

The association of aggression and cognitive and affective empathy: Considering gender differences

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Abstract

This study is aimed to investigate the association between affective empathy, cognitive empathy and aggression among young adults and to examine whether there are significant differences between males and females with regard to this association. Earlier studies report a negative relationship between empathy and aggression; this indicates that the development of empathy might influence aggressive behaviour. In the present study 168 participants were included between the age of 18 and 26, of which the majority were females (76,2%). Data has been collected using an online survey. Empathy has been measured with the Interpersonal Reactivity Index (IRI). The Proactive/Reactive Aggression (PRA) was used to measure aggressive behaviour. To examine whether the association between empathy and aggression depends on the type of empathy a regression analysis was conducted. It was hypothesized that the association between cognitive empathy and aggression is negative for males and non-significant for females. The findings support these hypotheses, however the association for males can be accounted as marginally. It was further hypothesized that the association between affective empathy and aggression is non-significant for males and negative for females. The association between affective empathy and aggression for males is, as expected, non-significant. The association for females is, contrary to the hypotheses, not significant. This study presents a solid base for investigating the association between affective empathy, cognitive empathy and aggression. However, further research is suggested concerning the variable of aggression, the technics of measurement and further possible predictors of aggression.

Introduction

Aggression is a widely discussed topic, due to its destructive nature for the targets of such acts, but also for the perpetrators themselves, and therefore presents a serious problem (Devine, Gilligan, Miczek, Shaikh, & Pfaff, 2004). In order to effectively reduce aggression, one has to understand where it originates. Hence empathy proves to be of crucial influence on the development of aggressive behaviour (Stavrinos, Georgiou, & Theofanous, 2010). Dispositional empathy appears to be a complex multidimensional construct, in which cognitive and affective aspects can be distinguished (Davis, 1983). A lack of empathy is often associated with violent, aggressive and criminal behaviour and is related to problems in social communication and interaction (Blair, Mitchell, & Blair, 2005; Moeller, Dougherty, Barratt, Schmitz, & Swann, 2001). The theory of the relationship between empathy and aggressive behaviour suggests that people with low empathy are believed to have an increased likelihood of acting in an aggressive manner (Feshbach, 1978). This can be traced back to the fact, that the behaviour of those with low empathy is not tempered by the substitute experience and comprehension of the emotional states of others (Jolliffe & Farrington, 2007). Suggesting that those with low empathy may fail to connect their aggressive behaviour to the emotional reaction of others (Hare, 1999). The hypothesized relationship between low empathy and aggressive behaviour is often investigated in psychological and criminological research, such as the involvement of empathy in the concept of psychopathy, a combination of behavioral and psychological traits linked to an increased likelihood of violent and criminal behaviour (Harpur, Hakstian, & Hare, 1988). Therefore methods to increase empathy in offenders are frequent elements in treatment programs (Jolliffe & Farrington, 2007). These studies tend to focus on more serious offences including identifiable victims, rather than less serious or even victimless aggressive behavior. Therefore most programs are constructed for severely antisocial behaviour and convicted offenders. However there is a wide spectrum of behaviour that can be considered aggressive, including questionnaire measures of the potential for aggression, which are investigated in the present study. So far results have been contradictory and a lack of research has been done regarding the association of self-reported aggression and empathy measures in young adults.

The purpose of this study is to examine how cognitive and affective empathy is associated with aggression, and therefore contributes to a better understanding of these processes and their association. Additional examination of gender specific traits, clarifies if these processes and associations differ by gender. A better insight allows the development of age and gender appropriate, effective interventions for aggressive behaviour in young adults.

