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The Relationship between Cognitive and Affective Empathy and Indirect and Direct

Aggression in Dutch Adolescents

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## Abstract

Studies on the relationship between empathy and aggression haven't often focused on subtypes of empathy and aggression. The present study researches the relationship between cognitive and affective empathy and indirect and direct aggression in adolescents. The sex differences within these relationships are investigated, and the development of aggression over five measurements is explored. The sample consists of 272 Dutch adolescents (136 male and 136 female). Results indicate that cognitive empathy is negatively related to indirect aggression in males and direct aggression in females. Furthermore for males and females, personal distress is positively related to respectively indirect and direct aggression. Over the five waves there is a significant quadratic trend in aggression. Further research should be done using different assessment measures to confirm the results.

*Key words: Empathy, Aggression*

## Introduction

Empathy and aggression are two concepts that have received a considerable amount of attention in research. However, the definitions used in research are diverse (Miller & Eisenberg, 1988). Empathy has been defined as the perception or understanding of how and what another person is feeling, but also as the experiencing of another individual's feelings or emotions (Ellis, 1982). Hoffmann (1977) uses the concept 'recognition of affect', to describe the observer's cognitive interpretation of the other's emotional state. According to him empathy consists of the observer's vicarious affective response to another person. Most researchers agree that empathy consists of a cognitive and an affective component. When these two are combined they form the definition of empathy as "an affective state that stems from the apprehension of another's emotional state or condition, and that is congruent with it" (Eisenberg & Miller, 1987, p.91).

A definition for aggression is proposed by Berkowitz stating aggression as "any form of behavior that is intended to injure someone physically or psychologically" (Berkowitz, 1993, p. 3). However, in most research the concept of aggression is divided into subtypes. These subtypes can be based on the intention of the aggressor, for example instrumental and emotional aggression. Instrumental aggression refers to an action that is carried out for an extrinsic purpose, whereas the primary objective in emotional aggression is to do harm (Berkowitz, 1993). Subtypes can also be based on the way in which the aggression is expressed, for example indirect and direct aggression. Indirect aggression is a sophisticated strategy of aggression in which another person is harmed through social manipulation. This happens in such a way that the perpetrator can't easily be identified (Björkqvist, Lagerspetz & Kaukiainen, 1992). On the other hand, direct aggression consists of observable physical actions or verbal statements aimed at harming another person (Berkowitz, 1993). These different subtypes of aggression have led research to focus on different aspects of aggression.

*Sex Differences*

Hoffman (1977) indicates that there is evidence to support the proposition that females are more affectively empathic through the life cycle than males. However, he does mention that there is no consistency in findings regarding cognitive empathy, although there is a slight tendency for females to obtain higher scores than males. Furthermore, differences in the way of measuring lead to different results. No sex differences arise when empathy is measured physiologically or with unobtrusive observations of nonverbal reactions. The results in laboratory situations are moderate, and when self-report or other-report measures are used, sex differences favoring females are the strongest (Eisenberg & Lennon, 1983). However, research on gender and gender-role orientation indicates no relationship between gender and empathy when a self-report measure of empathy is used. A relationship has been established between gender-role orientation and empathy. Of the two gender-role orientations, it is solely femininity which contributes to the level of empathy (Karniol, Gabay, Ochion & Harari, 1998). Overall these results indicate that there is not much consistency in research regarding sex differences in empathy.

Research on sex differences in aggressive behavior also shows inconsistent results. Research on sex differences in the aggressive behavior of 15-year-old schoolchildren from Finland (64 boys and 63 girls) has shown that boys score significantly higher on physical aggression, whereas girls score higher on indirect aggression. There was no difference between the sexes on direct verbal aggression (Björkqvist et al., 1992). These findings are inconsistent with research investigating 74 British primary school children (aged 7 to 8 and 10 to 11). The researchers found no significant sex differences for direct verbal aggression and indirect aggression. They did find that boys engaged more in physical aggression than girls. However, these results were only obtained by observational data. Peer and self report data showed no significant sex differences in physical aggression, indicating that the measure used

to assess aggression influences the results (Tapper & Boulton, 2004). Amedahe and Owusu-Banahene (2007) studied sex differences in aggression among 400 male and 400 female students in Ghana (mean age 16,5 years). They found that the male adolescents reported significantly more characteristics of direct aggression than the female adolescents. On the other hand female adolescents reported significantly more characteristics of indirect aggression. These results are consistent with the findings of Björkqvist and colleagues (1992). Considering these studies both focused on adolescents, whereas the study by Tapper and Boulton (2004) focused on primary school children, age could play an important role in the presence of sex differences in aggression. Differences in preferred aggression type could start to emerge in adolescence, with females starting to develop more indirect aggression strategies.

