	49.48
Positive rejection 2	84	21.65	100	25.77	184	47.42
strict 3	84	21.65	78	20.1	162	41.75
expect 4	118	30.41	138	35.57	256	65.98
interference 5	86	22.16	120	30.93	206	53.09
disturbed 6	122	31.44	156	40.2	278	71.64
spoil 7	146	37.63	136	35.05	282	72.68
Follow blindly 8	136	35.05	142	36.6	288	71.65
contradiction 9	84	21.65	90	23.2	184	44.85
atypism 10	136	35.05	130	33.5	276	68.55

It can be seen from the distribution table of the level of adolescents' mental health and the level of each factor of MHT that the level of difference is used to measure adolescents' psychological problems. Most adolescents have extremely obvious psychological anxiety in their studies, followed by a certain degree of anxiety about others, accounting for about 5.70%, followed by self-blame tendencies and physical symptoms with certain mental health problems.

Table 2. Adolescents' mental health level and MHT factor level distribution (%)[3]

	excellent (%)	good (%)	difference (%)
Study worries	35.53	64.03	6.58
Worry about people	29.39	58.77	5.7
Loneliness	66.67	32.46	0.88
Self-blame	37.22	57.89	4.39
Allergic tendency	29.82	69.3	0.88
Physical symptoms	41.67	59.51	4.82
Terror tendency	52.63	45.61	1.75
Impulsive tendency	32.89	64.47	2.63

Xu Li pointed out that in the modern family education and school education environment, with the continuous improvement of living standards, parents generally have an urgent need for their children, ignoring the differences in intelligence and abilities of teenagers themselves. In addition, according to relevant foreign studies, most young people with psychological problems are caused by improper family parenting. Such families usually treat young people with violence or coldness, which ultimately leads to an unhealthy mental state for young people.

5. On the Cultivation of Teenagers' Mental Health

The growth of young people can't be separated from the family, so if there is a problem in the way of family upbringing, it needs to be made up in the later stage to ensure that young people maintain mental health in the process of growth.

5.1 Full Respect

For teenagers, no matter what kind of education mode they grow up from, they all have their own inner instinctive respect needs. Family members must respect their children's decisions. Respect does not mean complete satisfaction, but logical judgment through three links: listening, judgment and decision. If it's a correct and reasonable decision, let the child say the reasons for making the decision, what aspects to complete the decision, and how the family can help. For unreasonable demands and behaviors, we should negotiate with children in the way of communication. It is not suitable to respond to their decisions in the form of direct veto, questioning, beating and scolding, and indifference. Adolescence is the key point for children from immature to mature. They have extremely sensitive emotional characteristics and are easy to form extreme thoughts. To give them full respect is to help them develop rational and calm thinking.

5.2 Effective Communication

For young people, they have a need for communication. Equal, calm and effective communication with family members is extremely important for their growth. At the adolescent stage, they gradually began to pay more attention to the material and the opinions of others. For example, it is possible that in order to have a better-looking pair of shoes, but the parents do not understand their own ideas, the child becomes irritable and irritable [6]. At this time, parents need to calmly wait for their children to gradually stabilize their emotions, and have an equal dialogue with their children. They should ask as friends instead of questioning, and explain the problems that arise, and then propose specific measures. In the communication process, pay attention to the tone and wording to ensure the effectiveness of communication. [7]

5.3 Establishing Principles

Under neglect-oriented education, the most easily overlooked by young people are principles. Due to the rapid development of Internet equipment, young people have a strong ability to receive information, and the indulgence of parents exposes children to too much negative information during their growth. Such as the extreme practice of threatening teachers and family members by suicide, and satisfying one's needs for mobile phones and other devices in the form of theft, the above-mentioned things must be completely stopped. Cherishing life and reverence for the law are important principles for the mental health of

young people. The frequent occurrence of criminal cases among young people in recent years is the lack of principles of family education.

6. Conclusions

Teenagers' mental health is the requirement of the society for the family. Only a teenager with mental health can grow up to be a pillar of the society. In the age of materialistic desires and Internet information, we should pay more attention to the psychological problems of teenagers, and timely guide and sort out the problems to ensure that teenagers have a positive and healthy psychological state.

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ARTICLE

Effectiveness of Behavioral Intervention among Congenital Heart Defect Children

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ARTICLE INFO	ABSTRACT
	Development in medical intervention has significantly decreased the mortality rates for children with complex congenital heart disease (CHD) but among these survivors with complex heart disease there occurs a unique pattern of neuro-developmental and neuropsychology impairment characterized social interaction impairment, impulsive Behavior, and impaired executive functions. Presence of behavioral problem is found significantly high in pediatric population with chronic illness than children with absence of chronic illness. The sample of 200 children with congenital heart defect was selected between age 4-8 years using multistage stratified sampling. The childhood psychopathology measurement schedule (CPMS) by Dr. Savitha Malhotra was used for assessing Behavioral problems present in children with CHD. "Pre- Post experimental design was used to investigate the study and the results were statistically analyzed using paired T test. The result revealed that the effectiveness of intervention program to retrain Behavior showed high significance. With increased survival rates, the aim of the intervention and research based on clinical practices gets a shift from short term medical assessment to long term assessment and intervention of morbidity.

1. Introduction

1.1 Congenital Heart Defect (CHD)

The Congenital Heart Disease is a birth defect which affects the heart structure and corresponding blood vessels. These are primarily seen in children. Congenital heart defects make up the largest portion of heart disease among children. It affects new-borns and account for a high proportion of infant mortality worldwide, witnessing an advanced progression of treatment and management. [1] Improvement in technology has made diagnosis evident that the birth defect can be screened even before the birth of the child. With available medical facilities over 75% of infants born with CHD can survive beyond the first year of life and many can lead nearly normal lives thereafter. However, this privilege of early identification and timely treatment is restricted only to children of developed countries. Recent development in Medico surgical progression had led to decrease in mortality rate but lack of identification. Early screening and intervention increase the risk of neurodevelopmental and neuropsychological problems in children affecting their wellbeing and quality of life [2]. India has 440 million children. About twenty seven million children are born annually in India, however nearly two million of them don't live to the age of five. It is estimated

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that one lakh twenty five thousand children are born each year with congenital heart condition [3].

1.2 Prevalence

The birth prevalence of congenital heart disease is estimated as 9/1000 more than 2,00,000 children are born with CHD in India. Currently advanced cardiac care is available to only a minority of such children. A number of cardiac centres have been developed over the last 10 years. However, most are in the private sector, and are not geographically well-distributed. Challenges to paediatric cardiac care include financial constraints, health-seeking behavior of community, and lack of awareness. Government of India is taking a number of steps for improving health of children through its various programs and schemes that are likely to benefit children with congenital heart disease, especially those who are vulnerable and marginalized [3-4].

1.3 Causes

The causes of congenital heart defect are usually multifactorial which means that "many factors" (multifactorial) are involved in causing the birth defect. The factors are usually both genetic and environmental.

Conditions such as Downsyndrome exhibit a higher incidence of infant heart malformations Chromosomal problems that result in genetic syndromes. 30% 0f Children with abnormalities in chromosomes reported having cardiac defect [4-6]. Congenital heart defect is frequently associated with non-cardiac defects in malformation syndromes and is classified according to the causes, such as chromosome abnormalities and single gene or gene pair abnormalities.

1.4 Neurological Deficit in CHD

Heart and brain develop simultaneously at same period. Hence defect in one organ may cause defect on another. It is perhaps not surprising that disruption of organogenesis in one organ will impact the development of the other. A defect in the heart indicates to insufficient blood supply to the brain. Newborns with congenital heart condition show a high frequency of non- inheritable focal brain injury. [7] These brain damages often lead to problems in domains of neurodevelopmental and neuropsychological dysfunction affecting cognition, Behavior, thinking, and learning.

1.5 Epochs of Brain Development and Neuropathology in Congenital Heart Defect

The development of the brain is highly lively process. It involves timing and orchestration of higher cellular events. Development of brain is a long process which begins at third week of gestation and development continues to life long. After birth, during the first five years there is 100% increase in brain volume. Individual with congenital heart defect are at risk of altered brain development and pathological insults which may result in poor neurological outcomes. It varies from motor delay and later on progression affects the language, social and finally the executive functioning [8]. Some children have unaffected or undisturbed milestone till they reach the school age. As soon as they reach the school age, the child starts to exhibit deficits in neurodevelopment and neuropsychological domains. Many children also struggle with emotional and behavioral disturbances which vary from mild to severe. Most of the aspects of neurodevelopment and neuropsychology delays start to reveal its impact only during the school-age. The spectrum of neurodevelopmental and neuropsychological impairment is wide and leads to spectrum of multivariate developmental delay.

1.6 Behavioral Problems of Children with Congenital Heart Defect

Presence of behavioral problems among children with CHD is more when compared with children without chronic illness. Behavioral problems in children can be classified into externalizing behaviors and internalizing behaviors. Externalizing Behaviors are marked by defiance, impulsivity, hyperactivity, disruptiveness, aggression and antisocial features. Internalizing Behaviors are evidenced by withdrawal, dysphoria and anxiety. [9]

CHD children show worsen behavioural and emotional problems irrespective of type, duration and severity of the condition. Irrespective of the severity of the heart disease, the congenital heart disease patients exhibited more Behavioral problems. [10-14]

A large number of children with surgically operated congenital heart diseases are probably to survive longer. This population is at higher risk to develop emotional and Behavioral issues. Several medical factors could place congenital heart defect children at redoubled risk of developing later adjustment issues. These children show a raised feeling of inferiority and of basic anxiety and a lot of impetuous Behavior. They have low self-esteem and depression and are at specific risk for poor school adjustment. Withdrawn aggressive Behavior, physical complaints, depression and anxiety seen.

2. Methodology

2.1 Material and Methods

The study was conducted to assess the behavioral and

emotional problem among congenital heart defect children and determine the effectiveness behavior training among congenital heart disease affected children.

2.2 Objectives of the Study

For the current examination, the accompanying objectives were defined:

1. To assess the behavioral and emotional problem among children with congenital heart defect;

2. To determine the effectiveness of behavioral training among congenital heart defect children;

2.3 Hypothesis of the Study

Based on the previous studies, the following hypothesis was formulated and was tested:

H1. There will be an improvement in factors of Behavior and emotion after neuropsychological retraining process among congenital heart disease affected children.

2.4 Participants

The sample consists of a total of 200children between the age group of 4-8 years selected using multistage stratified sampling technique.

2.5 Tools for Data Collection

a. Demographic form

The demographic form was put in place to elaborate on the information pertinent to the study. The demographic forms consist of general information and socio-demographic factors such as type of family, educational qualification of mother, occupation of the mother.

b. Childhood Psychopathology Measurement Schedule (CPMS)

It is an Indian adaptation of Child Behavior Checklist (CBCL; Achenbach & Rescorla2001), for using it on Indian population. The only scale that has been systematically standardized studied in India.

2.6. Structure of the Research

The present investigation adopted an experimental design, described as "Pre- Post experimental design with control group". In this design, the procedure assured that all subjects have the same chance of being in the experimental or control group. Because of strict random assignment of subjects, it is assumed that the two groups are equivalent on all important dimensions and that there are no systematic differences between the two groups. The pre-test is administered to all subjects in both groups-experimental and control and ensure that both groups

experience the same conditions except that in addition the experimental group experiences the intervention.

The experimental group undergoes the treatment program or designed intervention of interest. Researchers then find the variations between the two groups on a selected outcome. The post-test is administered to all subjects in both groups. Likewise this experimental study is carried out to assess the effectiveness of neuropsychological retraining of cognition and intelligence, emotion and Behavior and temperament among female children.

2.7 Procedure

200 samples consist of both who have undergone either surgical or conservative treatment. The sample of N=200 consisted of 4 years (N=52), 5 years (N=51), 6 years (N=44), 7 years (N=39), 8 years(N=14). The Parents were clearly explained about the complete procedure and a signed parent consent form was collected.200 samples underwent basic line demographic assessment followed by inventory of standardized psychological scale named the childhood psychopathology measurement schedule (CPMS) was used to assess Behavior and emotion. The samples were divided randomly into experimental group-100 samples, of age group 4 years (N=25), 5 years (N=27), 6 years (N=21), 7 years (N=20), 8 years (N=7). and control group of 100 samples .Assessment was conducted on all 200 samples. This assessment was considered as Pretest assessment. 100 samples of experimental group and were given neuropsychological Behavioral retraining for 30 days 2-3 hours/day. Parents along with the children have participated in the training. Post training, posttest assessment of three scales was conducted. The values were tabulated for analysis and interpretation.

2.8 Formulation of Cognition, Behavior and Emotion Training Program

Cognition, Behavior and emotion Training program employs approaches not only to deal with up with present illness but for a complete well- being. The skills are achieved by gaining a positive attitude towards one well-being, academic performance and whole life. All possible subdomains of cognition, emotion and behavior are trained during the interventional program under proper guidance and support. This proactive program utilizes activities and games which are Child – Friendly. The environment is designed and structured in the way it reinforces active participation of the child [14]. This collaboration of activities along with tailored structured environment motivates the child to involve maximum and produce positive results. This program is designed based

on the principles drawn from field of Neuro-psychology and behavioral psychology employing framework such as cognitive rehabilitation methods namely – Cognitive stimulation therapy, Cognitive behavioral therapy, neuroplasticity behavioral approaches, play therapy. Home follow up and practicum of skill training in between sessions are emphasized to children. This diverse methodology is exclusively tailored for children with CHD. The Program is designed based on age appropriateness and the level is increased from simple to complex activities based on previous task accomplishments. Home follow up assignments were given, doubts regarding the session were thoroughly cleared to the parents before and after daily schedule for maximum participation from each and every participant throughout the session.

3. Statistical Analysis

The data collected was analyzed and quantitative analysis was done through statistical techniques which included: (1) Mean and SD (2) t-test Here, we use the statistical package of social sciences (SPSS21stversion).

4. Results

Table 1. summarizes the demographic characteristics of the samples from information provided by the parents (N = 200)

| S.No	Variables	Group	N	%
1.	Age(Years)	4Years	52	26.0%
		5Years	51	25.5%
		6Years	44	22.0%
		7Years	39	19.5%
		8Years	14	7.0%
2.	Type of family	Nuclear Family	171	85.5%
		Large Family	29	14.5%
3.	Educational Qualification of Mother	Illiterate	8	4.0%
		Primary	17	8.5%
		Higher Secondary	76	38.0%
		Graduate and above	99	49.5%
4.	Occupation of Mother	Unemployed	37	18.5%
		Semi/Part time- employed	50	25.0%
		Full Time –employed	113	56.5%

The socio-demographic characteristics of the sample (Table 1) shows that, in a total sample of 200 female children with congenital heart defect 26.0% of the children were in the age group 4years, followed by 5 years (25.5%), 6 years (22.0%), 7 years (19.5%) and 8 years (7.0%). Majority (85.5%) of the children hailed from the nuclear families and the rest of them (14.5%) were large family background. On basis of educational qualification of the mother 4.0% were Illiterate, 8.5% were primary level in education, 38.0% belong to higher secondary level of education and 49.5% were graduate and above. Regarding to

the occupation of the mother 18.5% were unemployed or house wives 25.0% were part time employees and 56.5% were full time employed.

Table 2. The overall analysis of Behavior and emotion before and after retraining process

Childhood Psychopathology scale Pre –Test				Childhood Psychopathology scale Post – Test				't' value	p-value
Mean	N	SD	SE	Mean	N	SD	SE		
23.15	200	5.54	0.39	35.73	200	13.57	0.95	±13.05	0.00*

*-Significant
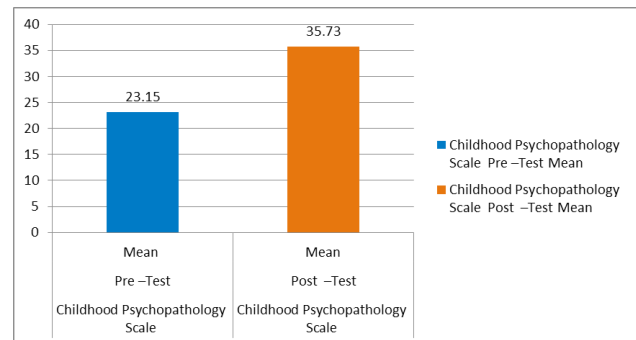
Figure 1. Overall analysis of Pre and Post mean scores of Child hood psychopathology scale

The childhood psychopathology scale score pre-test and post-test intervention for 200 samples was analyzed using paired t- test. The scores showed a significant difference between pre-test (M= 23.15 S.D=0.391) and post-test (M=35.73 S.D=13.57) . The post-test compared to the pre-test, with the t score= ±13.05, being significant at the 0.00 level. This result suggests that when an intervention program is introduced to train and modify behavior the group scores on Childhood Psychopathology Schedule increased revealing improvement in Behavior and emotion. Thus the hypothesis 1 stating that "There will be an improvement in Behavior and emotion after retraining process among congenital heart disease affected children" is accepted.

5. Discussion

The objective of the research study was to evaluate the effectiveness of Behavioral interventions among children with CHD. Hypothesis 1 states (H1) that there will be an improvement in factors of Behavior and emotion after neuropsychological retraining process among congenital heart disease affected children, According to Table 2, a significant difference was found in the improvement of Behavior and emotion after retraining process among congenital heart disease affected children. The neuropsychological retraining was effective when Behavior and emotional factors were trained. Early introduction of behavioral and emotional intervention show success rates

with positive correlation than late interventional programs i.e. 9-12 years. These findings are in accordance with the study of BenItzchak and Zachor, (2007) stating training behavior through Behavior programs have shown highly significant outcome in pediatric population with neuropsychological and developmental deficits. [15].