Empathy and aggressive behaviour

Aggression is commonly defined as any behaviour directed towards another individual or object to cause harm (Anderson & Bushman, 2002). In the last few decades, the study of aggressive behaviour focused on the fact that aggression is not only physical by its nature, but can also include social, relational and covert processes, such as rejection or exclusion (Feshbach, 1978; Card, Stucky, Sawalani, & Little, 2008). This type of aggression is called relational aggression and is mostly reported in females (Prinstein, Boergers, & Vernberg, 2001). Emphasizing the social interest of understanding the processes behind aggression, extensive discussion has focused on mediating, or even causing factors of these behavioral traits. A distinctive theory is the idea of insufficient empathy as the central characteristic in different types of aggressive behaviour (Jolliffe & Farrington, 2004; Jolliffe & Farrington, 2007).

Human empathy is generally defined as the ability to emotionally understand and share another person's emotional state (Eisenberg & Strayer, 1987; Eisenberg & Miller, 1987). De Waal (2008) emphasizes the importance of empathy for the regulation of social interaction and the collaboration towards shared goals, due to the ability of quickly and naturally relating to the emotional state of another person. In other words, those with higher levels of empathy are expected to act in a more responsive way to the perceived feelings of others (Jolliffe & Farrington, 2004). The affective component (in particular empathetic concern) is characterized by the tendency to share others feelings and experiencing feelings of concern or sympathy towards others, whereas the cognitive component (in particular perspective taking) refers to the ability to identify and understand another person's perspective (Feshbach & Feshbach, 1969). In the present study these two components are referred to as cognitive and affective empathy. According to Feshbach (1978), cognitive and affective empathy coexist, but the cognitive component is considered as a prerequisite of empathy. Implying that being able to recognize emotions of others and to take their point of view is necessary, but not solely sufficient, to empathize with others feelings (Gini, Albiero, Benelli, & Altoe, 2007). Despite some differences, several authors agree that cognitive and affective empathy can be considered and measured separately. To understand the complexity and extensiveness of a construct such as empathy, as a whole, they have to be combined and considered jointly (Hoffman, 2001; Gini et al., 2007).

In trying to explain the association between both concepts of empathy and aggression, researchers have proposed that those who display aggressive behaviour have less empathy than those, who do not display such behaviour (Burke, 2001; Bush, Mullis, & Mullis, 2000; Jolliffe & Farrington, 2004). Therefore empathy is viewed as an individual protective factor, decreasing the likelihood of aggressive behaviour, whereas lack of empathy is assumed to have a facilitating influence on aggression (Jolliffe & Farrington, 2004).

A meta-analysis of 43 studies exploring the association of anti-social behaviour and empathy in general concluded that a negative relationship is likely to exist between these concepts (Eisenberg & Miller, 1987). Furthermore some researchers suggested a causal link between aggression and low empathy in young adults (Minde, 1992). Several studies suggest

that aggressive adolescents show lower levels in affective empathy (Bryant, 1982; Cohen & Stryer, 1996; De Wied, Goudena, & Matthys, 2005; LeSure-Lester, 2000). Furthermore, prosocial adolescents scored significantly higher than aggressive ones on a measure of affective empathy (Warden & Mackinnon, 2003). A possible explanation is that affective empathy has been proposed to inhibit, or at least mitigate, aggression, due to the distress it would cause in the victim, and the associated vicarious distress it would cause in the aggressor (Anastassiou-Hadjicharalambous & Warden, 2008). Therefore it seems reasonable to suggest that affective empathy can be negatively associated with aggressive behaviour. Contrary, researchers have no mutual agreement on the association of cognitive empathy and aggression. A number of researchers found a negative association between cognitive empathy and aggression (Jolliffe & Farrington, 2004; Mayberry & Espelage, 2007), whereas others suggest no association between these concepts (De Wied et al., 2005; LeSure-Lester, 2000). An explanation for the suggested nonexistence of an association could be, that, to hurt someone there needs to be some understanding of the other's perspective (Sutton, Smith, & Swettenham, 1999). To be able to deliberately harm someone, a person needs good social cognition and theory of mind skills, in order to manipulate and organise others suffering in subtle and damaging ways (Sutton et al., 1999). Despite the variances in opinions, there is some indication that the association between affective empathy and aggression is negative, whilst the association between cognitive empathy and aggression is weaker, or even non-significant, but still is leaning towards a negative association.