#### *Development of Aggression*

Björkqvist and colleagues (2000) suggest a developmental theory focused on styles of aggressive behavior. According to them, physical, direct verbal, and indirect aggression are not only three different strategies, but also reflect three developmental phases. Small children use physical aggression since they have not developed verbal and social skills. When verbal and social skills develop, these skills can be used to express aggression in different ways than physically. When social intelligence develops the means for indirect aggression emerge. Since girls develop verbally quicker than boys (Fenson et al, 1994), it has been suggested that girls develop indirect aggressive strategies earlier than boys. Côté (2007) conducted a review of research that compares the progression of physical aggression with indirect aggression. The conclusion is that physical aggression and indirect aggression sex differences diverge increasingly during childhood. Physical aggression in boys is more likely to remain stable on a high level trajectory, whereas physical aggression in girls is more likely to decrease as their use of indirect aggression increases. These findings are inconsistent with research on the

developmental trajectories of physical and social aggression in a sample of 5151 adolescents (aged 11 to 18) from rural counties in North Carolina. The results show that boys consistently engage in more physical aggression than girls, but the trajectories are parallel. Furthermore, there were no sex differences in social aggression. Both types of aggression follow curvilinear trajectories. Physical aggression peaks at around age 15 and social aggression at around age 14 (Karriker-Jaffe, Foshee, Ennett & Suchindran (2008).

### *Empathy & Aggression*

Empathy and aggression have not only been researched separately, there has also been research investigating a possible relationship between the two. A review of the research on the relationship between empathy and aggression indicates that empathic responding is negatively related to aggression and antisocial, externalizing behaviors when measured by questionnaires (Miller & Eisenberg, 1988). However, this review did not research differences in cognitive and affective empathy. A review by Lovett and Sheffield (2007) looked at affective empathy. They found a negative relationship between affective empathy and aggression in adolescents, with the relationship being stronger when behavioral measures of empathy were used compared to questionnaire measures. However this review consisted of only six studies investigating empathy and aggression in mostly clinical and forensic samples of adolescents and there are many inconsistencies in the literature. Jolliffe and Farrington (2004) conducted a review of the literature on empathy and offending. The studies in this review focused on forensic samples of adolescents and adults with empathy being measured by questionnaires. In contrast to the review by Lovett and Sheffield (2007), results indicate a negative relationship between empathy and offending, with cognitive empathy being more strongly related to offending than affective empathy. Furthermore they found that violent offenders were significantly less empathic than nonviolent offenders (Jolliffe & Farrington, 2004). A study by Kemp, Overbeek, Wied, Engels & Scholte (2007) researched empathy and

antisocial behavior in a community sample of 823 Dutch adolescents. They found systematic negative associations between affective empathy and antisocial behavior, corroborating the results of Lovett and Sheffield (2007). However in this study only questionnaires were used to measure both empathy and aggression. To summarize, all three reviews and the study by Kemp and colleagues (2007) found a negative relationship between empathy and aggression, however the results differ when the type of empathy, the type of sample and the assessment methods are considered.

Overall not much research has been done on the relationship between empathy and aggression in adolescence. Especially considering different subtypes of aggression. Therefore the present study will explore the relationship between cognitive and affective empathy and two types of aggression, namely direct and indirect aggression, in Dutch adolescents. Furthermore there will be investigated if there are sex differences within these relationships. Based on previous research it is hypothesized that females use indirect aggression more often than males and are more affectively empathic. Males on the other hand are hypothesized to engage in more direct aggression. The role of cognitive empathy will be explored in this research since a hypothesis cannot be based on previous research. The last objective of the present study is to investigate the development of aggression over a five year period, and to explore the sex differences in this development.

## Method

### *Participants*

The current sample was a subsample of a longitudinal study on relationships of adolescents with parents and friends, called CONAMORE (CONflict And Management Of Relationships; Meeus et al., 2005). In the CONAMORE study, 938 young adolescents (mean age = 12.4 years,  $SD = 0.6$ , range = 10-15 years) and 393 middle adolescents (mean age = 16.7 years,  $SD = 0.8$ , range = 16-20 years) from twelve high schools located in the province

of Utrecht, the Netherlands, annually filled out a battery of questionnaires at school. At the first measurement, the young adolescents received a letter inviting them to participate with their parents during annual home visits as well. Of the families invited, 491 agreed to participate. However, 90 one-parent families were not able to take part because of the restriction to only include two-parent Dutch families. Of the remaining 401 families, 323 families were randomly selected to participate from wave 2 onward. This sample was named the *family sample*. In this study, only adolescents from the family sample were used who had data on the aggression measure on wave 1 to 5 and empathy measure of wave 5. Adolescents with more than two missing scores were excluded from analyses. This led to a sample of 272 adolescents (136 male and 136 female).