The neuropsychological retraining was effective when psychological domains were trained. The reason could be because of introduction of behavioral intervention at an early age may produce positive results compare to the introduction of intervention in late childhood i.e. 9-12 years. This needs to be examined through further research. These findings are in accordance with the study of BenItzchak and Zachor, (2007) reporting that rigorous behavior intervention has shaped positive outcome in young children with neurodevelopmental defects in their individual skills. The effectiveness of psychological interventions was examined in various aspects for in depth understanding. After pre assessment the children were exposed to package of intervention followed by post assessment. It showed remarked evidence that the package of psycho-educational interventions scheduled and implemented in the present study were found to be effective. Early the intervention, effectiveness is evident and plays a major role in determining the child quality of life and well-being. Developmental Evaluation is important which is followed by neuropsychological assessment. The need of these ages based evaluation is mandatory and selection of age specific assessment is recommended. These assessments provide clear information about psychological functioning which enables the documentation of deficits in the CHD population. Children who are at high risk for Developmental Disorder exclusively with defects in heart defects may be considered to optimize neurodevelopmental and neuropsychological outcome.

6. Conclusions

Nonexistence of standardized practical guidelines for assessment and treatment of these impairments in spite of well documented presence of developmental delay in CHD and lack of professional efforts on creating these guidelines leads to late identification and interventions. Structured protocols shall provide the clinicians about the existence of these disabilities in CHD population hence the treatment procedure will be multidisciplinary which appreciates early screening and interventional process in all dimensions decreasing risk of late screening and related quality of life and wellbeing. This paves a futuristic pathway in treatment of congenital heart disease where the Physician and Psychologist work together to deliver the treatment as a whole.

7. Limitation

a) The study could not include the focus on large number of children with congenital heart defect due to limitation of time.

b) The Study did not consider children who are psychologically handicapped.

c) The study was based on the intervention program including the parent and child hence the sample was limited to a small number.

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ARTICLE

Day Time Sleepiness and Quality of Life Predicts Perceived Stress among Youth

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ABSTRACT

The study examined the predictor of perceived stress among youth. The variables used in the current study were day time sleepiness, quality of life and perceived stress. The sample consists of 150 youth (81Male & 69 Female) with in the age range of 18-24 years. The Epworth Sleepiness Scale (ESS), World Health Organization Quality of Life (WHO-BRIEF), and Perceived Stress Scale (PSS) were used. The data were interpreted after obtaining the descriptive statistics i.e. Mean and SD, Pearson's Product Moment correlation and step wise multiple regression analysis. The findings indicated that day time sleepiness and quality of life have a significant positive relation with perceived stress among youth. The step wise regression analysis found day time sleepiness and psychological health related quality of life are the predictors of perceived stress. Both the variable accounts for 39% of total variance in perceived stress among youth.

1. Introduction

Quality of life (QoL) can be understood in terms of individual's view about their position in life in connection with culture and value system. It is also concerns with the goals, perspectives, and standards [26]. In recent time, the study of QoL became very important to find out the effect of any illnesses/diseases and several interventions. However, very less importance has been observed in connection with QoL of university students at their educational phase, which is very high stressful time for students. Youth is a special population group in terms of fast changing period of life so their concerns and stressors differ from the other group of population. They may have various stressors, like academic pressure, financial issues, peer pressure problems and relationship issue. Because of many issues their quality of life may affect which lead to perceived stress among them.

Day time sleepiness is very normal for all but when it happens in an extreme way then it becomes problematic for the people. Excessive daytime sleepiness refers to the persistent sleepiness and has often a lack of energy, even during the day time after had adequate or prolonged night time sleep. Some of the research which focused on the sleep regulation and sleep related problems [1,2,3,4]. Individual perception of their position in life is known as quality

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29

of life it can be improved by adopting specific social skills like social expressivity, social control, by acquiring specific social skills youth can enhance their quality of life in an improved way [5].

Earlier researches focused on general population not on the youth particularly so the current review is based on general finding. In a study that shows the relationship between stress and quality of life in a significant way, one of study indicated predictive roles of self-worth and family support in quality of life [6]. Study showed health-related quality of life is affected by the presence of chronic pain and mental disorders among university students [7]. In another study, investigation was conducted perceived stress in relation to sleep duration and found perceived stress was negatively related to sleep duration and positively related to poor sleep quality [8]. One of the study explored the perceived stress and health-related quality of life (HRQOL) among pharmacy students compared to non-pharmacy students. The study found that negative correlation between stress and mental HRQOL in Non-M-Pharm students [9]. In a study, it has examined the depression, anxiety, stress and quality of life among drug abusers in the normal population group. The results showed quality of life of normal people was higher than those who were addicted to opiates. Further, study also revealed anxiety; depression and stress were found negatively associated with quality of life [10]. In another research, it has been found that sleep quality index and quality of life significantly positively related with each other [11]. One of study examined perceived stress and quality of life among students and finding showed stress negatively affect quality of life among students [12]. In a systematic review it has been highlighted the negative association between stress and quality of life among university students [13]. Another study, which assessed the prevalence of stress and anxiety among college going students and finding reveal a high degree of depression, anxiety and stress among students [14]. Researcher investigated the prevalence and its correlation between stress and poor sleep quality among students who study medical. The study showed a significant relationship between poor sleep quality and stress [15]. Another researcher conducted study on quality of life and social anxiety among students [16]. Similarly another researcher found perceived stress found significantly related to sleep quality [17,18]. In a recent study found that stress and quality of life negatively associated with each other among university students [19]. On a similar line, stress and sleep are necessary elements of life and these two important factors significantly affect the academic performance of medical students [20]. Very recently, study examined the quality of life of

hypertensive patients. It is influenced by several factors, like age, gender, educational background, ethnicity and nutritional status [21]. Another factor that is also very important is the quality of sleep. Recent studies have been conducted on the day time sleepiness in relation to fear of COVID-19 and emotional adjustment among adolescent [22], perceived stress negatively affect the optimism and well-being. The outcome of perceived stress may affect the person bouncing back from adversity [23].

1.1 Rationale of the Study

On the basis of literature we can find that earlier studies mainly focused on stress, optimism, wellbeing, social skills and emotional adjustment [5,22,23] but very few studies has been conducted on the variable of day time sleepiness with quality of life so there is need to study the day time sleepiness and quality of life which predicts the perceived stress among youth.

1.2 Objectives

• To examine the relationship between day time sleepiness and perceived stress among youth.
• To investigate the relationship between perceived stress and quality of life among youth.
• To investigate the correlations between day time sleepiness and quality of life among youth.
• To find out the predictors of perceived stress among youth.

1.3 Hypotheses

• There will be a positive correlation between day time sleepiness and perceived stress among youth.
• There will be a positive relation between perceived stress and quality of life among youth.
• There will be a positive relation between day time sleepiness and quality of life among youth.
• Day time sleepiness and quality of life will be the predictor of perceived stress among youth.

2. Method

2.1 Sample

The study was conducted through online mode; the Google form was created and circulated on different WhatsApp groups and individual concern. The sample consists of 150 youth (81 Males and 69 Females). Their age ranged between 18-24 years. Data description table is as mentioned below:

S.No.	Male	Female	Total Sample	Occupation	Age range
1	81	69	150	Students	18 to 24 years

2.2 Tools for the Study

The following psychometrics tools were used for the data collection.

2.2.1 The Epworth Sleepiness Scale (ESS) [24]

ESS consists of eight items which measured the daytime sleepiness with the help of eight short questions. This scale is very helpful in assessing and diagnosing the sleep related problems. It was developed by Dr Murray Johns of Epworth hospital in Melbourne, Australia. The Respondents related each item on a 4-point like types scale. Answer include "no chance of dozing", slight chance of dozing", "moderate chance of dozing", high chance of dozing". The minimum score possible for each question is 0 and the maximum is 3. Higher score indicates severe day time sleepiness and lower score indicates lower day time sleepiness. ESS has appropriate reliability (Cronbach's alpha, 0.75) and validity (Convergent & Discriminant) reported by Baumgartel, Terhorst, Conley & Roberts in 2013 [25].

2.2.2 World Health Organization Quality of Life-BREF (WHOQOL-BREF) [26]:

It is 26 items scale in which two items are related to the overall QOL and general health of the person. One question is related to a broad comprehensive assessment of QOL which is included in WHO QOL-100 scale. The is a five point rating scale. The scale reveals quality of life in terms of four significant factors like, Physical Health, Psychological Health, Social Relationship, and Environment. Cronbach's alpha values showed for each of the 4 factors which range from .66 (for domain 3) to .84 (for domain 1). Factors scores were scaled in positive direction (i.e., high scores indicate high quality of life). The scoring was opposite for negative items.

2.2.3 Perceived Stress Scale (PSS) [27]

It is ten item scale which were designed to assess the degree in which persons perceive their life as stressful. Participant answers each question on a five point Likert type scale which is range from zero (Never) to four (Very Often). High scores reveal high perceptions of stress and low scores indicate low stress. The PSS having the appropriate coefficient alphas of .84 and .85 for two college samples [27]. The PSS has been positively related with life-event scores, depressive and physical symptomatology, social anxiety, and maladaptive health related behaviours (e.g., increased smoking; [28]). These significant evidence and studies reveal its construct and concurrent validity.

2.3 Procedure

After informed consent the proper instruction was given to participants, and then the above mentioned psychometric tools were administered through online Google form and obtained data were analysed with the help of SPSS-16 Version. The scoring of filled questionnaires has been completed with help of manual and instruction were followed which was given in the test.

3. Results

The present study was conducted to examine the day time sleepiness, quality of life and perceived stress among youth. The obtained data were analysis by applying descriptive statistics i.e. mean and SD, and Pearson's product Moment method of correlation. Descriptive results revealed normal day Time sleepiness (*Mean*=7.30, *SD*= 5.04) from a maximum of 24 which indicate that participant tend to be less sleepy during the day therefore it is normal level of sleepiness, quality of life (*Mean range from 9.32 to 23.0, & SD range from 4.59 to 10.52*) from a maximum of 120, and low on perceived stress (*Mean*=14.72, *SD*=8.0) from a maximum of 40 (refer Table 1).

Table 1 shows the correlation between day time sleepiness and perceived stress among youth. Relationship between day time sleepiness and perceived stress was

Table 1. Inter-correlation Matrix

	Perceived Stress	Day Time Sleepiness	Physical Health QOL	Psychological Health QOL	Social Relationship QOL	Environment QOL
Perceived Stress	----------	.56**	.40**	.52**	.42**	.55**
Day Time Sleepiness		-------------	.47**	.49**	.47**	.60**
Physical Health QOL			----------	.70**	.74**	.80**
Psychological Health QOL				-------------	.75**	.83**
Social Relationship QOL					-----------	.85**
Environment QOL						--------------
Mean	14.72	7.30	22.42	17.15	9.32	23.01
S.D	8.0	5.04	10.52	7.97	4.59	10.45

* Correlation is significant at the 0.05 level; ** Correlation is significant at the 0.01 level

found positive with a correlation coefficient of .56 which is significant .01 levels. Perceived stress was found to be positively correlated with quality of life with a correlation coefficient range from .40 to .55 which is significant at .01 levels. The relationship between day time sleepiness and quality of life was found to be positive with a significant correlation coefficient range from *.47 to .60 (p<.01).*

Table 2 shows the results of stepwise regression analysis for the dependent measure perceived stress in the sample of youth. The predictor measure of day time sleepiness accounts for 31% of variance ($R^2 = .31$) in perceived stress. R for day time sleepiness variable equals to .56. The F value for this variable is 67.72 which is significant at .001 level of significance. It enters the equation at step one. Results reveal that day time sleepiness predicts perceived stress among youth.

Table 2. Summary of Stepwise Multiple Regression (Dependent Variable: Perceived Stress)

Step	Variable	R	R^2	R^2 Change	Beta	Std. Error	F	P
1	Day Time Sleepiness	.56	.31	.31	.56	6.65	67.72	.001
2	Psychological Health related Quality of Life	.62	.39	.08	.32	6.28	18.76	.001

The next potent predictor is psychological health which enters the equation at step two, accounts for 39% of the total variance ($R^2 = .39$) in perceived stress. R for this variable increases to .62 F value being 18.76 which is significant at .001 level of significance. It indicates that psychological health related quality of life appropriately predicts perceive stress among youth.

4. Discussion

The main purpose of the current study was to explore the predictive factor of perceived stress among youth. As far as the relationships are concerned, the day time sleepiness and perceived stress positively correlated with each other. People with a high level day time sleep have high level of perceived stress. Thus hypothesis 1 stating the positive relation between day time sleepiness and perceived stress is accepted and proved here. Earlier study revealed that adolescents were observed day time sleepiness with several factors such as economic status, academic achievement, being satisfied with body image, sleeping and waking time, smoking, and reading books [29]. Other reported, adolescents have sleep problems because of the development age. This is the most commonly sleep problem that is the daytime sleepiness, which is caused by inadequate and poor quality sleep [30].

Finding also indicated that perceived stress positively correlated with quality of life among youth. People with a high level of perceived stress report high level of problem related to the quality of life. Thus hypothesis 2 regarding the positive relation between perceived stress and quality of life is accepted and proved here. Previous study reported stress and quality of life negatively associated with each other among university students [19]. Further, stress and sleep are necessary elements of life and these two important factors significantly affect the academic performance of students [20]. Similarly, finding also indicated a positive relation between day time sleepiness and quality of life among youth which means the person with high day time sleepiness having a high level of quality of life. Thus Hypothesis 3 stating the positive relation has been proved and accepted.

Result also found that day time sleepiness and psychological health related to quality of life together accounts for 39% of variance in perceived stress among youth. So, the present study conclude that day time sleepiness and psychological health related quality of life are the potent predictors of perceived stress therefore it is playing a great role in youth's life. Youth are in the phase of very fast changing and time of uncertainty so consequently it's the age for their life development. Thus, the hypothesis 4 that stated the predictor of Perceived Stress accepted here. Current findings are in consistent with the earlier finding that showed perceived stress and health-related quality of life (HRQOL) negatively correlated with one another [9].

5. Conclusions

On the basis of finding of the current study it is concluded that the quality of life and day time sleepiness have significantly related with each other. Further quality of life and perceived stress is also related factor. Thus we can say that the QOL, sleep problem and perceived stress among students are needed to be study further. So that, we can find out the more dependable result among Indian students. The article is also highlighted the need to understand the sleep related problem in connection with quality of life.

5.1 Implications

Findings reveal that day time sleepiness is related factors for quality of life. Therefore the study has an important implication with regard to better quality of life for youth. Study also provides the knowledge of correlated factors of perceived stress which can be the helpful for improving the quality of life for youth's population.

5.2 Suggestions for Future Studies

Current study is also suggesting some future research in the areas of quality of life and day time sleepiness in connection with the youth, adolescents and adults so that more related factors can be explored.

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ARTICLE

Perceptions of Injured Athletes after Eight Weeks of Mindfulness Based Stress Reduction Program

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ARTICLE INFO	ABSTRACT
	Mindfulness Based Stress Reduction (MBSR) has been extensively applied as a clinical intervention by researchers' who have made on-the-spot decisions research as part of their practice. This research was provided via a knowledge transfer of 8 weeks of MBSR based on the original MBSR version. The main objective of this study was to offer a qualitative explorative insight into the perceived experience of participating in a MBSR program for injured athletes. A semi structured interview was conducted with each injured athlete who participated in this study. A thematic analysis was applied to explore the themes which emerged from injured athletes' experience after 8 weeks of participation in a MBSR program. Five themes emerged from injured athletes' attitudes towards MBSR: 1) Reconnecting with the body, 2) Reconnecting with the mind, 3) Passivity of MBSR as opposed to the athletic praxis, 4) Group versus self-guided MBSR, 5) Acceptance of pain. These different themes are presented and discussed below. This particular qualitative exploratory investigation was based on injured athletes' experiences in this study; MBSR can benefit them during the sport rehabilitation process. As such, the findings will promote scientific understanding about the effectiveness of MBSR as a clinical intervention. It should also be noted that, more investigation is required to find out about the role of mindfulness meditation in terms of therapeutic aspects with injured athletes.

1. Introduction

Athletes in all fields of sport activities might face the risk of injuries. As such, sports injuries are serious issues that athletes have to pay attention to in order to prevent them occurring and also to have the capability to return to their sports after being injured. As Nicholl, Coleman and Williams estimated, 29 million sports injuries occur each year in the UK [1]. According to Hawkins and Fuller the proportion of injuries among football players is higher than other sports and professions. They estimated the rate of injuries between professional footballers in four English Leagues to be nearly 1,000 times higher than any other occupation [2]. Moreover, Beynnon et al. reported that more than two million people each year in the USA suffer from ankle ligament injuries, notably, half of them are diagnosed as severe injuries. It is clear from the previous data that, sports injuries have a very high rate of risk

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35

among athletes [3]. As Bahr & Holme stated, literature has shown overwhelming benefits that emerge from physical activity, such as health, relaxation, pleasure, competition, socialisation, an improvement in fitness and many other vantages. In addition to that, regular exercise can lead to a reduction in the risk of premature mortality, obesity, heart disease, hypertension and particularly diabetes mellitus. Nevertheless, participation in physical activity might lead to permeant disability as a result of a sports injury. In other words, despite the countless advantages of physical activity, it can expose athletes to the risk of injuries [4]. Schneider et al. have specified that the side effect of physical activity is injuries [5].

To shed light on psychological models that relate to sports injuries, there are two types of psychological-adjustment that have been recognised. The first, is the stage model that the author states was inspired by literature concerning grief reactions. Second, cognitive appraisal models were realised as stress and coping approaches in research. In the stage models, there are two assumptions of psychological-adjustment. Once athletes have become injured, they feel that a part of them is missing. This feeling emerges after they have been away from their sports that provides them with a social role, a sense of identity and a specific charisma. The other assumption is that, achieving a satisfactory adjustment of psychological response, is unalterable, because injured athletes follow a predictable path. Sport psychologists specify that, prior to achieving an acceptance, the athlete's progress consecutively goes through the stages of anger, depression, denial and bargaining [6].