However little is known about gender differences in the associations. Several empirical studies suggest that men and women tend to differ in their levels of aggression and empathy (Rueckert & Naybar, 2008; Archer, 2004; Card et al., 2008; Björkqvist, Österman, & Kaukiainen, 2000). In general females tend to score higher on self-reports of empathy than males (Caravita, Blasio, & Salmivalli, 2008). Furthermore females report higher levels of personal distress, than men, in response to empathetic stimuli (Endresen & Olweus, 2002). Eisenberg and Miller (1987) argue that this could also be assigned to the females' idea of being empathetic. Meaning that based on self-reports one cannot be sure if females are truly more empathetic or if they just see themselves as such, because it seems to fit their gender role. Since males typically engage more in physical aggression they were generally seen as more aggressive than females (Björkqvist et al., 2000; Loudin, Loukas, & Robinson, 2003; Frick et al., 2003). However a recently growing body of research indicates that females may be just as aggressive as males, but the form and quality of aggression seem to be different in genders. Compared to males, females are more likely to harm others through covert and circuitous acts, such as rumor spreading and damaging another's self-esteem to maximize their anonymity and minimize the risk of vengeance and threat (Loudin et al., 2003). But whether the differential associations of aggression with each form of empathy depend on gender, must be further investigated.

The present study

The aim of this work is to study the relation between cognitive and affective empathy and aggression, considering gender differences between the associations. Based on the literature it is generally suggested that higher levels of empathy predict lower levels of aggression. To be more precise one has to determine differentiations in gender and empathy components. Several studies claim that there is no association expected in the relationship of aggression and empathy in females (Björkqvist et al., 2000). However, due to the division in cognitive and affective empathy and the concept of relational aggression, it becomes more likely to expect an association among the two concepts for both males and females. Empirical literature suggests a negative association with affective empathy and aggression among females (Jolliffe & Farrington, 2004, 2006; Caravita et al., 2008) and a non-significant association among affective empathy and aggression among males (Jolliffe & Farrington, 2006). A non-significant relationship between cognitive empathy and aggression among females is frequently reported (Espelage & Swearer, 2004), whereas for males the association between cognitive empathy and aggression tends to be negative (Mayberry & Espelage, 2007). Since aggression, in particular relational aggression, involves good theory-of-mind skills, and since women seem to be more likely than men to engage in such behaviour (Prinstein et al., 2001), it is hypothesized that the association between cognitive empathy and aggression is negative for males and non-significant for females.

On the other hand, aggression, in particular physical aggression, is more often seen in males (Björkqvist et al., 2000; Loudin et al., 2003; Frick 2003). This type of aggression requires some lack of empathetic concern and absence of the ability to be affected by another's emotional or arousal state. Therefore it is hypothesized that the association between affective empathy and aggression is non-significant for males and negative for females.

Method

Sample

The sample consisted of 168 participants of which 76,19% are female. The mean age of the participants was 22.25 ($SD=2,25$), with a range of 18 to 26. A total of 69,64% of the participants are students and most of them were born in the Netherlands (96,43%). All participants received standardized instructions, and gave their informed consent regarding voluntary participation and personal data such as age, sex and educational level.

Procedure

Thirteen students of the Faculty Educational Science of the University of Utrecht conducted the recruitment of the sample. This study makes use of non-probability sampling, by conducting a mail based survey research. The internet-based questionnaires contain questions concerning each concept of this study: one for measuring both affective and cognitive empathy, and one measuring aggression. A mail-survey was administered, to avoid problems of interviewer bias. It is a suitable procedure for investigating personal and sensitive topics and is hence a quick and efficient way of collecting data. However, choosing this collection method, the influence of non-

random sampling has to be accounted for, signifying that the data collection relies on the individual's availability and willingness to respond to the survey (Sheehan, 2001). By using internet-based questionnaires a cross-sectional survey-research design is applied. Facilitating this type of survey design enables the description of certain characteristics of the population, such as empathic and aggressive behaviour, and therefore allows predictions about these concepts based on correlational survey data (Neuman, 2009).