### *Procedure*

Both adolescents and their parents received written information about the study and, if the adolescent was willing to participate, were required to provide written informed consent. Interviewers visited the schools and asked participating adolescents to gather in classrooms to fill out a questionnaire. Interviewers also visited the families at home. During these home visits adolescents and their parents filled out an additional questionnaire, which had to be filled out independently. Confidentiality was guaranteed, as the results were processed anonymously. Each wave, families received €27 (Approximately \$36,50), for participating and adolescents received an additional amount of €10 (Approximately \$13,50), for participating at school.

### *Measures*

*Empathy.* Empathy was measured using the Interpersonal Reactivity Index (IRI; Davis, 1983). The IRI is a self-report measure of affective and cognitive empathy and consists of four 7-item subscales, each of which measures a separate aspect of the global concept of empathy. The Perspective Taking (PT) subscale is the main measure of cognitive empathy

and assesses the tendency to spontaneously adopt the psychological point of view of others. The Fantasy Scale (FS) also assesses cognitive empathy and is focused on the tendency to imaginatively place oneself into the feelings and actions of fictitious characters in books, movies and plays. The Empathic Concern (EC) subscale is the main measure of affective empathy and assesses other-oriented feelings of sympathy and concern for unfortunate others. Finally the Personal Distress (PD) subscale assesses self-oriented feelings of personal anxiety and unease in tense interpersonal settings and is also a measure of affective empathy. The PT and EC subscales are the most important measures of cognitive and affective empathy, therefore, the focus will mainly be on these subscales. The adolescents have to indicate on a 5-point scale ranging from 'is not applicable to me' to 'is very applicable to me' how they feel about several statements. Reliability analyses of the subscales using the current sample led to a Cronbach's alpha of .70 for the PT subscale, .75 for the EC subscale, .84 for the FS subscale, and .76 for the PD subscale.

*Aggression.* Aggression was measured using the Direct and Indirect Aggression Scales (Björkqvist, Lagerspetz & Österman, 1992). This self-report measure consists of 23 items divided into three aggression subtypes: Indirect Aggression (IA, 12 items), Direct Aggression (DA, 5 items), and Passive Aggression (6 items). For the purpose of this study, only the direct and indirect subscales will be used. Adolescents are asked what they would do to a classmate when they are angry with that classmate. They have to indicate on a 4 point scale ranging from 'never' to 'very often' how often they display a type of behavior. Reliability analyses of the subscales for all five waves led to Cronbach's alpha's between .83 and .88 for the IA subscale, between .80 and .84 for the DA subscale, and between .87 and .91 for total aggression, the combination of IA and DA scores.

*Analyses*

As mentioned earlier, subjects with more than two missing scores weren't included in the current sample. As a result, several items had missing scores. These missing scores were filled in with the means of these items. The means were calculated using the rest of the samples' scores on each item. The differences between the empathy scores of males and females are analyzed using multivariate analyses. Since the scores on the aggression subscales are not normally distributed, the differences between the aggression scores of males and females are measured using a repeated measures ANOVA with sex as a between-subjects factor and wave as a within-subjects variable. The repeated measure ANOVA is also used to investigate the development of aggression over the five waves. If the assumption of sphericity is violated this will be mentioned, and the Greenhouse-Geisser correction will be used for the interpretation of the results. The relationship between the aggression and empathy scales is investigated using spearman correlations.

## Results

### *Empathy*

First of all, males and females are compared on their empathy and aggression scores. Table 1 gives an overview of the mean scores and standard deviations of the sample on the different empathy subscales. There are differences in the means between males and females for all empathy subscales, with females scoring higher than males. Multivariate analyses indicate that there is a significant effect of sex on PT ( $F(1, 270) = 14.64, p < .01$ ), EC ( $F(1, 270) = 71.90, p < .01$ ), FS ( $F(1, 270) = 62.15, p < .01$ ), and PD ( $F(1, 270) = 60.96, p < .01$ ).