For instance, Brewer & Redmond identified that cognitive appraisal models put forward that athletes' interpretation of their injuries or judgement of their physical state, (besides the context of injury) once they had occurred, played an essential role in determining how they responded emotionally, behaviourally and cognitively. This is instead of a predictable way that athletes respond to their injuries [6].

In terms of a psychological point of view, injured athletes might experience both physical and psychological consequences after being injured. Walker and Heaney emphasised that psychological effects on injured athletes can be noticed by anybody who has had experience of a sports injury, whether it be athletes, a coach of an athlete or even medical practitioners who are treating injured athletes. As a result, the physical effects may cause psychological changes such as anxiety, depression, isolation, anger and frustration [7]. More specifically, Schinke et al. indicated that people who surround athletes, such as teammates, coaches, sport psychologists and medical staff have to be conscious of referring to their evidence-based interventions, cultivating help-strategy behaviours and also the presence of clinical and subclinical mental conditions. As a consequence, these factors will lead injured athletes to cope better and recover from injuries [8]. In relation to the psychological consequences, Reese et al. mentioned that sport injuries frequently make injured athletes' lives imbalanced and also disrupted. Thus, injured athletes will face health risks and also the inability to achieve their athletic targets [9].

It is from this perspective, that paying attention to improving the mental health of injured athletes is very necessary. As outlined by Markser, this is because of the massive social, somatic and mental stress that athletes are exposed to [10]. By the same token, a study by De Heredia et al. described that the mental response to injury as a subjective estimation of the injury, mood states and adherence had positive effects on sport recovery. Therefore, and based on these results, the psychological responses of injured athletes can have an effect upon their abilities to handle injuries and also achieve better consequences in the rehabilitation process [11]. Furthermore, Putukian demonstrated that psychological responses fluctuate among athletes who have been injured, from the moment of occurrence to the post-injury stage, followed by the rehabilitation process and then when athletes return to their sports. Hence, through psychological responses, the mental health conditions that emerge from injuries such as anxiety, depression, substance use/abuse and eating disorders can be observed [12]. Consistently, Brewer and Redmond indicated that sport injuries impact upon athletes' behaviour as well as emotions and cognition. Therefore, rehabilitation outcomes can be affected by behavioural responses to sport injuries. It should be noted that, the researchers referred to rehabilitation outcomes in terms of terminology, which includes both biopsychological consequences, such as pain endurance, rate of recovery, strength, joint laxity and range of motion, in addition to sports injury rehabilitation consequences, such as quality of life, preparation to return to sports and functional performance [6].

It is therefore important, to pay more attention into injured athletes' mental health, despite the sizable body of literature and psychological models that have been developed to support injured athletes in handling their injuries. For example, these pieces of research were developed in the realm of the psychology of sports injuries [13-15]. Mental health was defined in 2003 by the World Health Organization (WHO), as a feeling or a sense of wellbeing, that enables an individual to handle their stressful experiences. This is in addition to becoming more productive and

fruitful, and also encouraging them to feel better about their affiliation and contribution to a community. From this point on, health is not only the absence of sickness or infirmity, but also a complete context of mental, physical and social wellbeing [16].

With respect to injured athletes' mental health, Keilani et al. mentioned that mental training techniques can provide athletes with an ability to handle sport-associated injuries (SAI). Thus they can improve their mental skills and counteract distress. These mental techniques, showed an improvement in both the athlete's mental recovery and sport performance, such as breathing techniques, cognitive interventions, progressive muscle relaxation, imagery/visualization and many others [17].

In light of the above, and in addition to the positive impact of physical rehabilitation on those injured, the psychological response also plays a significant role in terms of recovery time. Notably, injured athletes who recover quickly from injury, in both senses, indicated that they had a greater adherence to the rehabilitation process, better mood state and less judging of their injuries [11].

Mindfulness Based Stress Reduction (MBSR) program has been extensively applied as a clinical intervention by researchers' who have made on-the-spot decisions research as part of their practice. "MBSR is an eight-week evidence-based program that offers secular, intensive mindfulness training to assist people with stress, anxiety, depression and pain" [24].

In addition, a huge body of literature has been derived from the MBSR program, in particular, Mindfulness-Based Cognitive Therapy (MBCT) [18]. Besides, other mindfulness-based programs have been established by Kabat-Zinn for particular purposes, such as cancer treatment, childbirth, eating disorders, parenting and other interventions [19]. Depending upon Kabat-Zinn's approach, working in mindfulness approaches is being continued by other researchers, who are investigating the effectiveness of mindfulness [20,21,22]. Mindfulness has also been integrated into educational approaches for health practitioners. Dobkin and Hassed indicated that delivering mindfulness approaches to undergraduate and postgraduate students as an active clinical skill is essential. This is consistent with the literature, that has emphasised the positive influences of meditation for utilisation with health practitioners and patients [23].

This research was provided via a knowledge transfer of 8 weeks of MBSR based on the original Mindfulness Based Stress Reduction (MBSR) version, which was developed by Kabat-Zinn in 1979 at the University of Massachusetts Medical Center [24]. Being able to identify and categorise the characteristics of a better meditation practice is crucial to improving the experience of practitioners. In other words, in order to assess MBSR with different kinds of methodology, participants were provided with the opportunity to explain and discuss their expertise, thoughts and experiences after 8 weeks of MBSR in both formal and self-directed practice.

The positive outcome of this study was the overarching benefit to researchers, which will expectantly be the ability to help achieve higher levels of practicing MBSR in future. This will help to deal with the problems that might be faced during meditation and also to become more familiar with MBSR as a clinical intervention that can be used with "injured athletes". This study was an attempt to find out what the experiences of injured athletes were in relation to MBSR.

By collecting some exploratory qualitative data, our intention was to get to know what the perception of injured athletes' was after participating in an 8 week MBSR intervention. In this vein, Fitzpatrick et al. indicated that qualitative assessments are a suitable means of realising the acceptability of intervention [25]. Moreover, Fitzpatrick et al. mentioned a qualitative study by Abercrombie et al. [26] to evaluate the acceptability of MBSR with women of different ethnic backgrounds who had a low income. In addition, Cohen-Katz et al. employed qualitative materials to evaluate the effect of MBSR as a long term intervention on nurses' stress and burnout; notably, the qualitative analyses improved their understanding of the effectiveness of MBSR and also the future direction of MBSR research [27].

According to research that had been done by Mackenzie et al. with cancer patients, it was revealed that MBSR in quantitative methods can reduce stress, change mood and improve the quality of life. On the other hand, subjective effects were not clearly observed [28]. Therefore, the researchers collected data from qualitative methods, using a semi-structured interview and a focus group to evaluate their experiences after the participants had received 8 weeks of MBSR.

The main objective of this research was to find out what the experiences of injured athletes were in relation to the MBSR intervention. The research question was concerned with what experiences the "injured athletes" had during the eight weeks' formal and self-directed MBSR.

2. Methods

2.1 Procedure

This study was approved by the Ethics Committee at the School of Sport & Exercise Sciences. To inform the participants about the research of this study, they were

given a participant's information sheet (PIS). This sheet explained that they had the right to withdraw at any stage of the program, and this was explained clearly to the participants. In addition, all the information they needed about the study procedure was available in the PIS. This was followed by an informed consent form to sign prior to conducting an interview with the participants. The participants were invited to attend a face to face interview and the duration of the interview was 30 minutes. Additionally, each injured athlete had to respond to six questions during the interview. The interview was led by the second author in order to ask questions and take notes. The interview was conducted individually, with each participant in a safe and quiet location, at a suitable location and time for all participants. The interview took place in the School of Sport and Exercise Sciences (Appendix 1). Once the research was completed, participants were sent a digital copy of the research and all were acknowledged for their assistance in the study. In addition, they were asked to provide their responses with any further comments.

2.2 Participants

The participants who were involved in this study were "injured athletes", who had received 8 weeks of the MBSR program [29]. Six injured athletes from the ten participants were accepted to be interviewed after they had received the MBSR program. The participants were both female and male. Notably, five males and one female (injured athletes) completed the semi-structured interview in this study. Demographic data are presented in (Table 1). Mean and standard deviation of the participants were: (M injured athletes = 28.9 years, S = 6.21). The researcher contacted injured athletes and invited them to take part in this study. The initial contact was made by email and then additionally by telephone calls. It is noteworthy that no participants dropped out of the study after signing the informed consent forms.

Table 1. Participants' demographic, physical activity and kind of injury for injured athletes

Participants number	Age	Gender	Physical Activity	Kind of injury
1	25	Male	Basketball	Shin injury
2	22	Male	Running	Knee injury
3	23	Male	Basketball	Collateral-ligament
4	33	Male	Running	Low back
5	37	Male	Kickboxing	Wrist injury
6	30	Female	Running	Hips injury
7	32	Female	Basketball	Knee ACL
8	34	Male	Body Building	Knee injury
9	31	Male	Football	Shoulder Injury
10	36	Male	Tennis	Ankle Injury

2.3 Data Analysis

Injured athletes' opinions after participating in an 8 week MBSR program were analysed using a Thematic Analysis [30]. Semi-structured interviews (SSI) were carried out with injured athletes to obtain detailed and comprehensive information about their experiences in participating in the MBSR in both formal and informal practice. The interview data were recorded using an audio tape recorder to allow for the transcription and analysis of data at the end of the study. The data were transcribed and then coded openly.

3. Results

After the data collection with injured athletes, five themes were identified: 1) Reconnecting with the body, 2) Reconnecting with the mind, 3) Passivity of MBSR as opposed to the athletic praxis, 4) Group versus self-guided MBSR, 5) Acceptance of pain.

3.1 Reconnecting with the Body

Among the different transcripts of the interview data, a recurring theme that emerged in our analysis was related to the feeling of gaining control and of 'reconnection with the body' that mindfulness provided to them. This first theme refers to the sensation of control and body-awareness that the MBSR offered to our participants. According to participant 4:

'I become more aware of my body, I can follow the recovery time better and also feel more aware of the injury. I think it is good as a complementary tool plus physical therapy to support athletes in how they can manage their feelings during the rehabilitation process and this should be taken into account as well' (Participant 4).

This reconnection with the body helped the injured athletes in our sample to identify the specific location of the pain into our participants' bodies. In the words of participant number 5:

'I could think better during the meditation, what is my problem and where is the pain and also I could determine where exactly the pain was in my body' (Participant 5).

Another of our participants highlighted that this increased body-awareness helped them achieve a sense of reconnection with their body:

'Physically I was really aware of my body; I did not feel any pain or anything. I could do things that before I could not, 8 weeks of the MBSR program made me feel very connected with my body' (participant 2).

3.2 Reconnecting with the Mind

Sport injuries generate a period of absence from sport

arenas and this is mentally very demanding for the injured athlete. However according to our data, injured athletes can find in the practice of MBSR a very good mechanism to cope with the injury, in their journey to full recovery.

'I think mindfulness could be a very effective method for injured athletes especially to handle with the negative mood that you feel it when you become injured and being away from your sport for a while' (participant 6).

Indeed, all injured athletes in this study reported that 8 weeks of MBSR encouraged them to feel an improvement in their psychological state. Thanks to their participation in the programme, they felt less anxious and more positive in their thinking. Participants 1 and 2 described their feelings that meditation practise helped them to become more relaxed, happier, less stressed, have less negative thoughts and gain a better feeling. One of our participants stated that his experience was related to the theme above as follows:

'Mentally, I was really emotionally able to experience basically what kind of emotion I had, so if I was feeling like sad I just switched my mood and just did not think about it. I was not so angry and was really calm and felt very joyful' (Participant 2).

The feeling of calmness and relaxation as a result of mindfulness practise was something that was mentioned by several of our participants:

'Overall, after doing an hour of meditation it is just a bit easier to do something after it. I would say that initial meditation gives you a relaxed feeling and more attention, if there is negative feeling I can push it away or I can ignore it and focus on something I need to focus on. I would say, definitely psychologically it was an improvement, and it definitely helped me out' (Participant 3).

3.3 Passivity of MBSR as Opposed to the Athletic Praxis/ Challenges when Practising MBSR

For the totality of our sample, MBSR was a new experience and every new practise entails its own difficulties and challenges. Participant 4 stated that:

'It was frustrating to begin with MM because its new skills and difficult skills to learn because you spent all day thinking and you have to switch-off. You will see yourself struggle in the first couple weeks but by the end you will do it easily'.

The most common obstacle that our participants faced during the MBSR had to do with the passive character of MBSR. This is especially true for our participants who as athletes, are used to having to be exposed to activities that require a high level of action and movement.

'Sport is a very active thing and mindfulness is not

very active, its more about acceptance. In sport, the focus is on fixing the problem and dealing with problems, while mindfulness rather teaches just accept it and move on' (Participants 1).

Participant number 3's words reflect the need to incorporate more diverse methods of meditation to avoid monotony and have a break from routine.

'In formal sessions it was just a sitting meditation, body scan, mindful breathing, so it was just the same things or the same practise every week, so I think variety of meditation during the formal sessions would make MM better' (Participant 3).

Lastly, one of our participants suggested that a shorter duration of mindfulness practice would facilitate a smoother initiation to the program, while the full program seems difficult for them to adhere to because of the long duration.

'Omm, it might be better to start with short time like 10 minutes, because for me being in the proses for nearly 90 minutes its quite long time and sometimes it becomes like you force yourself to finish it' (Participant 6).

3.4 Group versus Self-guided MBSR

Another question that we indented to shed some light upon had to do with the delivery of the MBSR. Nowadays there is a plethora of self-guided modes of delivery, while there are other courses which still privilege the face-to-face delivery of the programmes. As has been described in other parts of this investigation, our methodological design included both self-guided practise and a face-to-face modality. Overall it seems that most of our participants expressed a preference for a face-to-face mode of delivery of the programme. Notably, participant 1 mentioned that the interaction with other participants in a group workshop setting would help participants get through the obstacles of the first difficult initiation stage:

'… I think, group workshops would be interesting because you will meet many people and especially at the start when you are learning the skill, because you can compare it to other people. For instance, how you are doing and your feelings towards other people because is frustrating at the start and I think many people might stop because they struggle with it but if you see other people are struggling and you know you are all together, that might sometimes really help' (Participant 1).

Participant number 6 also highlighted that for new starters it would be beneficial:

'providing a guided meditation in formal session. Or meditation with guide especially to people with no prior experience' (participant 6).

3.5 Acceptance of Pain

In terms of pain aspects, injured athletes who were involved in this study have attributed their practise in MBSR to clearly changing their attitudes towards pain. A number of injured athletes were focused on how MBSR helped them to accept their physical state after they got injured and also improve their pain sensitivity.

'I can run for longer and at the same time I feel tired but I was still able to push through it. It might be that MM did make me think differently about the pain, that is, it is actually not the end of the world if you have pain, so pain is there but I did not really worry about it' (Participant 4).

Another participant also mentioned the concept of 'acceptance' of pain and how the MBSR intervention helped in that regard:

'…it was helpful a lot in terms of just acceptance that hey, that is ok that happens' (Participant 1).

This notion of 'acceptance' of pain was indeed present in several of the responses that we received from the participants. Participant number 2 was very illustrative in their description of how the MMM, by focusing and not distracting the sensation of pain, was of help to finally 'get through it' and 'let go'.

'Slightly, I was more aware of the pain, I could think about it, it was not just reflex I can just feel it as a pain and I thought about whether to accept it or not. My perception of pain like changed, before it was just pain I did not really think about the pain, when I just found it I tried to avoid it but after MM I was able to connect with the pain and go through it, I just let it go' (Participant 2).

In the same line participant 5 also mentioned that:

'As a result, you can control your muscles with your mind through positive thinking and ignore pain in your body' (Participants 5).

In conclusion, overall all injured athletes' who were interviewed expressed positive comments after their participation in the 8 weeks of the MBSR. However, they also stated that, as it was a new skill for them to learn, they also faced some difficulties, especially during the early phase of the program. From the interview data, it came apparent that group meditation in a face-to-face mode would enhance feelings of empathy among participants and also stimulate some peer support, which would help overcome the difficulties for new starters. In addition, the participants mentioned that MM supported them in accepting their new situation as an injured athlete and promoted a feeling of "let go" without judging their physical state.

4. Discussion

In this study a qualitative approach was employed, by applying a thematic analysis to explore the perceptions and opinions of injured athletes who received 8 weeks of the MBSR. Notably, six injured athletes were randomly selected and invited to attend a 30-minute interview to assess their personal lived experiences. Five themes were identified from our thematic analysis: (1) Reconnecting with the body, 2) Reconnecting with the mind, 3) Passivity of MBSR as opposed to the athletic praxis, 4) Group versus self-guided MBSR, 5) Acceptance of pain.

Injured athletes reported that MBSR was a new skill for them to learn and they faced difficulties in going through the initial stage of the program. It is worth mentioning that the injured athletes who took part in our studies were beginners in this kind of meditation and had not had any previous experience. Therefore, to learn and be familiarised with new skills, is indeed a difficult task, as the MBSR requires some perseverance and a series of repetitions. Kornfield stressed that the cultivation of any new skills requires three components systematic training, patience and perseverance [31].

Thinking about the particularities of our sample, it is of relevance to take into consideration that the everyday pattern of sport activities is characterised by dynamic, active, explosive and fast actions and that this is antithetic to the passive and sedentary nature of a classic MBSR, as highlighted by some of our participants. Consistently, injured athletes emphasised that self-practise with formal sessions during the 8 weeks enabled them to perform better and also feel more connected with their bodies.

To understand whether MBSR is a convenient means to be utilised with the clinical population, injured athletes explained that, MBSR is a beneficial technique, which enables them to reconnect with their bodies, as well as become more aware of their physical condition. Besides, they can manage their body sensations during the SRP. Overall our participants regarded MBSR as a beneficial method to help them reconnect with their bodies and be more aware of their injuries and to accept them. These results are in accordance with recent studies, which have observed that, MBSR is suitable and effective as a treatment approach that can be applied as a clinical intervention, such as work undertaken by the following suggests [32,33,34,21].

