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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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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 neuroimaging 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, $D(69) = .07$, $p = .200$.
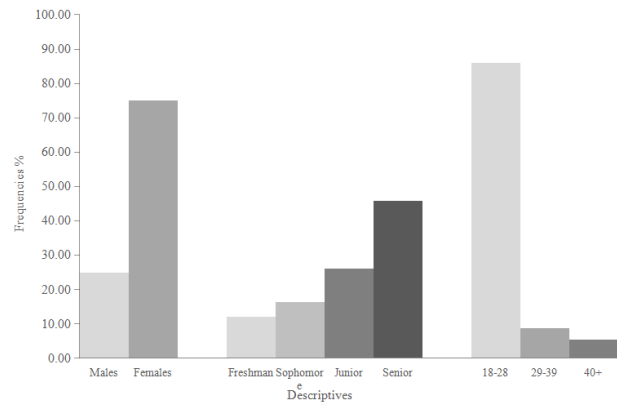
Figure 1. Bar graph with frequencies of descriptive demographic data obtained from the sample of undergraduate students in two private colleges in Greece.

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
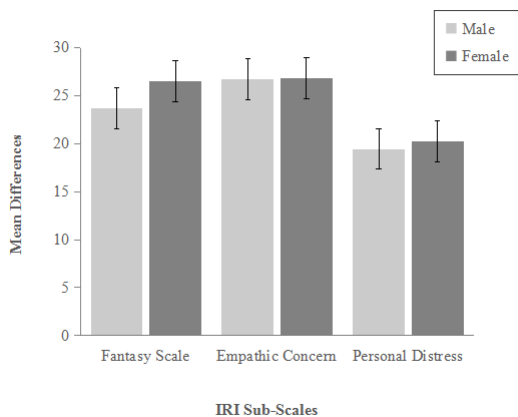
Figure 2. Bar graph of mean differences between males and females on three Empathy subscales.

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 meditator 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 participants 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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