### *Aggression*

Figure 1, 2 and 3 illustrate the mean aggression scores for males and females over all 5 waves. The male mean scores are higher than the female mean scores for total aggression (Figure 3) and both subscales, IA (Figure 1) and DA (Figure 2). Further analysis, using a repeated measures ANOVA with sex as a between-subjects factor, indicates a significant

effect of sex on IA ( $F(1, 270) = 10.98, p < .01$ ), DA ( $F(1, 270) = 53.54, p < .01$ ) and on total aggression ( $F(1, 270) = 25.50, p < .01$ ).

One objective of this study is to investigate the development of aggression over a five year period, and to explore the sex differences in this development. Figure 1 illustrates the development of IA for the males and females. The males score higher than the females for every wave. The mean IA of the male sample gradually rises from wave 1 ( $M = 1.43$ ) to stay steady at wave 3 and 4 ( $M = 1.47$ ). At wave 5 it drops below the level of wave 1 ( $M = 1.40$ ). The mean IA of the female sample starts at 1.31 in wave 1 and reaches its peak at wave 2 ( $M = 1.38$ ). It then gradually drops to 1.30 at wave 5. A repeated measures ANOVA using sex as a between-subjects factor indicates that, besides the significant effect for sex found earlier, there also is a significant effect for wave ( $F(4, 1080) = 3.67, p < .01$ ). However, there is no interaction effect between sex and wave ( $F(4, 1080) = 0.72, p > .05$ ). The effect for wave is visible in Figure 1, which indicates a significant quadratic trend ( $F(1, 270) = 13.06, p < .01$ ).

Figure 2 illustrates the development of DA for males and females separately. The mean DA for the males gradually rises and peaks at wave 3 ( $M = 1.65$ ). It then drops at wave 4 ( $M = 1.56$ ) to rise a little again at wave 5 ( $M = 1.58$ ). The mean DA score for the female sample rises from wave 1 to wave 2 (respectively,  $M = 1.31$  and  $M = 1.38$ ). It stays steady at wave 3, but drops at wave 4 ( $M = 1.29$ ) and keeps declining at wave 5 ( $M = 1.25$ ). A repeated measures ANOVA with sex as a between-subjects factor indicates a significant effect for wave ( $F(4, 1080) = 4.69, p < .01$ ), but no significant interaction effect between sex and wave ( $F(1, 1080) = 0.52, p > .05$ ). Figure 2 illustrates the effect of wave, which indicates a significant quadratic trend ( $F(1, 270) = 8.95, p < .01$ ) and a significant cubic trend ( $F(1, 270) = 4.59, p < .05$ ).

Figure 3 illustrates the development of total aggression for males and females over the 5 waves. The total aggression mean for males starts at 1.48 and peaks at wave 3 at 1.52. It

then declines to beneath the starting level and reaches 1.45 at wave 5. The development of total aggression for females indicates an increase from wave 1 to 2 ( $M = 1.31$  and  $M = 1.38$ , respectively). The mean total aggression scores then decline and reach the lowest point at wave 5 ( $M = 1.28$ ). A repeated measures ANOVA, using sex as a between-subjects factor, indicates that there is a significant effect for wave ( $F(4, 1080) = 4.81, p < .01$ ). However, there is no significant interaction effect between sex and wave ( $F(1, 1080) = 0.47, p > .05$ ). Figure 3 illustrates the development of total aggression over the five waves, and indicates a quadratic trend ( $F(1, 270) = 15.15, p < .01$ ).

So besides the significant effect for sex on IA, DA and total aggression, there also is a significant effect for wave on all these variables. This development of aggression over the waves shows a significant quadratic trend.

### *Empathy & Aggression*

Since there are significant differences between males and females on the empathy and aggression subscales, analyses of the relationship between the empathy and aggression subscales will focus on males and females separately. Spearman correlations are used to investigate the relationship between the different subscales of empathy and aggression. In these analyses the four empathy subscales are entered together with the IA scores, DA scores and total aggression scores of wave 5. As can be seen in Table 2, there is a significant negative correlation between IA and PT for males. This indicates that more cognitive empathy is related to less indirect aggression. Surprisingly there is a positive correlation between IA and PD for males, meaning that more personal distress is related to more indirect aggression in males. The relationship between the empathy and aggression subscales for females is similar. There is a negative correlation with PT and a positive correlation with PD. However, in contrast to the males, these subscales are correlated with DA, and not with IA. This means that more cognitive empathy is related to less direct aggression, and more personal distress is

related to more direct aggression in females. The correlations with total aggression are similar to the relations with IA for the males, and DA for the females.