Injured athletes also offered some valuable insight into what method of delivery is more suitable for inexperienced participants such as them. These attitudes might be a "light guide" for practitioners and researchers in future programs, which target clinical populations. Injured athletes reported that instead of running meditation sessions for an individual, workshops might have a better effect in terms of comparing one person's statement to

others and sharing an idea with them. Fundamentally, the original MBSR was developed and practised in a group Kabat-Zinn, [35,36]. However, to the contrary in this study, meditation sessions were run individually instead of meditation with a group. The reason behind this was that the physical state of the injured athletes, which made the gathering of those injured athletes at one particular time and place not possible. In addition to the MBSR, they had had physiotherapy treatment and also their own personal tasks to do. Furthermore, other injured athletes reported that self-directed practise should have included a diary to write in instead of only the practise, because it would help to understand one's progress as a beginner in mindfulness meditation. The reason for the self-directed practise without having homework to write down was to avoid an extra task that might have affected their participation.

There were perceptible interpretations from injured athletes regarding the perception of pain and pain tolerance after 8 weeks of the MBSR. Noticeably, injured athletes reported that after a period of regular meditation, their pain sensitivity improved and their body sensations changed after MBSR. Further, their pain tolerance increased and they felt more endurance even though they had had fatigue. Interestingly, the understanding of these perceptions, which emerged after their participation in this study, was that MBSR has actual positive effects on injured athletes. In other words, they followed and applied the daily practise in both formal and informal meditation. Therefore, meditation sessions supported them during the rehabilitation process. This is in line with Kingston et al. who found that pain tolerance significantly improved with asymptomatic students [37]. Consistently, Zeidan et al. verified that a brief form of mindfulness meditation was effective in reducing pain and anxiety [38]. Other injured athletes emphasised the beneficial aspects to the psychological consequences of pain. They indicated that after being injured, there were many negative thoughts that had come to their minds regarding parallel physical pain, such as frustration, negative moods and anger. Therefore, MBSR was very useful in terms of managing feelings and having a clearer mind. However, there was nothing noticeable in terms of physical pain. Worth mentioning is that Brown and Jones found in their research with patients who had chronic pain, that there was an improvement in mental health and better management of pain, while clinically no reductions in pain rating had been found [39].

All injured athletes reported that MBSR positively affected their psychological state during the rehabilitation process. This is even though they were faced with difficulties in practicing meditation for a long time. Further, it was a suitable means of managing their negative moods

and furthermore, it helped them in with their daily tasks over time. In fact, it was expected that MM would support injured athletes during their recovery time, because they meditate regularly to cultivate awareness and this helped them to achieve wellbeing and the ability to manage their psychological state. In this sense, Kabat-Zinn stated that to develop a greater wellbeing and emotional balance, individuals need to keep up the awareness moment by moment and disengage themselves with strong thoughts and beliefs [40]. Moreover, this is consistent with the findings from other research [41-44], which discovered the positive impact of MBSR on improving wellbeing and the quality of life within different clinical populations.

The research question in this study was what experiences the injured athletes had had during the 8 weeks' formal and self-directed mindfulness meditation program. In general, and according to these qualitative findings, it can be realised that injured athletes reported positive experiences after having been involved in 8 weeks of the MBSR program. These findings raise intriguing questions regarding the nature and extent of MBSR efficiency to be applied by injured athletes. It can therefore be assumed that MBSR is suitable mental training that can be used by injured athletes parallel to physiotherapy treatment during SRP.

In spite of the exploratory nature of this study, it should be noted that the findings revealed a considerable positive perception regarding the injured athletes' participation in the MBSR. Further qualitative studies could enhance our knowledge and scientific understanding about what it is that makes MBSR have such a positive perceived effect on injured athletes' acceptance of pain and how this can be incorporated into a holistic approach during the sport rehabilitation process.

5. Conclusions

Based on the findings of this study, incorporating MBSR techniques into sport rehabilitation helped injured athletes to increase their pain tolerance as well as increase mindfulness. In other words, these techniques provided athletes with an ability to cope with their physical pain in a better way, without being attached to negative thoughts of injury. According to some interpretations from injured athletes, they emphasised that MBSR had changed their attitudes towards their physical pain. For instance, one of the injured athletes who received 8 weeks of MBSR training stated that MBSR makes me more aware of the pain, and be able to connect with the pain and go through it, just let it go. Therefore, it is clear that MBSR can be a suitable technique for injured athletes to manage their negative emotions and reactions after having been injured

and then achieve better results in the recovery time. It can also be noticed through the findings of this study that, mindfulness can play an important role in the recovery period along with SRP. This is consistent with Mahoney and Hanrahan who found that practising mindfulness with injured athletes, who suffered from anterior cruciate ligament (ACL) injuries, helped them to improve their rehabilitation protocol and their wellbeing [45]. Hence, mindfulness can become an essential part of the therapeutic toolkit of sport therapy. Another research suggested that the ability of an injured athlete to support pain is related to how quickly they recover from injury [46].

In addition, injured athletes can benefit from MBSR in order to cope with the circumstances of the injury, such as emotional responses to their injury, their physical pain and adherence to physiotherapy treatment. Another possibility to incorporate MBSR into sport therapy, is to have these techniques within a sport medicine strategy. Thus, injured athletes can get this form of mental practice within their sports medicine team easily.

Another implication of this study is that it provided more understanding regarding MBSR, and also finding out what difficulties injured athletes faced during the intervention period. This could encourage researchers to avoid those problems that were mentioned in this study in future research. Furthermore, this study was a deep subjective analysis with regard to injured athletes' experiences of long-term mindfulness meditation practise.

Acknowledgments

Conflict of Interest

The authors report no declarations of interest.

Authorship and Contribution

AP had the original idea for the study and was responsible of interpreting the data. WM collected the data, conducted the preliminary analyses and wrote the draft of manuscript. DS led the design of the methodology and contributed in data processing. All authors contributed to the interpretation of the data, reviewed/edited the manuscript and approved the final manuscript.

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Appendix 1. Semi-Structured Interview Questions

1. How do you feel after eight weeks' practice of a Mindfulness Based Stress Reduction Program?
Follow up questions:
Could you tell us more about your experience of participating in this program?
2. Would you recommend Mindfulness Based Stress Reduction, as a clinical intervention that can be used with injured athletes'?
3. What do you suggest/recommend to improve Mindfulness Based Stress Reduction?
4. Do you think Mindfulness Based Stress Reduction had helped you to reduce your perception of pain and also of pain tolerance?
Follow up questions: If yes, how? In what sense?
5. Do you feel that Mindfulness Based Stress Reduction was helpful and helped you (psychologically) feel better?
6. Do you have any further comments you would like to mention regarding Mindfulness Based Stress Reduction.

ARTICLE

Exploring the Empathy - Aggression Relationship, and Gender Related Differences in Greek College Students

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ARTICLE INFO	ABSTRACT
	The present study examined the inverse relationship between empathy (cognitive and affective) and forms of aggression (physical, verbal, anger and hostility). Previous research has continuously argued that empathy mitigates forms of aggression in individuals due to cognitive perspective taking and emotional sharing with others, that buffer hostile behaviour towards one another. However, there is a gap in the literature regarding this association in Greek culture. This correlational analysis examined empathy using the widely known multifaceted Davis Interpersonal Reactivity Index and aggression was explored using the multi-dimensional Buss-Perry Aggression Questionnaire in a sample of 92 Greek undergraduate college students from two private institutions in Athens, Greece. Gender effects on aggression and empathy levels were investigated as well. The results revealed that cognitive and emotional empathy indeed demonstrates a negative relationship with direct physical aggression. However, other forms of aggression such as verbal aggression, hostility and anger were positively associated with personal distress and Empathic fantasy majorly linked to Greek emotional regulation difficulties. Females displayed higher Empathic fantasy scores compared to males. A cultural perspective was adopted in exploring the results considering norms, gender roles, collective regulation capacities and societal conditioning, offering links to previous literature and theories.

1. Introduction

Our ability as humans to identify, perceive, acknowledge and respond to a variety of emotions while predicting consequential outcomes, not only with ourselves but with others as well, is a relational marvel. Most of our social understanding and synergy is grounded in psychological processes and forms of emotional connections. The concept of empathy continues to assume a pivotal position [1,2]. Over the last two decades, empathy has been receiving an abundance of attention from scientists in various disciplines, inspecting its critical function in individual as well as in societal experiences by establishing an emotional bridge among people and, evolving interpersonal and intrapersonal capacities [3,4]. Empathy briefly described alludes to a key socio-emotional process that includes 'the effort to comprehend the internal mental and emotional occurrences of other individuals' [5]. It has been known to be a noteworthy factor in different areas of life including individual relationships, education, communication, culture and socialization. Additionally, it has been a

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       45

conspicuous interest to social psychologists particularly in understanding empathy's implications with personal and social mechanisms including aggression, violence, cooperation, generosity, decision making, social control and child rearing [5]. A synthesis of empathy's involvement in the above-mentioned life domains will explored further in the following sections of this paper. Of particular importance to the current research study is empathy's function in interceding aggression levels.

Several researchers have examined the relationship between empathy and aggression. The results revealed that empathy inhibits or at least mitigates aggressive behavior. It is claimed that due to an individual's heightened understanding of another's cognitive and emotional state, there would consequently be a decrease in the likelihood of anger, hostility, prejudice, violence and aggression to arise [3,6]. With this information, can we consider empathy as the polar opposite of aggression? What additional factors play a role? Studies have investigated how gender, age, socio-economic status, education and profession affect the empathy-aggression relationship. The results are inconclusive, along with a gap in the literature with regards to certain cultures and populations. The current study aims to bridge this gap in literature and gain a more in-depth updated understanding by examining this relationship. The purpose was to investigate if there is an association between empathy and aggression in Greek College students via self-report measures, as well as to explore effects of gender linking back to cultural influences.

2. Literature Review

2.1 What is Empathy

As empathy is studied over an assortment of fields, it is viewed as an interdisciplinary concept thus prompting various distinct and debatable definitions across literature [1]. For the purpose of this research study, empathy is defined according to Davis [6] who characterizes it as the response of one individual to the recognizable experiences of another including the capacity to share others inward states (i.e. thoughts and feelings). Research postulates empathy as a multidimensional construct that contains cognitive and affective states of another which is needed to comprehend their perspective and possess an emotional response to it [3,7,8,9]. Additionally, an important aspect of being Empathic is the ability to distinguish between self and other as well [10].

Previous literature [11] indicates that empathy contains three fundamental parts: (a) Perception and Differentiation, that is the capacity to utilize appropriate data so as to analyse, determine, recognize and classify emotions, (b)

Understanding and Role taking, the capacity to estimate and experience another's vantage point and (c) Affective Responsiveness, the capacity to share another's emotions [11]. Essentially, different scholars characterize empathic individuals with the capacity to understand (cognitively) and feel concern (affectively) about someone else's emotional state [5]. More specifically, cognitive empathy alludes to the imaginary comprehension of other's experience typically involving one relating to another's thoughts, prediction of other's psychological/emotional state, as well as employing effective communication, and socioemotional skills [5,6-9]. According Davis's [6] multidimensional questionnaire used specifically in this study known as the Interpersonal Reactivity Index (IRI), cognitive empathy is seen through subscales referred to as Perspective Taking (i.e. to assume the psychological viewpoint of others) and Fantasy (i.e. ability to imagine oneself as fictional characters with similar emotions, actions) [6].

On the other hand, affective empathy (connected to ancient roots in the mammalian realm) alludes to the vicarious emotional experience one has to the affective condition of another otherwise known as emotion-matching described as a contagion or emotional resonance [3,10,11,12]. Furthermore, emotional empathy incorporates sympathy reactions (i.e. concern and desire to diminish the anguish of others without involving ismorphism with the others feelings, regularly referred to as Empathic concern); sensitivity and partaking in the suffering of others so personally they appear as though they are one's own [5]. In the IRI scale of the current study, emotional empathy can be demonstrated as Empathic concern (i.e. sentiments of sympathy and worry for ill-fated others) and Personal Distress [6]. Personal distress is described as feeling personally troubled, agony or discomfort by the hardships or difficulties of others occurring as a result of affective empathy [5,6].

2.2 Theories and Development of Empathy

Before diving into the psychological theories that are frequently used to understand empathy, it is helpful to recognize empathy as an evolutionary, biological and developmental ability in humans possess. Riess [4] points out that empathy was previously viewed as a skill, however, through biological research we can now assure that empathy is a neurological ability [13]. Along these lines, the inquiry still remains, how was the human mind fashioned for this perplexing and complex errand [4]. It is proposed that if human presence was basically a by-product of 'natural selection or survival of the fittest', we would be wired exclusively to overshadow others, not react to their affliction [4]. However, the discomfort experienced by observing

others torment regularly propels us to react with benevolence. It is plausible then to assume that the endurance of our species relies upon communal aid, and providing it diminishes our own personal distress as well [4]. This common aid exists in the earliest accounts of ancestral behavior and continues to serve as a compelling power in this day and age as well. Decety and Lamm [1] add to this thought proposing that empathy can be seen as an induction cycle by which feelings, both positive and negative are jointly experienced, which in turn increases the probabilities of similar practices by observers. Although specific mammals are able to experience emotions between individuals, humans are singularly ready to deliberately feel for and respond to others whose encounters may vary significantly from their own [1]. This particular ability may help clarify why Empathic concern is regularly associated with prosocial behaviour, for example, aiding a family member and has been viewed as a central method of altruism. It is postulated that this Empathic serving demeanour developed because of its contribution to hereditary wellness coinciding with Riess [4] and other researchers [1].

In understanding empathy further, there are two central theoretical frameworks that stand out: The Simulation Theory and Theory of Mind (ToM). According to Runehov, Oviedo and Azari [12] the simulation theory is a theoretical framework which claims that the human ability to understand others involves mentally imitating or re-creating the other's actions, beliefs, emotional and mental states to experience and understand them almost as our own. Quite similar to how airplane models develop simulations that resemble the responses of an actual airplane, allowing pilots to test actions and learn before flying a real airplane [12]. Humans contain the ability to explain other behaviours or inner states through three steps: (a) projecting oneself mentally into their situation, (b) using imitation and mirroring to simulate their behaviours or emotions, and (c) experiencing the others states internally and then providing an authentic Empathic response [7].

The simulation theory contains a biological component seen through concepts such as mimicry and emotional contagion [2]. Studies claim that affective empathy is associated with inner mimicry or imitation, almost like an involuntary somatic reaction which develops as early as 10 weeks of age in infants. This somato-sensorimotor resonance between self and other is the first sign of empathy as seen in studies where infants displayed high distress soon after other infants began to cry [2]. The sharing of this emotional experience is known as Emotion Contagion which is the propensity to involuntarily mimic and harmonize facial expressions, bodily positions, vocalizations and behaviour with those of another, resulting in shared affect

continuing into adulthood [1]. There is a surplus of research demonstrating that mimicking a person's affective expression, by means of afferent feedback of internal kinaesthetic signals, the individual encounters the internal affective condition of another person [13]. Dimberg, Thunberg and Elmehed [14] claimed that when participants viewed pictures of happy faces they mimicked this expression and this imitation lead to an increase in the zygomatic major muscle, which is the muscle that raises the lips to structure a smile consequently leading to a more positive affective state. As such, when exposed to angry faces, participants had an increase in corrugators supercilii muscle which joins one's eyebrows producing a frown evoking a negative affective state [14]. It is proposed that this unconscious imitation served a role in human survival through social learning by allowing efficient communication, building comprehension of others, enabling easier interactions and increased liking for others [1,13]. Moreover, mimicry of certain emotional expressions such as fear enabled others to not only observe bodily reactions, neurologically activated brain areas responsible for action and movement. Thus, emotional contagion served many functions for social, emotional and physical survival further affirming that empathy played an important role in group evolution as discussed briefly in above [1,2].

Neuroscientific research shows that primitive process of mimicry occurs due to the human mirror system, more specifically based on mirror neurons which are sensorimotor neurons residing in the premotor, motor and anterior intraparietal area [2]. These neurons are activated and fire excitatory messages when observing and experiencing an emotion or behavior, storing representations of these actions in memory. For instance, there is a natural unconscious tendency to mimic a person's facial expression which consequently leads to oneself feeling the emotion of the other through the mirroring process. Neuroimaging studies have uncovered that perceiving facial expressions, other's emotions and behavior while encountering such an experience within oneself includes coinciding neural circuits such as: the anterior insula, the amygdala, superior temporal sulcus and the premotor cortex [1,10]. In a study that explored this phenomenon, participants breathed in unpleasant scents that produced feelings of disgust [15]. Following this, the aforementioned participants watched recordings of different individuals also encountering feelings of disgust. The results of this study demonstrated that zones of the anterior insula and to some degree the anterior cingulate cortex were initiated both when individuals viewed disgust in others and when they encountered it for themselves [15].

Additionally, FMRI studies have confirmed shared neu-

ral pathways are also associated to observing and experiencing tone of voice, touch and pain [1,2,4,7]. Studies show that children aged 7-12 are more innately more disposed to experience empathy for others in pain, activating similar brain regions as adults observing others in pain as well [7]. A study revealed that the women who received electric shocks activated certain regions with an associated neurological pain matrix as seen through brain scans [10]. Later, the same participants received indication that their partners were receiving similar electric shocks, which again activated a similar neurological pain matrix in the female participants when perceiving the pain of another [4,10]. An important distinction between the self and other must be considered. For instance, participants asked to imagine pain felt by the self and pain inflicted on another entail two very separate entities with two different forms of empathy arising [1]. Particularly, imagining pain inflicted on another evokes empathic concern which is a response consistent with the perceived anguish of the person in need. While, imagining pain to the self induces both empathic concern and personal distress (self-oriented response such as anxiety, physical discomfort). If an observer feels personal distress by witnessing another's emotions, it might explain why a lack of empathic responses occur [1]. Interestingly, Decety and Michalska [2] found that when participants observed someone deliberately inflicting pain onto another person, brain regions associated with emotional assessment and moral reasoning were additionally activated. As discussed earlier since empathy leads to sympathy responses (i.e. drive to act out or provide aid), the above participants were motivated to altruistic responses based on their initial emotional concern [2]. This notion is corroborated in various other social studies as well.