Snowball sampling was employed; whereby researchers made use of their personal network to recruit participants and asking for them to also include their network by participating. The respondents were limited by age and nationality. Applying these procedures, participants were recruited anonymously and their participation was voluntary. In the introduction of the survey the participants were informed about their right to stop their participation at any time and the possibility of leaving questions unanswered without any justification. Naturally the respondents were informed that the participation was strictly anonymous.

Measures

Empathy. The Interpersonal Reactivity Index (IRI) was used to measure empathetic tendencies (Davis, 1983). This instrument is a 28-item self-report instrument consisting of four 7-item subscales, each tapping into aspect of the global concept of empathy. The IRI is scored on a Likert-type scale ranging from 0 (doesn't describe me at all) to 4 (describes me very well). Before the analyses, four of the items were reverse coded. Therefore, higher scores indicate a higher level of empathy. For the purpose of this study the two subscales of Empathic Concern consisted of 7 items ([EC], $\alpha=.70$), and Perspective Taking consisted of 7 items ([PT], $\alpha= .69$). These were selected, as they respectively capture cognitive empathy (PT) and affective empathy (EC). 'Sometimes I don't feel sorry for other people when they are having problems' was a sample item for affective empathy and 'I sometimes find it difficult to see things from the "other guy's" point of view' was a sample item for the cognitive empathy component. By using only these two subscales, the subscales fantasy (FS) and personal distress (PD) were deleted. Assessing the IRI, the construct validity and internal reliability are found to be satisfactory, making it an appropriate instrument for this study.

Aggression. The Proactive/ Reactive Aggression (PRA) questionnaire was used to measure aggression. The PRA is a 23-item self-report questionnaire ($\alpha=.84$). This instrument contains six subscales; they are described below, followed by an exemplary item. (1) Proactive physical aggression (3 items) e.g. 'I try to get what I want by threatening others'. (2) Reactive physical aggression (3 items) e.g. 'When someone makes me mad I push or hit that person'. (3) Proactive relational aggression (5 items) e.g. 'Others know if I'm not liking them if they do not do what I want'. (4) Reactive relational aggression (5 items) e.g. 'When someone hurts my feelings, I will ignore him or her'. (5) Victimization relational aggression (4 items) e.g. 'Other ignore me, or do like I don't exist when they are mad at me'. And; (6) Victimization physical aggression (3 items) e.g. 'Others push or hit me when mad at me'. The two scales that conduct the concept of 'victimization' are of no concern to this study and are neglected. The PRA is scored on a Likert-

type scale ranging from 1 (not true at all) to 7 (totally true).

Analysis plan

The purpose of this study is to examine if there is a non-significant relationship between cognitive empathy and aggression among females exist, whereas for males the association between cognitive empathy and aggression tends to be negative. The association between affective empathy and aggression is expected to be non-significant for males and negative for females.

The first step is to examine the descriptive statistics, including means and standard deviations. Additionally, independent sample *t* tests are conducted, to discover mean differences between genders in affective empathy, cognitive empathy and aggression. The next step is to examine zero-order correlations between both types of empathy and aggression. Subsequently, correlations are computed separately for males and females. To check if the correlations between males and females differ significantly the Fisher *r*-to-*z* transformation test is used. Finally, to explore if the association of cognitive empathy on aggression differs from the association of affective empathy on aggression, a multiple regression analysis is executed. The regression analysis allows testing if each of these associations is moderated by gender. The alpha level of this analysis is determined at $\alpha = .05$, two-tailed.

Results

Prior to interpreting the results, several assumptions were evaluated and were found to be fulfilled. The pool of participants is of sufficient size ($n = 168$; minimum $n = 30$). The stem-and-leaf plots indicated that each variable in the regression was normally distributed, and free from univariate outliers. Furthermore, inspection of the normal probability plot of standardized residuals indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met.