Finally, researchers have concluded that through observation, one can feel what others feel to an extent via an intricate process of neuronal action representation that alters their own emotional state, finally stimulating empathic concern or consequently a sympathetic response [4]. Furthermore, Rueckert and Naybar [10] suggests that the right hemisphere of the brain, which is involved in the process of interpreting emotions, facial expression and other social behavior could be linked to creating the self-other awareness mentioned previously. The above-mentioned simulation theory along with its emotional contagion and mimicry counterpart integrate both affective (i.e. empathic concern) and some cognitive (i.e. fantasy) components of empathy.

On the other hand, opposing researchers suggest that the ability for two individuals to connect deeply on an emotional level is indeed the foundation for developing joint affective meanings but, is not sufficient for advanced empathic concern and comprehension [2]. This would require a more complex higher order cognitive functioning through attribution of others mental states, as seen through theory of mind or 'mindreading' [7]. Dvash and Shamay-Tsoory [16] suggest that Theory of Mind (ToM) is a metacognitive ability that permits individuals to comprehend or predict or infer another's behavior, thoughts and emotions, and respond accordingly, without mental imitation seen in the simulation theory [1,2,7]. In simpler terms, ToM is the capacity to understand what another individual is thinking or affectively experiencing guided by general rules for how one should think or feel, that we have stored in memory. Through the use of cognitive thought processes, we access internal data obtained to foresee or explain other's actions. ToM encompasses a cognitive aspect (i.e. thinking about thoughts, intents or beliefs of others) and an affective component (i.e. thinking about emotions of others) which is a progressive form of mentalizing [16]. Neuroimaging studies have identified that cognitive ToM include the following brain regions: media prefrontal cortex, superior temporal sulcus, temporoparietal junction and temporal poles. Whereas brain regions associated with affective ToM incorporate the inferior frontal gyrus, anterior cingulate cortex, amygdala and the ventromedial prefrontal cortex [16]. Some neuroimaging studies prompting both components of ToM include the 'Yoni' task where participants were asked to judge mental or emotional states of a cartoon figure (i.e. Yoni) through verbal and eye gaze cues [16]. Other studies involved vignettes where participants had to listen to a brief description of an event, followed by a sarcastic remark by a character and infer why the character used sarcasm as well as predict what were the characters thoughts and emotions [16]. Evidently, these studies through complex cognitive process demonstrate how individuals are able to indulge in perspective taking, a cognitive component of empathy and predicting emotional reasonings. Other research has explored how participants used three sets of adjectives (i.e. personality traits, current mental state, physical qualities) to describe themselves or present the United States at the time [16]. This study expressed Cognitive ToM's self-reflective ability, distinguishing actions produced by oneself and others, analysing similarities and differences between self and others mental states. While affective ToM requires more self-reflection of one's own emotions when it comes to differing between self and other, while cognitive ToM is more systematic and somewhat detached from the emotional aspect [1,16].

Decety and Lamm [1] argue that self-reflection and self-awareness is a necessary component that contributes to empathic social interaction, as if the awareness of one's

own emotions enables appropriate regulatory mechanisms allowing for the differentiation between empathic responses to others from one's own personal distress. Moreover, emotional regulation of internal states is additionally imperative for adjustment of one's own vicarious emotion to avoid experienced [1,2]. Research shows that emotion regulation positively associates to empathic concern for others. Thus the distinction mentioned previously between self and other is vital in order to provoke supportive responses [2]. Emotional regulatory functions and its relation to empathy was explored in a number of developmental studies. It was revealed that children who possessed the ability to regulate emotions, shift attention from self to other, taking on a more objective standpoint were more prone to empathy responses as compared to children who did not possess emotional regulation abilities [2]. This goes hand in hand with Ioannidou and Konstantikaki [17] arguing that one's ability to control impulse, regulate emotions, prevent discomfort, recognizing other's emotions, adopt others perspective and acquire self-awareness are important elements for sound emotional intelligence which incorporates empathy within it [17]. Both theories of mind and emotion regulation that activate executive resources in the prefrontal cortex are elements to maintain self-control and emotional control when concerned with empathy [2]. Thus, can it be assumed that to provide an Empathic response, one must also be able to healthily detach or inhibit one's own emotions to avoid personal discomfort (e.g. sympathetic arousal, anxiety) and adequately respond to another [1]. In that case, perhaps when investigating individuals who show less empathy (i.e. empathic concern and perspective taking), their ability to emotional regulate oneself through assessing personal distress levels should be explored as this could cause deter supportive responses to others.

Apart from these two primary theories used to understand the multifaceted concept of empathy and its advancement, it is imperative to briefly explore other forms of empathy development. The Attachment theory proposes an undeniable framework for understanding an individual's ability to connect with others and form supportive relationships [7,18]. The theory supports that those who received inconsistent parenting during childhood, as adults have exaggerated responses to distress either by hyperactivating their attachment system leading to heightened anxiety and flawed self-concept [18,19]. Moreover, for individuals whose parents were unresponsive to their needs as children, as adults deactivate their attachment system through avoidance and dismissive responses, repressing emotions [18,19]. Both these forms of attachments are referred to as insecure attachments where children

were not able to adequately learn how to cope and regulate emotions leading to extreme responses with self and others throughout life. What's more, Collins [7] discussed that parenting styles such as the authoritative type posed as antecedents to an individual's development of empathy. Relatedly, Diamond, Fagundes and Butterworth [19] claim that parents who display high avoidance and anxiety may prevent the capability of emotional states of others to be recognised. Studies show that parents tending to a child's needs and providing a sense of safety during emotional expression as well as enabling positive emotional interactions results in higher self-esteem and empathic abilities, making attachment through childhood experiences extremely important [19]. Accordingly, research confirms that individuals with dismissive or avoidant attachments may display less empathy due to their inclination to maintain distance from others leading to a lack of emotional connection as well as awareness of their own emotions due to their internal pattern of repression [18]. This was corroborated in a study with Wei et al. [18] with college students and community adults. Moreover, Lyons, Brewer and Bethell [9] argue that low maternal care and paternal protection during childhood are predictors of emotional detachment and traits of psychopathy. Whilst, high care and protection are important in influencing empathy development [9]. Furthermore, individuals with anxious attachments are often preoccupied with their own needs of distress that often are unable to fully pay attention to others needs and offer appropriate empathy [18]. However, studies with anxious attachments show mixed results as theorists have found that anxious attached individuals who have experienced difficulties previously are more likely to understand other vulnerabilities and display high levels of emotional empathy. This latter result with anxious attachments was also seen in the study Wei et al. [18] conducted, consistent with most literature.

As we have seen previously, mimicry and rehearsal are important tools for learning. Similarly, empathy can be developed from observing modelled behavior during childhood via the social learning theory. If a parent participates in empathic or prosocial behavior with others, children mimic cues, expression of emotions, interactive mannerisms and learn empathy by observing their models [7]. Parents who displayed positive emotions when involved with their children and responded to the child's needs distinctly showing maternal tolerance and paternal involvement in rearing practices yielded adults with higher empathic concern. Through this, Collins [7] concludes that by reducing expressions of aggression and enabling open communication about effect allows children to learn how to identify, share, communicate and regulate emotions facilitating

high empathy as adults.

Finally, research has additionally confirmed the significance the environment plays on the development of empathy in children and young adults. Specifically, Barr and Higgins-D'Alessandro [20] point out that school environments that share an open, caring community increases social perspective taking (i.e. cognitive empathy), connectedness, cooperation and moral development in students. School environments have been associated with positive empathy levels, social interactions and emotional wellbeing [7,20].

2.3 Empathy- Aggression Relationship

A broad definition of aggression refers to a response that delivers harmful stimuli to another individual [21,22]. However, over time researchers have postulated a more refined detailed definition of aggression, it is a specific behaviour driven by hostile intentions to injure another individual either physically or psychologically; or to eradicate an object [23]. There are various subtypes of aggression; the current paper will emphasize the four categories discussed by Buss and Perry [22]. These categories include physical aggression, verbal aggression, anger, and hostility [24]. Verbal and physical aggression which involves injuring or inflicting harm on another person through words or actions, represents the motor element of behavior [23]. Anger which includes physiological excitement and preparation for an aggressive episode, speaks to the affective aspect of behavior [22]. Lastly, hostility, comprised by thoughts or feelings of animosity and unfairness is linked to the cognitive response [24]. Anderson and Bushman [25] claim that hostile aggression (also referred as reactive aggression) is perceived as being instinctive, negligent, driven by outrage, having a definitive motive of hurting a person and occurring as a response to some apparent incitement.

Linking back to empathy which allows an individual to use affective and cognitive processes to predict others behavior, regulate one's own emotions as well as behavior and provide a beneficial response is an important element for social development and adaptation. This social development relies on empathy as a key process in facilitating prosocial behavior while inhibiting antisocial behavior such as aggression [26]. Kaukiainen et al.,[27] states that social intelligence is a neutral tool in which metacognition is used to understand, evaluate and respond to oneself, others and social circumstances. It entails skills such as observing non-verbal gestures, forming inferences about others behavior role-taking, adaptability, internal rehearsal and interpersonal awareness [11,26,27]. Evidently, it is noticeable that empathy and social intelligence overlap. It is noted that cognitive empathy which involves perspective taking and understanding others is a critical part of social intelligence [27]. However, the affective component of empathy (i.e. emotional sharing) is a distinguishing element between empathy and social intelligence, as the latter may be functional without affect [11]. An extreme clinical example of this phenomenon can be seen in an individual with antisocial personality, bullying and/or narcissistic personality, who is able to apply social understanding skills for manipulation purposes to gain preferred outcomes regardless of the another's emotions [11,26-29]. It is valuable to mention that aggression through social manipulation is termed indirect or relational aggression, which has been noted to require higher levels of social intelligence, according to the developmental theory of aggression and subsequent studies [11,27].

Kaukiainen et al.[27] examined the relationship between social intelligence, empathy and aggression in 526 school children, the results concluded that direct forms of aggression (i.e. physical and verbal) were not associated with social intelligence. Moreover, in line with developmental theories, indirect aggression was correlated to higher social intelligence but not direct aggression. Lastly, higher levels of empathy were seen in mitigating aggression [27]. This demonstrates that lower social intelligence and lower empathy is correlated with direct forms of aggression. This was corroborated by developmental examinations suggesting that aggressive children are seen to have social deficiencies in understanding and resolution capabilities [27]. This can be seen in instances of bullying by Jolliffe and Farrington [28] examining bullying behaviour in 720 adolescents revealing that low overall empathy and low affective empathy were related to more frequent aggressive bullying behaviour. Moreover, Del Rey et al. [30] suggest that low levels of empathy are predictors for traditional as well as cyber bullying and aggression in adolescents. Furthermore, Castillo et al. [21] argues that adolescents who engage in aggression are found lacking the ability to recognize and regulate negative emotions that is fundamental to aggression.

Donahue et al. [31] proposes that an understanding of underlying mechanisms such as emotional regulation and dysregulation is vital when investigating aggression. Emotional regulation refers to specific processes that impacts which emotions are experienced, when and how one experiences them. On the contrary, emotional dysregulation alludes to a maladaptive manner in which emotions are experienced and responded to, it has been linked to emotional reactivity such as aggression [31]. Emotional dysregulation is said to predict aggressive behavior in adolescents as the lack of awareness, comprehension and recognition of emotions leads to difficulties inhibiting

impulsive behaviour when distressed [31]. More specifically, emotional dysregulation is linked to personal distress which strengthens or intensifies anger, hostility and negative affect [32]. It is often possible to observe individuals with high affective empathy using hostility to regulate and cope with the distress being felt [32]. This was also supported by Contradi et al. [33] investigation of empathy and aggression in young Italian adults who displayed high hostility when unable to emotionally regulate oneself as well as high personal distress levels. Interestingly, it was also found that the fantasy element of cognitive empathy was positively associated with emotional regulation struggles as well [33]. Previous studies have also found that fantasy is positively associated with affective vulnerability and that individuals with higher fantasy scores may use maladaptive coping mechanisms such as avoidance or hostile conduct [33]. It is postulated that perhaps fantasizing or identifying with the emotions or cognitions of fictional characters creates a sense of personal distress which individuals are unable to regulate leading to increase in indirect aggressive tendencies. Mansfield et al. [34] suggests that an individual's attachment style formed in early childhood sets the basis for the development of regulatory strategies and coping mechanisms. It is argued that children learn from parental figures how to value and accept emotions, trust others to share joy and guide them through distress [34]. Consequently, if a child forms an insecure attachment due to the caregiver's unpredictable nurturance, ignorance, punishing, fearful or abusive responses, it teaches the child that emotions are not appreciated or valued [34]. This hinders children and adults in developing the affective skilfulness required to recognize and respond to emotional states in a non-destructive aggressive, violent or distant manner [34].

Accordingly, it becomes evident that children and adolescents with the ability to perceive, comprehend and manage their own feelings are less prone to aggression, due to their elevated levels of emotional awareness which prompts an improved understanding of self, others and consequences of their actions [21]. Higher levels of empathy in adolescents are also negatively associated with social struggles and internalizing conditions such as depression. Hence, it can be concluded that empathy endorses psychological and social adjustment in youth. Based on this understanding, variety of therapeutic programs designed to treat forms of aggression encourage empathy training and social competency building [11,26]. Relevantly, as the present study is inspecting the relationship amid aggression and empathy, it was important to clarify the division between empathy and social intelligence [11,27].

The inverse relationship between empathy and aggression is well documented by researchers over the last 30 years [26]. However, studies have revealed mixed results, causing an interest in additional research on the subject. More specifically, the infamous meta-analytical review conducted in 1988 examined the association between affective empathy and aggression from 43 studies [11,26-28]. Affective empathy was measured through picture or story representations, self-report questionnaires, facial expression/gesture responses and behavioural responses to investigatory stimulation or priming. Aggressive tendencies were measured through self-report assessments, peer aggression reports and responses to unpleasant stimuli presented during a task [26]. The results revealed a significant negative correlation between aggression and affective empathy specifically in self-report measures, but no significant associations with other methods [11,26,27,29]. The investigators of the study postulated that empathy is able to mitigate aggression, however, both forms of empathy must be considered when investigating its relationship with aggressive responding [11,27,29].

Richardson et al. [29] investigated self-reported empathy and aggression in conflict responses. Specifically, empathy was measured through two subcategories as discussed by Davis[6] which incorporate perspective taking (i.e. cognitive empathy) and empathic concern (i.e. affective empathy). Richardson et al. [29] argued that perspective taking would inhibit aggressive responses due to the high level of cognitive functioning allowing one to control impulses and reducing aggressive conflict resolution strategies [35]. The study examined 189 college students who were given the Davis Interpersonal Reactivity Index and Buss-Durkee Hostility Inventory. The results confirmed that high levels of cognitive empathy were negatively associated to every measure of aggression suggesting that perspective taking lead to more constructive conflict responses [29,35]. While affective empathy also demonstrated an inverse relationship with aggressive traits such as negativism and assault [31]. Likewise, De Wied, Branje and Meeus, [35] found that empathy was positively connected to problem solving abilities and negatively to conflict involvement in adolescents. Castillo et al. [21] connectedly states that the ability to identify, absorb and control one's own emotions and perceive other's emotions, boosts conflict resolution dexterities relating to healthier social interactions as well as reducing aggression. This is linked closely to social intelligence as well as Zillman's cognitive excitation model of aggressive responses [26,29].

Particularly, the cognitive excitation model suggests that when individuals experience high levels of arousal, consequently cognitive incapacitation occurs, resulting in impulsive responses [26]. Specifically, with aggression,

cognitive disturbance resulting from high arousal levels reduces the likelihood of inhibiting aggressive responses. Richardson et al. [29] suggested that improving cognitive functioning through perspective taking and reflective thinking serves as a cognitive inhibitor of aggressive behavior moderating arousal. Increasing the willingness to view situations from another perspective or another factor enhances cognitive processing decreasing aggression [26]. Richardson and colleagues reported an additional two studies revealing empathy's negative relation to aggression as well [11,29].

Following this revelation, researchers such as Jolliffe and Farrington [28] evaluated the association between empathy (cognitive and affective) and offensive conduct through 32 studies that employed only self-report measures. The analytical results repeatedly showed a significant negative relationship between aggression and cognitive empathy but a weak association between aggression and affective empathy [26]. Furthermore, Lovett and Sheffield [36] assessed the relationship between affective empathy and aggression through 15 studies with youth below the age of 21. The studies employed self-report and picture/story representations to assess affective empathy while assessing aggression through self-report, peer evaluations, clinical diagnosis and recruitment type (i.e. juvenile correctional facility or schools) [26,36]. The self-report measures revealed a negative relationship between empathy and aggression, especially in adolescents. There were inconclusive findings with younger aged children [36]. Lasota [32] also investigated the inverse relationship between both affective and cognitive empathy with aggression in a sample of Polish adolescents. It was found that high scores in cognitive empathy in elements of perspective taking were attended by lower scores in direct forms of aggression such as physical aggression [32]. There was a negative association between affective empathy and physical aggression as well, but it is emphasized that cognitive empathy is specifically important in inhibiting direct physical or behavioural aggression as compared to its affective counterpart [32]. More recently, a meta-analysis of 86 studies investigating cognitive and affective empathy through self-report and experimental tasks were investigated with adult populations [26]. However, the results revealed a weak relationship between aggression and both forms of empathy, especially affective empathy. The inconsistent results from studies may be linked to instrumental deficiencies and the use of diverse assessments such as presentation of stimuli, self-report or behavioural responses to measure affective empathy can be misleading [26]. Considerably, self-report measures could also cause participants to engage in selective reporting biases for instance "to seem like a good or nice individual" causing inconsistent or untrue results [3].

Likewise, researchers have pointed out the usefulness and efficacy of employing physiological measures such as facial electromyography, heart rate and skin conductance responses to study affective empathy in particular [26]. As mentioned in the theoretical chapter, reacting to facial expressions and gestures is an unconscious biological process. Consequently, physiological studies of empathy found that individuals with higher affective empathy displayed increased activity of zygomatic muscles when responding to positive social stimuli, while displaying higher activity corrugator muscles when responding to negative social stimuli [26]. Moreover, neuroimaging discussed earlier have shown physiological changes in specific brain regions responding to empathy and are associated positively with self-reported cognitive empathy [26]. Thus, it can be concluded that at times negative relationships between affective empathy and aggression could be linked to inconsistent and perhaps, inefficient measure of affective empathy, which can sway overall findings. Gantiva et al. [26] took this consideration into account in their recent examination of empathy and aggression with Hispanic adults divided into the aggressive or non-aggressive group. Participants were shown 36 images from the International Affective Picture System of positive affective stimuli (i.e. happy facial expressions, individuals smiling) and negative affective stimuli (i.e. individuals suffering in pain, expressions of individual crying). Affective empathy through physiological responses was measured via facial electromyographic activity, pulse and skin conductance as well as, self-report measures such as the Buss-Perry Aggression Questionnaire and Davis Interpersonal Reactivity Index assessing cognitive empathy [26]. Interestingly, three were no significant differences in physiological response to stimuli with different affective content between both groups (aggressive vs non-aggressive). The only significant finding was seen in the perspective taking subscale of the IRI and physical/verbal aggression. Similar to Richardson et al., [29] and other studies mentioned previously, self-reported measures of cognitive empathy seem to be provided valuable evidence demonstrating the inversive relationship with direct forms of aggression. As suggested by the cognitive excitation model discussed previously, direct forms of aggression (physical and verbal) seem to be related to a deficit in the capacity to see a situation from another perspective than to physically experience feelings that are in harmony with others [26].

Vescio et al., [37] points out that perspective taking instigates affective processes such as affective empathy arousal. This was seen in a study investigating the role of

perspective taking on an individual's empathy levels towards a stigmatized group such as individuals with AIDS [3,39]. It was hypothesized that promoting empathy towards outgroup members would lead to an increase in valuing the wellbeing and feeling more favourable towards the individual or group. The results suggested that participants who were told to take the perspective of another (i.e. an individual describing struggles faced due to their group membership) displayed higher empathy arousal and more positive attitudes towards the group as compared to participants who remained removed and impartial [3,37]. It is proposed that through perspective taking inspiring empathy arousal, it can drive improved intergroup attitudes even when stereotyped biases of outgroups are sturdily endorsed through relational aggression. Vescio et al. [37] tested this with 66 college students who listened to an interview piece where an African American male discussed struggles faced due to his race. Subsequently, participants were asked to answer a series of questions related to the interview through which measures of empathy, attributions and manipulation check were embedded. Similarly, it was found that participants who took on the perspective of the African Male in the interview showed higher empathy levels, attributed higher significance to situational causal influences and displayed more positive attitudes towards African Americans with lower racism scores [3,37]. Thus, it can be claimed cognitive empathy through perspective taking is able to mediate larger societal forms of aggression such as racism, prejudice and injustice.

Connectedly, Phelan and Basow [38] assessed college students' attitudes towards mental health labels and stigmatization through reading vignettes describing of other students struggling with depression, stress and substance abuse. It was found that individuals with higher perspective taking abilities were more likely to label individuals with mental illness in a described scenario as higher levels of perspective taking may allow one to identify forms of distress in others more readily leading to accurate label to aid the other individual [38]. It was also seen that empathy was forecaster of social tolerance, signifying that despite labelling another as mentally ill, individuals with higher perspective taking would not distance themselves from the labelled persons [38]. This research was influential in pointing out empathy's role in decreasing stigma, prejudice and aggressive attitudes of hostility to a variety of vulnerable groups. Additional studies on perspective taking show a decrease in aggression associated brain activity and self-reported hostility following an insult revealing empathy's mediating function once again [3]. Moreover, research found that individuals displaying increased narcissistic features, displaying lower overall empathy are

more disposed to aggression, especially following a threat, insult or rejection [3].

Overall, most of the literature evidence demonstrate empathy's role whether cognitive or affective in inhibiting aggression but this research needs further development. One area of development is to further explore cultural elements of the empathy -aggression relationship in diverse populations. In the next section, we will discuss empathy and aggression in terms of cultural relevance.

2.4 Culture

Bond [39] defines culture as coordinated communal beliefs, values, outlooks, behaviour implications and norms designed over a period of time by a group of individuals, used as a set of conditions for living in a specific geographical location. The rules of the system aim at diminishing members apprehension and uncertainty by enabling behaviour that are clear, explicable, predictable and appreciated for the groups survival [39,40]. More simply, culture serves as a tool that defines the reality or experiences of its members (i.e. life purpose, appropriate behaviour) and maintains a version of stability [40]. Furthermore, cultural patterns as well as traditions support individual's well-being, sense of worthiness, faith, belonging, assimilation and social relationships. It takes on an important role in shaping an individual's learned worldview (i.e. how a person perceives the world, their environment, themselves and others) and responsiveness to others [40]. For instance, a group or cultures record and teachings that brings forth a system of hostility or coercion towards certain groups, absorbing that these acts are justified, enables group members to perceive their personal antagonistic behaviour as appropriate and those of others as punishable [39]. This can create higher out-group violent responses. Thus, culture is one important factor to consider, as it can warrant aggression just as easily as it can warrant Empathic behaviour.

In an interesting exploration of culture and aggression, Bond [39] discusses factors such as war or political upheaval and its linkage to violence. It is postulated that the human norm of socialization is to avoid or inhibit acts of aggression towards in-group members. This rule is then generalized towards outsiders to main peace. However, conflicts such as war or upheaval forces members to train themselves to condone harming and killing another (i.e. the specified enemy), who can be anyone including one's own neighbour. This disinhibition of social self-control as well as conditioning of youth to engage in violent behavior, increases aggressiveness within a group even following the wars end and transfers it to subsequent generations [39]. Researchers found that homicide and assault rates in 186 countries were associated significantly

to the encouragement of aggression in boys during late adulthood, forming a more "macho" authoritarian society [39]. This is also linked to gender stereotypes and differences discussed further in the next chapter. Furthermore, parental warmth, acceptance and rejection responses are seen to also affect aggressiveness in children shaping their personalities and disposition to aggression or problem-solving skills as adults [39]. This can be linked to the previous discussion on attachment and parenting in above sections. Moreover, it is suggested that cultural parenting responsiveness and harshness are strongly correlated with aggressive acts such as homicide [39]. However, a factor to consider is the type of culture, differentiating between individualistic and collectivistic cultures and how they relate to aggressive tendencies.

De Greck et al., [41] suggests that independent or individualistic cultures (such as Germany, United States, UK) refers to a system where an individual is represented by their own uniqueness through thoughts and feelings as well as autonomy and independence, which is the ultimate desired goal in defining oneself [40,41]. This culture solely on an individual as a self-governing entity. Whereas, interdependent or collectivistic cultures (such as Asia, Middle east and regions of Europe like Greece) involves an individual complying to social milieus, attuning ones behavior to others and abiding to the others or groups perspective [41]. In collectivistic societies emphasize in-group bonds, traditional values, obligation to others and relational harmony (i.e. positive attitudes, serenity and group equilibrium) [39,41]. This is seen through a variety of studies suggesting that individuals in collectivistic cultures such as Hong Kong view relational consensus or harmony was more important for life satisfaction than in individualistic cultures in the US or Germany where life satisfaction is associated with emotional well-being [41]. As a result, members of collectivistic societies are unable to tolerate dissonance. They are more prone to depression when experiencing negative social circumstances and seek less social support during stressful times to maintain social concord [41]. This leaves individuals more isolated with other mental health issues on rise. De Greck et al., [41] argues that the expression of anger is said to be less prevalent in collectivistic cultures due to their necessity in maintaining peace and harmony, however, it was found that motivation to suppress emotions such as anger is higher, leading to increased depression rates mentioned above [39]. Anger suppression tendencies were also seen in neuroimaging studies such as with De Greck et al. [41].

It is also suggested that due to continuous anger suppression out of social politeness, individuals of collectivistic cultures display fewer cues of frustration, aggravation and anger during conflicts, while misinterpreting others cues as well. Hence why, in such cultures conflicts do not progress gradually rather they escalate in a sudden manner resulting in drastic intensities of violence [39]. This was found in egalitarian societies in New Guinea and South Africa, despite their tendencies for social harmony, homicide levels were very high [41]. Moreover, in collectivistic cultures certain forms of violence and aggression are seen more frequently including domestic or intimate partner violence where women often remain in abusive relationships to keep the family's honour and the male's reputation. In such cultures, it is also seen that members display higher levels of neuroticism and report experiencing emotions for large periods of time [39]. It could be argued that perhaps in such cultures, emotional self-regulation and social intelligence mechanisms are lacking due to group think.

In terms of empathy, Chung, Chan and Cassels [42] collectivistic cultures such as South East Asia differ in Empathic responding behaviour as compared to Western cultures. Specifically, it was seen that preschool children from collectivistic cultures expressed higher levels of personal distress when required to show empathy and less Empathic helping conduct as compared to Western children [42]. It could be suggested that due to perceiving oneself as a part of a larger entity or group, the distinction or boundaries between self and other necessary for appropriate empathy is blurred in such cultures, explaining why personal distress rates would be higher when witnessing another in distress. Likewise, researchers suggest that cultural parenting styles and responsiveness once again takes on a significant role in empathic behaviours. It was seen that when toddlers from German and Japanese cultures experienced the distress of a friend, mothers in both cultures responded [42]. However, Japanese mothers responded displaying higher negative emotional regulation strategies (i.e. to avoid the root of distress) while German mothers showed more positive regulatory mechanisms to children [44]. It could be that children in collectivistic cultures such as Japan grow up without appropriately learning self-regulation which leads to less other-focused Empathic behaviour as they are too preoccupied trying to soothe their own distress. Likewise, through a neuro-imaging study of empathy and anger, De Greck et al., [41] saw that Chinese participants experienced more personal distress represented in certain brain regions as compared to German participants. It was suggested that personal distress levels in Chinese participants were due to a lack of self-other distinction and self-regulatory mechanisms causing them to become more overwhelmed by negative affect [41]. Furthermore, it was also seen that Germans reported higher levels of Empathic concern, and Empathic

fantasy levels however, there were no cultural differences seen in perspective taking abilities [41]. Similarly seen in a study with 360 Italian adults (i.e. collectivistic culture) by Contradi et al. [33], it was found that personal distress scores were positively associated with emotional regulation difficulties and more hostility. This was also corroborated by Lasota [32] in a sample of 280 polish adolescents who demonstrated high personal distress levels positively associated with more hostility and regulation issues. Alternatively, to De Greck et al. [41], Italians were found with an increase in fantasy scores which was also linked to regulatory difficulties. Chung et al. [42] found in a sample of 190 high school and college students, individuals from Western cultures demonstrated higher levels of other-oriented Empathic concern tendencies and less personal distress when witnessing another's emotional state, as compared to East Asian cultures. This is corroborated with higher levels of prosocial and helping behaviour seen in Western societies as well as better emotional and social well-being levels [42]. However, alternative research has shown high prosocial behaviour in East Asian societies as well despite personal distress. It is postulated that perhaps one's personal distress can prompt prosocial attitudes to ease one's own anxiety. Moreover, collectivistic cultures are also known to be high in perspective taking tendencies (cognitive empathy) related to group interrelatedness [42] as mentioned by De Greck et al. [41] and Lasota [32] as well. Thus, perhaps it could be postulated that cognitive empathy through perspective taking in collectivistic cultures plays a mediating role between aggression.

Relating back to the current study which focuses on the Greek population categorized as a collectivistic culture despite being in Europe. Vitoratou et al. [43] explored aggression levels in 1700 Greek individuals using the Buss-Perry Aggression Questionnaire (BPAQ) revealing hostility subscale linked to depression and interpersonal sensitivity. Corroborating previous discussions regarding anger suppression and thoughts linked to mental health difficulties. It was also found that early aggressive behaviour were predictors of substance abuse tendencies and gender differences of males showing an increase in physical abuse tendencies [43]. This can also be linked to cultural acceptance for males to display such anger as compared to females who must comply to cultural gender norms of submissiveness. Similarly, Zajenkowska et al. [44] suggested that collectivistic cultures like Greece enabled males to attribute higher significance to self-directed behaviours. Zajenkowska et al. [44] examined types of aggression and aggression sensitivity using university students from Poland (*n*= 300), UK (*n*=196) and Greece (*n*=170). It was revealed that Greeks had low trait aggression overall and

high sensitivity to frustration (i.e. tendency to feel aggressive in response to negative circumstances or goals being hindered) compared to UK and Poland. The authors suggested that cultural ideals impact emotional evaluation of different events making distinctive cultures affectively sensitive to dissimilar circumstances [44]. Moreover, this may also be linked to collectivistic cultures unable to self-regulate adequately leading to increased feelings of being overwhelmed in negative circumstances mentioned previously. Opposingly to certain gender norms and stereotypes, Greek females displayed high sensitivity to provocation (i.e. experiencing aggressive affect in response to incitement from others) [44]. It can be proposed that women in Greek cultures suppress more anger due to cultural gender norms creating sudden bursts of aggression occurring as a result. Gender differences as well as age related difference will be discussed shortly. Finally, the current study takes into account cultural elements of aggression and empathy in hypothesizing Greek individuals to higher personal distress, fantasy and perspective taking abilities.

2.5 Gender Differences

There is a shared notion that females display higher empathic abilities than males, however, it is important to mention that research supporting female's higher empathy levels are often seen specifically in studies that employ subjective self-report measures [5,45]. A significant study measuring adults' self-reported emotional quotient (EQ) (i.e. ability to attend to the needs of others and circumstances of others through perspective taking and supportiveness) found that females displayed higher scores than male participants [46]. Other studies have suggested similar results with revelations suggested that such gender differences can be seen by ages 6-9. Michalska, Kinzler and Decety [46] discussed evidence found through a series of experiments as well as self-report measures with both children and adults revealing that females displayed higher distress as well as empathy levels when exposed to videos or mood inductions which also increased with age. Additionally, Schwenck et al. [45] claims that studies investigating objective measures of empathy are lacking or only focus on single aspects of empathy such as perspective taking or emotional judgment. Thus, it is difficult to link different domains of Empathic abilities in particularly school aged children of different genders methodically [45]. Studies investigating theory of mind (ToM) capacities in preschool children additionally suggest that girls display slightly better ToM skills. Research with adolescents suggest more strongly that girls score higher than boys in ToM tasks [45]. Finally, additional studies argue that girls

display higher levels of affective empathy as well [45]. On the other hand, Gilet et al. [47] found no gender differences on perspective taking and personal distress scores in a sample of 322 French adults. It was observed that French females demonstrated higher scores compared to males on dimensions of fantasy and Empathic concern [47], but this was linked to gender roles. Researchers have postulated that results seen in self-report measures are more often based on societal gender roles or cultural gender norms. Studies exploring the psychophysiological element of empathy claim no physical evidence (i.e. heart rate, blood pressure, facial and gestural measures, electrodermal activity) for sex-differences in children or adults [46]. Although, it can be argued that physiological measures may investigate different components of empathy such as affective arousal rather experience. Based on the theories mentioned in chapter 3, it is evident that there would be no gender differences in empathic arousal as it is an imbedded unconscious human competency.

Laboratory studies examining sex differences in empathy seen through emotional judgment assignments through facial cues find that female children and adults score higher in recognition of mental and emotional states through the eye region of the face as compared to males [46]. Schwenck et al. [45] examined empathy in 152 German children through tasks presenting affective stimuli and found that girls were able to recognize affective states more easily than boys. They suggest that girls displayed higher cognitive empathy through perspective taking however, found no differences in affective empathy [45]. Researchers have postulated biological underpinnings to such sex differences suggesting that exposure to prenatal androgens impacts social results later in life. More specifically, a negative association between quantity of testosterone in amniotic fluid and a child's capacity to identify emotional states. In experimental studies with women, administered testosterone had diminishing effects on cognitive Empathic abilities [46]. Testosterone could be linked to lower Empathic tendencies in males while lower testosterone impacting higher empathy in females. Meta-analytical examinations investigating 65 neuroimaging studies exploring reactions to affective stimuli revealed females did not display higher activation when observing affective content compared to males [46]. Amygdala activity showed no differences between genders. Similarly, an FMRI study exploring empathy and its associated with pain in others, results suggested that both genders demonstrated activation in parallel brain regions when deducing affective states of another dependent on visual cues of pain [46]. Females displayed more activation in the thalamus and anterior peninsular, suggesting they perceived painful stimuli

more intensely than males. Michalska, Kinzler and Decety [46] in a study with 65 children and adolescent corroborated no differences in physiological manifestations of empathy across sex when viewing another in pain but claimed that females reported being more upset by the observation. However, neuroimaging studies still require further investigation with larger sample sizes to offer more conclusive results. Interestingly, it is suggested that in FMRI studies, males' Empathic responses declined when observing another individual who had acted dishonestly earlier in pain, this suggested that other socialization and motivational factors impact Empathic gender responses [46].