Descriptive statistics

Table 1 showcases the means, standard deviations and ranges of the variables of this study are presented. The means serve as the reference point for the following statistics.

Table 1

Descriptive statistics including means, standard deviations and ranges of all variables

Variable	Mean	SD	Range
Affective empathy	3.63	.63	1.71-5
Cognitive empathy	3.56	.58	1.43-4.86
Aggression	1.52	.51	1-4.25

Note: $n = 168$.

In addition, independent samples *t* tests were conducted to compare the average mean differences in cognitive empathy, affective empathy and aggression reported by male participants

($n=40$) and female participants ($n=128$). The results are presented in Table 2, including a gender-specific representation of means, standard deviations and the t and corresponding p values and the associated Confidence Intervals (CI).

Table 2

Independent samples t tests for male and female participants, including means, standard deviations, t values, significance values and associated Confidence Interval

Variable	Male		Female		t	p	95%CI
	Mean	SD	Mean	SD			
Affective empathy	3.31	.76	3.72	.55	-3.23	.002**	[-.67,-.16]
Cognitive empathy	3.46	.67	3.60	.54	-1.33	.185	[-.34, .07]
Aggression	1.64	.69	1.48	.43	1.35	.185	[-.08, .39]

Note: Men $n= 40$; Women $n=128$; ** $p<.01$.

The t test for affective empathy was statistically significant with the male group ($M= 3.31$, $SD= 0.76$) having a mean .41 points lower, than the female group ($M= 3.72$, $SD= 0.55$), $t(166)=-3.23$, $p< .002$, two-tailed, indicating that the male participants on average scored significantly lower on affective empathy. The t test for cognitive empathy showed no statistical significance in mean differences of females and males, $t(166)=-1.33$, $p= .185$, two-tailed, suggesting that the male and female participants, on average, scored equally on cognitive empathy. The third independent sample t test was conducted for aggression. This test was not statistically significant, indicating that the mean score for aggression for males ($M= 1.64$, $SD= .69$) is not significantly different from the mean score for aggression for females ($M=1.44$, $SD=.44$), $t(234)= -2.19$, $p=.03$, two-tailed.

Correlations

To assess the overall strength and direction of the linear associations between the two forms of empathy and aggression, bivariate Pearson's product-moment correlation coefficients (r) were calculated. Prior to calculating r , the assumptions of linearity, normality and homoscedasticity were assessed, and found to be supported. A visual inspection of the normal Q-Q and detrended Q-Q plots for each variable confirmed that both were normally distributed. In Table 3 the results for the overall bivariate correlation of age, both concepts of empathy and aggression are presented.

Table 3

Bivariate correlations

	1.	2.	3.
1. Age			
2. Aggression	.048		
3. Affective empathy	-.021	-.203**	
4. Cognitive empathy	.035	-.208**	.392**

Note: N= 169. Note:** $p < .01$; two-tailed.

Affective empathy correlated significantly and negatively with aggression, $r(169) = -.203$, $p = .008$. This means that the greater the affective empathy level of a participant is, the lower the level of aggression is. Likewise, cognitive empathy has a negative and significant correlation with aggression, $r(169) = -.208$, $p = .007$, suggesting that the higher the level of cognitive empathy is the less aggressive behavior is displayed. Last, cognitive and affective empathy are positively correlated, $r(169) = .392$, $p < .001$, implying that those high in cognitive empathy are also high in affective empathy.

Additionally, to explore a possible gender difference in correlations, a bivariate Pearson's product-moment correlation coefficient (r) was separately calculated for males and females. The results are shown in Table 4.