Michalska, Kinzler and Decety [46] suggest that sex differences could be associated with (a) parental involvement and (b) gender roles, making it more beneficial for females to express higher empathy levels in order to protect and care for their offspring as well as nourishing family bonds. Whereas, males engage in processes which include male intrasexual competition, status seeking and reserve growth which require less empathy [46]. In terms of parental influences, Lyons, Brewer and Bethell [9] add that in childhood emotional empathy is linked to parental warmth, while in adolescence both cognitive and affective empathy are related to maternal support. A longitudinal study found that Empathic concern (i.e. affective empathy) of adults aged 31 was forecasted based on parental involvement and maternal dependency forbearance at age 5 [9]. Research suggests maternal support and nurturance are vital for socio-emotional advancement and perspective taking in boys as compared to girls. Retrospective investigations of childhood parental nurturance were found to be associated with empathic concern while parental overprotection was interestingly linked to later adult perspective taking capacities [9]. The above outcomes are understandable based on previous discussions of parent-child attachment and the parental relationship impacts. Moreover, high quality of parental care and relationship during childhood is discernibly linked to higher empathy levels during adulthood and vice vera according to research [9]. It is argued that each parent plays a different role in the development of empathy and is important to consider when looking at empathy development as well as gender related discrepancies. Thus, in a comprehensive study, Lyons, Brewer and Bethel [9] investigated parental effects on cognitive and emotional empathy along with sex-related differences in 226 participants aged 18-62. Participants completed a series of self-report measures exploring perceived parental bonds and both forms of empathy via the Interpersonal Reactivity Index (IRI) and the Empathy Quotient (EQ). The results suggested that emotional empathy was significantly associated with parental care and

overprotection in males. On the other hand, there was a significant relationship between affective empathy and maternal overprotection in females but a non-significant positive association with maternal support [9]. Additionally, affective empathy was associated with memories of care and overprotection by same-sex parents suggesting that children practice imitation of parents of a similar sex increasing their familiarization with same-sex behaviour and roles [9]. Thus, parental influence shapes empathic abilities in children according to sex as well linking to modelled gender roles.

Socialization processes and gender accepted roles during childhood could be another factor as Michalska, Kinzler and Decety [46] suggest to why gender differences in the experience, identification and expression of affect occur [5]. As suggested previously, girls are conditioned from a young age to care for others, display nurturance and develop close, deep and intimate relationships. Whereas, boys are taught to learn that emotional expression and relationships can signify overreliance and feebleness, which can be strongly connected to male emotional suppression mentioned in the previous chapter [5]. Likewise, Michalska, Kinzler and Decety [46] explicit expressions of empathy could be suppressed with age in males and boosted in females from childhood to adolescence. They are socialized to processes that are higher in problem-solving task oriented and competitive linking to their higher levels of aggressiveness. Furthermore, as adults these socializations can be very evident in how each gender expresses their needs and responses to others in social relations [5]. Females express more emotions that guard the feelings of another, openly express weakness, seek out support and have closer emotional relationships with both genders. On the other hand, males are seen to show less concern with affective struggles of another, less likely to disclose weaknesses and form relations on non-affective external interests [5]. Thus, responses in self-report measures of empathy could be role based as individuals may respond in manners that show consistency with gender stereotypes [46]. Gilet et al. [49] also points out that females are more disposed to identifying with or relating to fictional characters emotions and reactions as females are conditioned to be more prosocial and display more emotional expression. It is suggested that females display better scores on care associated moral reasoning skills [47]. Moreover, females are more likely to read fiction concern relationships, art and social interests whereas males tend to be more concerned with competition, movement and goal driven interests [47]. Keeping this in mind, females may be more willing to report empathy in self-report measures as it is a valuable asset as compared to male's lack

of willingness. Consequently, self-report measures of empathy are said to be associated with social desirability [46]. Additionally, it postulated that items in self-report measures (e.g. seeing another cry makes me feel like crying) are not constructed in a gender neutrality manner relevant to both sexes based on gender norms and expectations of crying. It could be the reason why females continuously score higher than males as they are able to relate to items more easily based on gender beliefs [46]. Finally, performance variations in empathy related tasks in laboratory studies may be linked to societal or cultural beliefs and norms on how one should express affect rather than internal differences between sexes [46]. Thus, we suggest that there may be a lack of sex discrepancy in trait empathy but more so in contextual factors of empathy based on socialized normed processes and responses.

2.6 The Present Study Hypotheses

Based on the literature analysis above, the current correlational study's research question remains "Is there an inverse association between empathy and aggression in the Greek population and does gender have any effect on empathy levels?"

There are three main hypothesis which are as follows:

1. Participants will display a negative correlation between aggression and empathy levels.

2. Female participants will reveal higher scores compared to males in the subscales of Fantasy, Empathic Concern, and Personal Distress on the Interpersonal Reactivity Index

The objective of the study was to investigate the association between empathy (cognitive and affective) and aggression (physical, emotional, verbal and cognitive) in Greek college students via self-report measures. The study further examined gender effects on empathy and aggression. Furthermore, the purpose of the study was to bridge the gap in the literature which lacks data and research conducted within the Greek population concerning the empathy-aggression relationship. The aim was to build on past literature, relating it to this particular region of the world and its cultural importance.

3. Method

3.1 Participants and Sampling

The sample included 92 Greek undergraduate students from two private American Universities (Deree-The American College of Greece and Hellenic American University) situated in Athens, Greece. Out of which 75% were females (*N*=69) and 25% were males (*N*=23). The age of the sample ranged from 18 to 54 years with 85.9%

from the age group 18 – 28 years old (*N*= 79); 8.7% from the age group 29-39 years old (*N*= 8) and 5.4% from the age group 40+ (*N*= 5). Freshman's made up 12.0% of the sample, 16.3% were sophomores, 26.1% of juniors and 45.7% were seniors. Additionally, the majority of the sample approximately 46.7% were majors in Social Sciences (i.e. Psychology) (*N*=43), while 14.1% were from the school of Business and Finance (*N*=13), 13.0% majored in English and Communication (*N*=12), 13.0% were Art majors (*N*= 12), 8.7% were Science majors (i.e. engineering, biomedical sciences, environmental science) (*N*= 8) and only 4.3% had declared they were History, Society and Law majors (*N*=4) (See Table 1). The study employed a web-based, non-probability volunteer response method of sampling. In particular, students were approached via a common Facebook group where the questionnaire link was provided for anyone to voluntarily participate.

Table 1. *Descriptive Statistics and Frequencies*

	Frequencies	N	Mean	Std. Deviation
Males	25%	23		
Females	75%	69		
College Year				
Freshman	12.0%	11		
Sophomore	16.3%	15		
Junior	26.1%	24		
Senior Age	45.7%	42		
18-28	85.9%	79		
29-39	8.7%	8		
40+	5.4%	5		
College Major				
Arts	13.0%	12		
English & Communication	13.0%	12		
Business & Finance	14.1%	13		
Sciences	8.7%	8		
Social Sciences	46.7%	43		
History, Society & Law	4.3%	4		
IRI Empathy			80.05	16.69
BPAQ Aggression			99.15	11.98

3.2 Design and Procedure

The research design of this study was non-experimental and correlational as it studied the relationship between empathy and aggression, along with effects on gender (males or females). The variables in this study were Empathy, which ranges from cognitive empathy (i.e. perspective taking, fantasy) to affective empathy (i.e. empathic concern, personal distress) and aggression (i.e. physical, verbal, anger – emotional and hostility - cognitive). Upon approval from the respective ethical departments and the head of the psychology department, the link for the online google forms questionnaire was sent to the web-based

platforms, following which the data collection process took place. Participants first received an informed consent with information regarding the study and their rights (e.g. voluntary participation, risks, and withdrawal is permitted at any time) (Appendix A). Upon their agreement, each participant was given a questionnaire which included demographic questions on the first page along with the IRI [9] and the BPAQ [24] scales on the following pages. Subsequently, participants received a debriefing from informing them of the purpose of the study, expected findings, relevant literature and contact information of the researcher (Appendix E).

4. Materials

Demographic Section

In relation to demographic data, participants were required to provide information regarding their gender (*male*, *female*); age, major (*e.g. "Psychology"*), and college year (*"Sophomore - 2nd year of college"*).

Interpersonal Reactivity Index

In order to obtain a multidimensional approach of individual differences in Empathy levels, the Davis Interpersonal Reactivity Index (IRI) [6] will be administered. The IRI is a perfect measure to assess both cognitive and affective components of empathy. It is considered reliable with internal reliabilities of individual subscale ranging from 0.71 – 0.77, test-retest reliability of each subscale ranging from 0.62 to 0.71 as well as displaying satisfactory convergent validity [9,11]. The scale consists of 28 items involving 4 distinct 7-item subcategories which include: Empathic Concern (EC) which measures other-oriented affective empathy and sympathy behaviours (e.g. "I often have tender, concerned feelings for people less fortunate than me"); Perspective Taking (PT) measures cognitive empathy by imagining another's viewpoint (e.g. "I sometimes try to understand my friends better by imagining how things look from their perspective"); Fantasy Scale (FS) assesses cognitive empathy through one's tendency to identify with fictional characters (e.g. " I get really involved with the feelings of the characters in a novel") and Personal Distress (PD) which assess affective empathy through one's self-oriented sense of anxiety or discomfort during others mental/affective states (e.g. I sometimes feel helpless when I am in the middle of a very emotional situation). The scale comprises of 20 normally scored items and 8 reversely scored items. The scale is scored using a 5-point Likert scale representing a range of possible responses (*1= strongly disagree to 5= strongly agree*). The total score suggests that the higher the score, the more

Empathic a participant may be. Moreover, each subscale of empathy was scored separately in order to observe significant differences between types of empathy in Greek college students.

Buss-Perry Aggression Questionnaire

To assess levels of state aggression, the Buss-Perry Aggression Questionnaire [22], known as the BPAQ was utilized. Furthermore, the scale is recognized to have sufficient levels of reliability and validity [22]. The scale consists of 29 items designed to measure four different dimensions of aggression which include: Physical Aggression measuring behavioural or direct aspects in which injurious harm to inflicted on another person (e.g. "If somebody hits me, I hit back"); Verbal Aggression measures direct/indirect verbal harm to another (e.g. "When people annoy me, I may tell them what I think of them"); Anger measures the affective component or physiological reaction (e.g." I have trouble controlling my temper") and Hostility measures thoughts of animosity (e.g." I am sometimes eaten up with jealousy"). It incorporates 27 normally scored items and two reversely scored items. The scale is scored using a 5-point Likert scale representing a range of possible responses (*1= extremely uncharacteristic to 5= extremely characteristic*). The total score assumes that the higher the score, the more aggressive the participant. Similarly, each subscale of aggression was also scored separately in order to observe significant differences between types of aggression in participants.

For the purpose of this study, the instruments were provided via google forms through online portals and participation was voluntary without incentives.

5. Results

Descriptive statistics and frequencies can be found in Table 1 and Figure 1 as described in the participants section above. Before beginning complex data analysis, normality tests were conducted to assess both Empathy and Aggression's distribution according to gender in the

Greek undergraduate population. A Kolmogorov-Smirnov test indicates that Empathy scores in males follows a normal distribution, $D(23) = .147$, $p = .200$. The test reveals that Empathy scores in females also follows normal distribution, $D(69) = .07$, $p = .200$. Similarly, a Kolmogorov-Smirnov test shows that Aggression scores in males follows a normal distribution, $D(23) = .14$, $p = .200$. Finally, the test reveals that Aggression scores in females also follows normal distribution, $D(69) = .07$, $p = .200$.
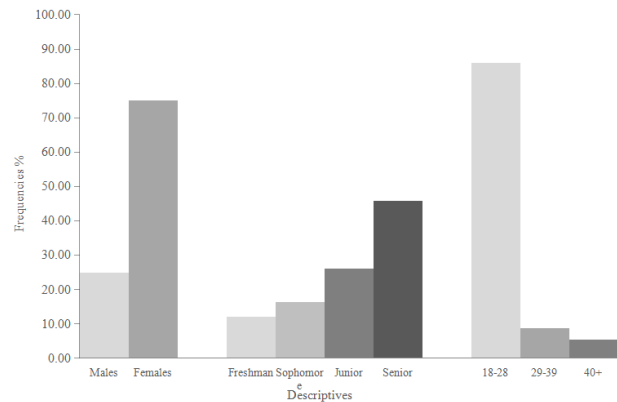
Figure 1. Bar graph with frequencies of descriptive demographic data obtained from the sample of undergraduate students in two private colleges in Greece.

Following normality checks, a Pearson Correlational analysis was conducted on all subscales of aggression and empathy to assess Hypothesis 1- *participants will display a negative correlation between aggression and empathy levels*.

The analysis revealed a significantly negative relationship between Physical Aggression (*M*= 16.30, *SD*= 3.54) and Perspective Taking (*M*= 26.47, *SD*= 4.16); $r(92) = -.25$, $p < .05$. Likewise, a significant negative correlation was seen between Physical Aggression and Empathic Concern (*M*= 26.78, *SD*= 4.05); $r(92) = -.26$, $p < .05$ (see Table 2).

The analysis also found a significantly positive relationship between Verbal Aggression (M= 16.30, SD= 3.54) and Personal Distress (M= 20.06, SD= 4.98); r(92) = .21,

Table 2. Correlations among Empathy and Aggression Subscales

		1	2	3	4	5	6	7	8
1	Perspective Taking								
2	Empathic Concern	.29**							
3	Fantasy Scale	.19	.36**						
4	Personal Distress	-.08	.47**	.2					
5	Physical Aggression	-.25*	-.26*	.15	.08				
6	Verbal Aggression	-.12	.08	.16	.21*	.39**			
7	Anger	-.14	-.01	.31**	.30**	.62**	.58**		
8	Hostility	.01	.11	.25*	.44**	.39**	.23*	.48**	

Note: n=92. $*p < .05$; $**p < .01$

$p < .05$. Moreover, a significantly positive relationship was revealed between Anger ($M= 19.08$, $SD= 5.45$) and Personal Distress; $r(92) = .30$, $p < .05$. A significant relationship was also observed between Hostility and Personal Distress; $r(92) = .44$, $p < .01$

Once more, there was a significantly positive relationship between Hostility ($M= 23.84$, $SD= 6.27$) and the Fantasy Scale; $r(92) = .25$, $p < .05$. Finally, a significantly positive relationship was also noted between Anger and the Fantasy Scale ($M= 25.82$, $SD=5.14$); $r(92) = .31$, $p <.01$. (see Table 2).

A series of independent-samples t-tests were conducted to investigate Hypothesis 2 - *Female participants will reveal higher scores compared to males in the subscales of Fantasy, Empathic Concern, and Personal Distress on the Interpersonal Reactivity Index*.

The results of an independent-samples t-test comparing the Fantasy scores of Males ($M= 23.70$, $SD= 5.10$) and Females ($M= 26.54$, $SD= 4.99$) met the assumptions for equal variances on the Levene's Test and indicated a statistically significant difference between the two groups, $t(90) = -2.35$, $p < .05$. That is, female participants reveal higher fantasy scores compared to male participants (see Table 3 and Figure 2).

Table 3. Descriptives of Independent Sample t-tests

	Males		**Females**			
	M	SD	M	SD	t(90)	p
Fantasy Scale	23.70	5.10	26.54	4.99	-2.35*	0.02
Empathic Concern	26.70	3.38	26.81	4.28	-0.12	0.91
Personal Distress	19.43	4.12	20.28	5.25	-0.70	0.49

*$p < .05$

Note: M = Mean. SD = Standard Deviation
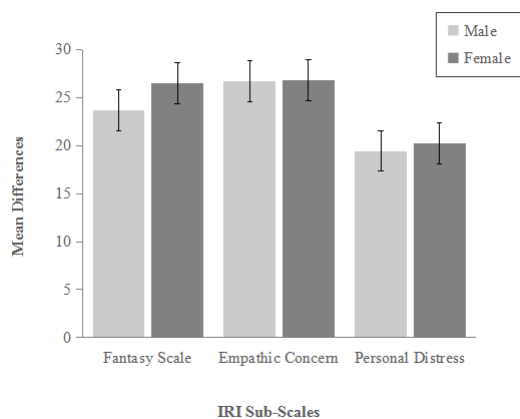
Figure 2. Bar graph of mean differences between males and females on three Empathy subscales.

Additionally, the comparison of Empathic Concern levels between Males ($M= 26.70$, $SD= 3.38$) and Females ($M= 26.81$, $SD= 4.28$) revealed no significant differences, $t(90) = -.12$, $p = .91$. Finally, the assessment of Personal Distress levels between Males ($M= 19.43$, $SD= 4.12$) and Females ($M= 20.28$, $SD= 5.25$) show no significant differences as well, $t(90) = -.70$, $p = .49$ (see Figure 2).

Since there was a large percentage of participants from the college major Social Sciences (see Table 1) which include psychology majors, a One-Way ANOVA was conducted to investigate the effect of College Major on Empathy levels. Empathy was measured in the following College Majors: Arts ($M= 99.75$, $SD= 10.85$); English and Communication ($M= 105.08$, $SD= 13.14$); Business and Finance ($M= 92.38$, $SD= 10.21$); Sciences ($M= 97.50$, $SD= 10.92$); Social Sciences ($M= 99.47$; $SD= 12.12$); History, Society and Law ($M= 101.50$; $SD= 13.53$). The application of One-Way ANOVA showed that College Major does not have a significant effect on Empathy levels, $F(5,86) = 1.53$, $p = .19$.

Aggression was also measured in the following College Major groups: Arts ($M= 84.17$, $SD= 19.47$); English and Communication ($M= 83.58$, $SD= 15.08$); Business and Finance ($M= 85.46$, $SD= 17.34$); Sciences ($M= 84.13$, $SD= 12.25$); Social Sciences ($M= 75.72$; $SD= 16.55$); History, Society and Law ($M= 78.0$; $SD= 16.75$). The application of One-Way ANOVA revealed that College Major does not have a significant effect on Empathy levels, $F(5,86) = 1.23$, $p = .30$.

6. Discussion

6.1 Cognitive – Affective Empathy and Aggression

The study hypothesized that participants would display a negative correlation between aggression and empathy in general. Following statistical analysis, the results indicate a significant negative correlation between both cognitive empathy (i.e. perspective taking) as well as affective empathy (i.e. Empathic concern) with physical aggression. Zajenkowska et al. [44] also found low to almost non-significant physical aggression scores in Greeks. The results go in the same direction as previous findings by Richardson et al. [29] supporting that college students cognitive empathy through perspective taking is able to inhibit aggressive responses based on higher level mental functioning based on theory of mind (TOM) allowing oneself to control impulses resulting in alternative conflict resolution responses [29,35]. Richardson et al. [29] posits that viewing a situation from the perspective of another or another factor improves mental processing leading to a decrease in aggression. This is also in line with Gantiva et al. [26] and past research

supporting that the cognitive excitation model of regulating aggression, indicating that cognitive processes impact the activation associated with direct forms of aggression. Moreover, Lasota [32] likewise found that in Polish adolescent populations, higher scores in perspective taking go along with lower physical aggression scores, confirming the importance of cognitive empathy in mitigating a more direct and behavioral form of aggression [32]. Kaukiainen et al. [27] discussed similar results in a study with school children, revealing that higher levels of social intelligence and empathy scores are linked to a decrease direct forms of aggression [11]. It was further postulated that social deficits in comprehending another's viewpoint and a lack of conflict resolution skills were seen in more behaviorally aggressive children [27]. Thus, suggesting that significant perspective taking scores in the current Greek sample are associated to increased levels of social intelligence in attempting to understand diverse perspectives and reaching appropriate resolutions without behavioral or direct aggression.

Furthermore, the present study also found that higher Empathic concern scores are linked to lower physical aggression levels similar to findings by Richardson et al.[29] and Gantiva et al. [26] discussing an inverse relationship between physical aggression such as assault and affective empathy. Similarly, previous meta-analysis of 43 studies also found a negative relationship between aggression and affective empathy, however, as it is indicated in this study. This inverse relationship is seen mostly in self-report measures [11,26,27,29]. Additionally, Lasota [32] revealed comparable results suggesting that the affective dimension of empathy which guides one's attention towards other's anguish holds a negative relationship with behavioral direct aggression. As though being able to attune to the emotional state of another and vicariously share another's suffering acts as a buffer against physically aggressive responses an individual may have. This is also corroborated by Jolliffe and Farrington [28] claiming that lower levels of affective empathy were linked to more aggressive as well as bullying behaviors, whereas higher levels are linked to less aggressive tendencies. Within the current sample of Greek undergraduate students, it can be suggested that both cognitive and affective empathy play a role in mitigating more direct forms of aggression such as behavioral or physical aggression. However, other forms of aggression revealed alternative results.

6.2 Personal Distress and Aggression

More specifically, we found a significantly positive relationship between verbal aggression and personal distress levels (i.e. an aspect of affective empathy that is self-fo-

cused unpleasant response either discomfort or anxiety when exposed to the suffering of another). What's more, personal distress levels were also significantly associated with Anger (i.e. physiological and affective component of aggression) and Hostility (i.e. cognitive competent of aggression centered around thoughts and feelings of enmity and unfairness). Zillman's cognitive excitation model of aggressive responses explains that high levels of arousal lead to a cognitive prostration causing impulsive responses [26]. With the current study, it could be that high arousal levels when exposed to another individuals' difficulties reduces an individual's ability of inhibiting certain aggressive responses such as verbal responses. Furthermore, as Kaukiainen et al. [27] suggests, in order for some form of indirect aggression to arise, sufficient social intelligence dexterity is required, which can connect our previous findings on perspective taking abilities and verbal aggressions. It is argued that perspective taking facilities aid in social and language capacities in order to effectively engage in verbal aggression as well [27].

Decety and Michalska [2] point out that an individual who possess emotional regulation abilities, meaning that one can focus and alter attention in an attempt to moderate distressing vicarious emotions while maintaining a satisfactory level of emotional arousal, are less likely to score high personal distress. However, individuals unable to cope with the exposure of intense negative emotions are likely to score high in personal distress. Furthermore, Castillo et al [21] argues that aggressive individuals are lacking in the ability to recognize and regulate negative emotion that is central to many forms of aggression. Correspondingly, personal distress should be explored based on the underlying mechanisms of emotional regulation and more importantly, dysregulation processes of coping when investigating its link to aggression. As discussed in previous sections, emotional dysregulation refers to a dysfunctional method of experiencing and responding to emotions (e.g. suppression, avoidance), especially linked to emotional reactivity like aggression [31]. With regards to the current results, participants may lack adaptive emotional regulation skills causing lack of inhibition while increasing reactivity where some forms of indirect aggression are likely to ensue.

Research has suggested a lack of awareness, understanding and recognition of emotions as well as being unable to cope with the experience of certain emotions leads to difficulties in inhibiting impulsive behaviors and increasing hostility as found in the current study [21,31]. Previous research evidence further confirms the relationship between personal discomfort and higher scores in hostility, irritability, resentment [32]. Furthermore, Lasota

[32] found similar results in within a Polish sample where a positive association between affective forms of empathy along with hostility and anger was visible. Research within an Italian sample by Contradi et al. [33] similarly found that difficulties in emotional regulation were associated with hostility levels, as well as, personal distress possessing a positive association with difficulties in emotional regulation and hostility.

What seems interesting is that Decety and Michalska [2] claim that effective emotion regulation is positively associated with Empathic concern or sympathy responses to others, they emphasize that the distinction between self and other is imperative in inciting supportive responses. Their neuroscientific research points that both theories of mind and emotional regulation activate the prefrontal cortex in order to maintain self-control and emotional control during empathy related situations [1,2]. Likewise, Ioannidou and Konstantikaki [17] support this claim by arguing that an individual's ability to control impulses, prevent distress, recognize emotions and adopt another's perceptive are key elements for a sound Empathic response. However, in the previous paragraph, the present sample displayed high levels of Empathic concern while also simultaneously experiencing high levels of distress. Moreover, the current sample was able to display theory of mind abilities based on perspective taking scores being high which could lead to Empathic responses, yet perhaps due to a deficit in emotional regulation abilities, these Empathic responses then cause personal distress to individuals leading to hostility, anger and verbal aggression when unable to soothe themselves. This is supported by previous studies claiming that individuals engage in aggressive patterns to regulate and/or improve their own emotional states [33]. Contradi et al. [33] further verifies this argument explaining that during stressful experiences, individuals scoring high on Empathic scales may engage in antagonistic behaviors as a maladaptive coping mechanism to avoid, flee or break free from uncomfortable situations, emotions and/or to self-regulate. It is also suggested that perspective taking plays a mediational role in balancing severe hostility and anger responses [33], as seen in the current sample. Contradi et al. [33] similar findings within an Italian sample are similar to our findings with Greek students, which could be due to similar cultural views in both these cultures.

Moreover, it is important to consider Greek collectivistic cultural influences that affect emotional regulation abilities and the distinguishing between self and other. Chung et al. [42] argues that individuals within collectivistic cultures lack emotional regulation due to group think and reveal higher personal distress levels when required to express empathy compared to western cultures [42]. It

is postulated that identifying oneself as part of a bigger system or group clouds the distinction between self and other, especially in collectivistic cultures and can explain high personal distress levels when observing another in anguish. This was also in line with De Greck et al. [41] observing self-other distinction struggles and self-regulation difficulties in Chinese participants causing higher personal distress levels. Additionally, this was supported by Zajenkowska et al. [44] study examining aggression in university students, revealing Greek participants with high sensitivity to frustration (i.e. propensity to experience aggression in response to negative stimuli) compared to the UK or Poland. Vitoratou et al. [43] also found that Greek demonstrated high hostility scores along with depressive features, anger and aggression. It was proposed that individuals in collectivistic cultures such as Greece may be unable to appropriately self-regulate causing emotions of being overwhelmed in stressful circumstances. Moreover, the suppression or avoidance of anger due to cultural norms has been linked to bursts of aggression or depression occurring as a result of dysregulation [39]. Thus, higher sensitivity to personal distress in Greeks could be associated with a cultural element of being unable to fully distinguish between self and other; discharge and process discomfort resulting in reactivity, either mentally (hostility) or emotionally (anger) and perhaps, verbally as well.

Participants from collectivistic cultures such as China, Japan are often seen revealing higher perspective taking propensities due to group interconnectedness as well [41,42]. Consequently, it could be assumed that in collectivistic cultures as reflected through the current study's as well, perspective taking could be the primary mediator between physical aggression to maintain group harmony. Additionally, research has demonstrated that East Asian participants often reveal high Empathic behaviors despite and simultaneously alongside high personal distress levels. It is argued that perhaps one's own personal distress can prompt prosocial or Empathic concern attitudes to ease one's own anxiety [42]. This could illuminate the high Empathic concern levels observed in the current sample despite high personal distress scores.

6.3 Fantasy and Aggression

Finally, the results of the current study also revealed a positive correlation between the fantasy dimension of empathy along with anger and hostility. Fantasy, an element of cognitive empathy is the ability to imagine oneself as fictional characters with similar emotions, actions characters. Parallel to our previous findings where participants scored high in perspective taking, another cognitive element of empathy, it seems understandable that participants

would score high in other cognitive Empathic elements such as fantasy as well. Culturally, cognitive Empathic abilities are more frequent in collectivistic cultures. However, the interesting association lies between fantasy's positive relationship with physiological/affective aggression and cognitive aggression as well. Similar to previous discussion on emotional regulation, it can be argued in an attempt to identify oneself with fictional characters, participants engaging in metacognitive theory of mind to understand others. However, if the emotions of a character is distressing, participants experience difficulties in coping or emotional regulating such distress and may use maladaptive coping mechanisms including antagonistic behaviors. Contradi et al.[33] corroborated these results as they found that high fantasy scores was positively associated with emotional regulation difficulties. They also contend that previous research has found a positive relationship between fantasy and emotional vulnerability as well as sensitivity to others [33]. It is also suggested that individuals high in fantasy are frequently found to suppress or avoid affect as a way to cope with distress [33]. If we could link this to collectivistic culture, it can be postulated that Greek participants due to cultural norms of suppression/avoidance of intense emotions and a lack of adequate emotional regulation capacities, are unable to control emotional arousal and impulses. This could lead to increased frustration, sentiments of anger and hostile thoughts, including thoughts of unfairness as they may struggle to soothe themselves feeling stressful emotions as overwhelming. An alternative perspective could argue that due to participants being unable to express emotions openly based on cultural group norms of maintaining group harmony, they may seek out identification with fictional characters also facing similar struggles, but are unable to cope with distressing emotions the empathic process brings leading to increases anger and hostility. Further research on Greek emotional regulation abilities and processes are required to understand cultural effects on empathic abilities.

6.4 Gender Effects

The study also hypothesized that female participants would display higher scores compared to males in empathy subscales of fantasy, Empathic concern and personal distress. Statistical analysis indicated that female participants demonstrated higher scores in Empathic fantasy compared to male participants. However, there were no significant gender differences observed in terms of affective empathy on scales of Empathic concern and personal distress. Consistent with Gilet et al. [47] who reported that women revealed higher scores on the fantasy scale com-

pared to men in the investigation of empathy in a French sample. These results suggest that females are more likely than males to relate or identify with fictional characters and experience more compelling Empathic responses to others negative circumstances. Socialization processes and gender accepted roles as suggested by Michalska, Kinzler and Decety [46] are important contributors to gender differences in the association, experience and presentation of emotion [5]. Since females are conditioned by society and culture to be caring, nurturing, understanding while expressing higher intimacy in relationships since a young age [5], they may be more inclined to display these qualities in several domains of life including connecting with fictional characters. Whereas males are geared towards emotional suppression in order to avoid being viewed as over-reliant [5], such conditioning from a young age may cause adult males to not fully engage with the emotions and cognitions of fictional characters. Research argues that cultural gender roles may habituate males to display less concern with the effect of another and obtain a more self-seeking attributes of status seeking, competition and achievement growth [46]. Likewise, Lyons, Brewer and Bethel [9] suggest that females are more likely to engage in social and pretend play or role play scenarios as children, allowing them to use such skills when connecting with fictional characters. On the other hand, male children are encouraged to engage in physical, competitive activities involving accomplishment and motor skills [9]. This may inhibit understanding and identifying with fictional characters affective capacities or create an emotional disconnect from fictional characters. Whereas, female gender role promotes the importance of other's feelings, open expression of all affect, seeking support and obtaining closer affective relations [46] causing them to seek these relatable attributes and emotional connections with fictional characters as well.

Michalska, Kinzler and Decety [46] also point out that due to these gender roles, females may be more willing to report empathy in self-report measures due to social desirability as well. Likewise, other studies have also found that females report higher empathy levels especially in self-report measures as compared to other experimental procedures [5,45]. Michalska, Kinzler and Decety's study [46] with children and adolescents suggested no physiological difference in empathy across gender when observing another individual's suffering but females communicated more distress by the observation. This could be due to social desirability of females being more motivated as well as expected to show more concern to another's pain and are encouraged to openly communicate this, compared to males who suppress distress. Moreover, it is also argued

that certain items in self-report such as (e.g. seeing another cry makes me feel like crying) are not represented through gender neutral means taking into considering gender beliefs and socialization processes in terms of expressing emotion through crying [46]. Furthermore, due to high personal distress scores found in the study, it could be that engaging in fantasy increases personal distress for male participants and due to gender norms of male affect suppression, they are less likely to engage in fantasy connections. Although, females also experience personal distress, it may be more culturally acceptable for females to display or communicate this distress openly. Finally, Gilet et al.[47] suggests that previous research has shown that women report reading more fiction, specifically, fiction that centers around interpersonal relationships and display more artistic and social curiosities. Such interests are also influenced by socialization process and gender roles, resulting in higher scores in items such as fantasy compared to male participants. Gender differences often seen in the study of empathy and aggression allude to gender role and expression discrepancies as compared to sex differences in the traits.

Finally, a large portion of participants belonged to the major 'Social Sciences' (*N*=43), which incorporates psychology as well. In order to rule out responding biases and social desirability by these participants who may have knowledge on empathy and aggression, the effect of college major on empathy and aggression levels was explored. The result demonstrated that college major did not have any significant effect on empathy and aggression scores.

7. Limitations

This study presented several limitations, firstly, even with a satisfactory sample size, the percentage of female participants compared to males was disproportionate. A majority of the participants were female, skewing the findings with one-sided gender biased data. Future research should obtain data of a proportionate amount between both genders of the population. Secondly, there was limited of access to the general Greek population, therefore, participants were Greek students obtained from two private American colleges in Greece, which may not be indicative or representative of the general Greek population. Additionally, due to covid-19 and lockdown restrictions, direct access to participants was limited causing the study was conducted entirely online using social media platforms. Due to this online nature, there was less identification verification to authenticate that participants meet the criteria needed for the study, biased respondents are able to include themselves into the sample and partici-

pants who are not affiliated with the specific social media platforms are unable to participate. Moreover, the instruments used in the study were self-report measures which as discussed in the literature review have been known to create certain subjective respondent biases such as social desirability, attribution errors and exaggeration. Future research could incorporate other forms of behavioural or physiological measures alongside self-report instruments to ensure reliable meaningful data. An interesting limitation that was unexpected was the choice of a demographic question regarding participants GPA which received negative responses from a large portion of the participants and removed from the study. Participants expressed a violation of privacy by asking GPA scores and questioned how it would be relevant to the research. Many participants refused to disclose such information and provided answers such as "no, N/A, or 0". Future research within academic settings should keep such a response in mind. It is recommended that the informed consent indicates the reasoning behind such a question, the question could be rephrased in a more neutral yet sensitive manner or should be reconsidered entirely unless directly relevant to the study. As in the current study, GPA was not relevant in any way to the data and was removed based on its lack of applicability. It is important to consider all emotional risks and boundary crossing that demographic questions can bring up to participants. Lastly, the study may be limited in exploring extraneous or confounding variables that could affect the findings such as the covid-19 pandemic, mental health difficulties and other personal as well as contextual difficulties that influence participants responses.

The present study concludes that there is an inverse relationship between empathy and direct forms of aggression as seen in self-report measures and supported by previous literature. Future examinations on the empathy-aggression relationship could explore further cultural impacts on emotional regulation abilities in Greek individuals as well as, attachment relationships and its impact on emotion regulation as well as Empathic abilities. Recommended future directions also include further investigation of cultural differences between Greeks, a Mediterranean collectivistic culture compared to individuals from western, individualistic cultures. Additionally, research on how emotional dysregulation in Greek students impacts academic success is also an important and interesting area of exploration.

Finally, this research was important for various fields of psychology including social, clinical, educational, cross-cultural and counseling psychology in creating a pathway to understanding prosocial and antisocial tendencies in the Greek students. More specifically, it can

help in the field of clinical and counseling psychology in exploring and being mindful of the apparent emotional dysregulation difficulties that Greek individuals may face either due to culture, parenting or attachment, and could aid in the potential understanding of mental health struggles/responses such as depression, anxiety, stress or burnout, trauma and interpersonal difficulties. This can be beneficial to professionals to prepare to aid individuals in learning effective and functional emotional regulation and self-soothing mechanisms, as well as, psychoeducate clients on the cultural link of emotional regulation and their experiences. School or college programs may be assisted by offering therapy sessions or psychoeducational groups to help students specifically learn more practical regulatory mechanisms decreasing anger and hostility in institutional environments and society, thereby increasing competent Empathic capacities as well. Moreover, in acknowledging how emotional regulation plays a key role in processing not only personal experiences but experiences of others, it is important for mental health practitioners to raise awareness of the discrepancies of regulation in the Greek culture as well as its consequences.

Acknowledgments

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