Table 4

Bivariate correlations by gender

	1.	2.	3.	4.
1. Age		.345*	-.049	-.099
2. Aggression	-.099		-.168	-.344*
3. Affective empathy	-.047	-.179*		.528**
4. Cognitive empathy	.081	-.111	.305**	

Note: * $p < .05$ ** $p < .01$; two-tailed; lower triangle comprises correlations among female participants and upper triangle comprises correlations among male participants.

The scores for men display a significant negative association between cognitive empathy and aggression, $r(40)=-.344$, $p=.030$, whilst scores for the women show a non-significant negative correlation, $r(128)=-.111$, $p=.211$. For females a significant negative correlation is shown in affective empathy and aggression, $r(128)=-.179$, $p=.043$, while men score a non-significant negative correlation, $r(40)=-.168$, $p=.299$. This suggests that the level of aggression in males is lower, if they display a higher level of cognitive empathy, whilst for females the same applies with a higher level of affective empathy. Unlike females, males show a significant positive correlation between age and aggression. This could be an indicator that males are more aggressive, when older, $r(40)=.345$, $p=.029$. For both genders, cognitive and affective empathy are significantly positively associated, implying that both genders show a higher level of affective empathy if they display a high level of cognitive empathy, and the other way around.

To calculate the value z , which can be applied to assess the significance of the difference between the male and female correlation coefficients, the Fisher r -to- z transformation test was used. The test was performed twice: once testing for affective empathy and aggression and once testing for cognitive empathy and aggression. Both, the test for affective empathy and aggression, $z(169)=.06$, $p=.952$, and the test for cognitive empathy and aggression, $z(169)=-1.32$, $p=.187$, showed no significant difference between gender.

Regression analysis

To estimate the proportion of variance in aggression that can be accounted for by affective and cognitive empathy, whilst controlling for age and gender, a standard multiple regression analysis was performed. Prior to interpreting the results of the regression analysis, several assumptions were evaluated. First of all stem-and-leaf plots indicated that each variable in the regression was normally distributed, and free from univariate outliers. Moreover an inspection of the normal probability plot of standardized residuals indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. Two models were made. The first model has been conducted to examine the main effects of the independent variables. Unstandardized (B) and standardized (β) regression coefficients, standard error and the p value for each predictor in the two regression models are reported in table 5.

Age, gender, affective empathy, and cognitive empathy accounted for a significant 7% of the variability in aggression, $R^2=.070$, adjusted $R^2=.047$, $F(4,163)=3.07$, $p=.018$., none of the variables had a significant effect on aggression.

Subsequently the affective empathy variable and the cognitive empathy variable were centered to create a zero mean. Using these new variables, interaction variables of gender and centered affective empathy, and gender and centered cognitive empathy were created. The second model was conducted, including age gender and the four new variables: centered affective empathy, centered cognitive empathy, the interaction variable of gender and affective empathy and the interaction variable of cognitive empathy. Model 2 accounted for a significant 9% of the variance in aggression, $R^2=.090$, adjusted $R^2=.056$, $F(6,161)=2.65$, $p=.018$. The interaction of gender and affective empathy, $\beta=-.132$, $p=.353$ cannot be determined as a significant predictor of

aggression. These analyses indicate that the association between affective empathy and aggression does not differ for males and females. The interaction of gender and cognitive empathy, $\beta = -.287$, $p = .062$ can be seen as a marginally significant predictor of aggression.

Table 5

Regression analysis for the prediction of aggression

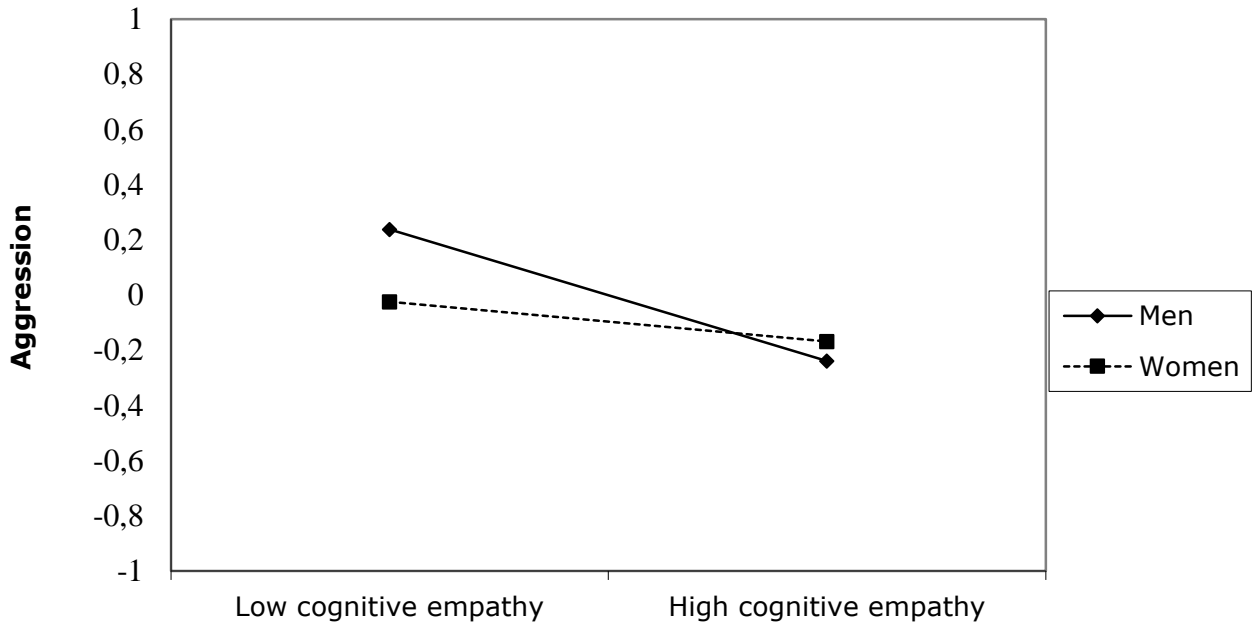
	B	SeB	β
Model 1			
Constant	2.126	.468	
Age	.013	.017	.059
Gender	-.104	.094	-.087
Affective empathy	-.093	.069	-.116
Cognitive empathy	-.137	.072	-.155 †
Model 2			
Constant	1.37	.384	
Age	.011	.017	.047
Gender	-.114	.096	-.096
Centered affective empathy	.017	.123	.021
Centered cognitive empathy	-.362	.140	-.411*
Gender*Affective empathy	-.139	.149	-.132
Gender*Cognitive empathy	.308	.164	.287 †

Note: N= 169. *Note:* * $p < .05$; two-tailed, † marginally significant

In the interaction variable of cognitive empathy and aggression, gender seems to play a marginally role ($\beta = .308$, $p = .062$). To interpret the interaction effect of cognitive empathy and gender a two-way interaction graph with binary moderator has been drawn up (Graph 1).

Graph 1

Interaction effect of cognitive empathy and gender on aggression



This graph shows that cognitive empathy seems to play an important role in aggressive behaviour among males. In females, cognitive empathy cannot be accounted as a reliable predictor of aggression. Therefore gender difference in the association with cognitive empathy and aggression can be observed.

Discussion

The aim of this study is to look at the relationship between aggression and both cognitive and affective empathy, considering gender differences between these associations. Although developmental researchers have long understood the importance of studying the association between empathy and aggression, there still is no consensus (Eisenberg & Strayer, 1987; Jolliffe & Farrington, 2004; Gini, et al., 2007). The study of literature on the topic revealed, that there is no sole result, indicating that more research into the topic of the association of aggression and empathy in young adults is needed. Therefore, this study sought to investigate the associations among young adults. A better insight will allow the development of age and gender appropriate, effective interventions for aggressive behaviour in young adults.

Concluding from earlier research, we expected that the association between affective empathy and aggression would be non-significant for males and negative for females (Jolliffe & Farrington, 2004, 2006; Caravita et al., 2008). Our findings support the fact that the association between affective empathy and aggression for males is non-significant. This could be explained by suggesting that physical aggression is more often seen in males (Björkqvist et al., 2000;

Loudin et al., 2003; Frick et al., 2003). Because physical aggression is often goal oriented, the development of affective empathy is necessary (Björkqvist et al., 2000). A negative association between affective empathy and aggression in females was expected. Although there is a negative association between affective empathy and aggression among females, they do not differ significantly from males. Therefore, gender differences in affective empathy cannot be observed. This could be explained by the fact that no division, in relational and physical, was made in the concept of aggression. This suggests that, in order to act relationally aggressive, a greater lack of empathic concern in females is needed, than expected. This finding asks for further investigation by dividing the concept of aggression and examining the divided concepts in association with empathy.

Compared to males, females are more likely to harm others through covert and circuitous acts, which can be seen as relational aggression (Loudin et al., 2003). Since relational aggression involves good theory-of-mind skills, and women seem to be more likely than men to engage in such behaviour (Prinstein et al., 2010), it further was expected that the association between cognitive empathy and aggression would be negative for males and non-significant for females. The findings support these hypotheses for both males and females. Consequently gender differences in these findings can be observed. These differences were not statistically significant but can be accounted for as marginally. Accordingly cognitive empathy in males can be seen as a marginally predictor of aggressive behaviour.

The influence of cognitive empathy on aggressive behaviour is gender specific. A higher score on cognitive empathy in males, concluded in less aggressive behaviour. For females this association has not been proven correct. In order to develop gender specific interventions for aggressive behaviour among young adults, it can be suggested to focus more on cognitive empathy, when dealing with male participants.

As with any study, the present study has certain limitations. First of all this study relied on self-report measures, opening up the possibility of shared-method variance. Females tend to score higher on self-reports of empathy than males (Caravita et al., 2008). They also report higher levels of personal distress in response to empathetic stimuli than males (Endresen & Olweus, 2002). This could also be assigned to the female's idea of being empathetic (Eisenberg & Miller, 1987). Meaning that, based on self-reports, one cannot be sure if females are truly more empathetic or if they just see themselves as such, because it seems to fit their gender role. This could also be considered among males, as they tend to score themselves more aggressive. A suggestion for future studies is to also include other report methods, such as observations. These methods can be selected to avoid social desired responses. A second limitation seems to be the differences in sample. The presented sample includes noticeably more female than male participants. Therefore, it seems reasonable that the number of female participants greatly influenced the data. Ensuring a bigger sample size and checking for big sample differences, before starting the analyses, could prevent this.

This study was focused on young adults, between the age of 18 and 26. This could also be accounted for as a limitation. During the research it became clear that age is a possible predictor of empathy. Empathy develops with age, suggesting that when people are getting older, their empathy level is increasing. This can already be observed in young boys: boys in the age of 6 and 7 seem to have higher levels of empathy and lower levels of aggressive behaviour than 4-5 year old boys (Feshbach & Feshbach, 1969). This finding is consistent with the idea of empathy increasing with age (Jolliffe & Farington, 2004). By limiting the participant by age, important data about the development of this concept could get lost. It could also mean that young adults are less empathetic and more aggressive than expected, in comparison to adults. Suggestions for further research include older participants to check if age has a significant impact.

Another variable, which could be of importance and was not taken in consideration in this study, is intelligence. The sample consisted mainly of students inheriting a comparable intelligence level. One can expect that intelligence may influence social intelligence, which includes both concepts of empathy (Björqvist et al., 2000). Hinting that more intelligent participants display higher levels of social intelligence, and therefore, higher levels of empathy, which possibly results in lower levels of aggression. According to this suggestion, intelligence is a possibly influential predictor of aggression. Taking this in consideration, intervention programs could be developed on a more effective manner, regarding an intelligence appropriate design. Further research has to be conducted to check the influence of intelligence within these concepts.

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