### Discussion and Conclusion

The present study has explored the relationship between empathy and aggression in adolescents, focusing on cognitive and affective empathy, and indirect and direct aggression. First of all sex differences between the empathy and aggression scores have been investigated. It was hypothesized that females would be more affectively empathic than males. The results of this study confirm this hypothesis. Furthermore it was found that females are also more cognitively empathic. These results are similar to the results obtained by Eisenberg & Lennon (1983). However, studies using different assessment methods have obtained different results. Since this study used self-report measures, just like Eisenberg & Lennon (1983), research using other assessment measures should be done before conclusions can be drawn with certainty. Research on sex differences in aggression led to the hypothesis that males use more direct aggression and females more indirect aggression. The present results show a different pattern, with males scoring higher on both direct and indirect aggression. This pattern is stable over all five waves. Analyses on the development of aggression indicate that there is a quadratic trend in the development of aggression. Côté (2007) found that physical aggression in boys is more likely to remain stable on a high level trajectory, whereas physical aggression in girls is more likely to decrease as their use of indirect aggression increases. In this research DA has remained stable for the male sample and DA has decreased for the female sample. However, inconsistent with Côté, the decrease of DA for females did not coincide with an increase of IA. The DA results of the present study are also similar to research by Karriker-Jaffe and colleagues (2008). They found that boys consistently engage in more physical aggression than girls, but that the trajectories are parallel. Overall it seems that there is consensus about males engaging in more physical and direct aggression than females.

However the results on indirect aggression are inconsistent. Research focusing on a longer time period could provide more information on this development.

The final objective of this study was to investigate if there is a relationship between the different subtypes of empathy and the subtypes of aggression. Correlations between the empathy and aggression subscales are found in the results. In the male sample a negative relation between PT – the cognitive empathy subscale – and indirect aggression is found. Although no hypotheses were formed, a correlation with indirect aggression in the male sample is surprising. In the literature males are mostly associated with direct aggression and females with indirect aggression (Amedahe & Owusu-Banahene, 2007; Björkqvist et. al., 1992). Even more remarkable is the positive correlation between personal distress and indirect aggression in the male sample. This indicates that more personal anxiety of the males in tense interpersonal settings is related to the use of more indirect aggression. Based on the current analyses, no conclusions can be drawn concerning cause and effect in this relationship. One could suggest that the higher personal distress is the result of the higher indirect aggression. A similar relationship with direct aggression would support this suggestion. However the current results don't indicate any significant relationships with direct aggression in the male sample. In the female sample a similar pattern of correlations emerges. However, in contrast with the literature, the correlations are with direct aggression. Perspective taking is negatively related to direct aggression, and personal distress positively. These correlations with indirect aggression in the male sample, and direct aggression in the female sample are unexpected. A possible explanation is that direct aggression is more innate for males and therefore less dependent on empathy. For the females this would be the other way around. There is however no conclusive evidence linking males to direct and females to indirect aggression strategies.

The present research indicates that males engage in more direct and indirect aggression than females, and that females are more empathic than males. When the relation between the different empathy and aggression subtypes is investigated more sex differences emerge. The results show that cognitive empathy is negatively related to indirect aggression in males and direct aggression in females. Furthermore for males and females personal distress is positively related to respectively indirect and direct aggression. An important limitation of this study is the use of self-report measures. Similar research should be done with other assessment measures. This can give more insight in the relationship between the empathy and aggression subscales and the discovered sex differences. More investigation of the negative relationship between aggression and cognitive empathy and the positive relationship with personal distress is essential. Finally, more longitudinal research is important to delineate the development of aggression.

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Table 1

*Means and Standard Deviations of the Empathy Subscales*

	Males		Females		Total	
	Mean	sd	Mean	sd	Mean	sd
PT	3.18	0.56	3.43	0.50	3.31	0.55
EC	3.09	0.56	3.64	0.52	3.37	0.61
FS	2.86	0.73	3.55	0.71	3.20	0.80
PD	2.34	0.52	2.87	0.58	2.60	0.61

Table 2

*Correlations between Empathy, Total Aggression and the Aggression**Subscales of Wave 5 for Males and Females Separately*

Subscale	w5 IA	w5 DA	W5 IA+DA
Males			
PT	-.22*	-.12	-.19*
EC	-.11	-.06	-.10
FS	.03	-.08	-.02
PD	.20*	.13	.19*
Females			
PT	-.15	-.24**	-.20*
EC	-.04	-.06	-.05
FS	.03	-.14	-.02
PD	.11	.17*	.17*

Note. \*\* Correlation is significant at the .01 level (2-tailed)

\* Correlation is significant at the .05 level (2-tailed)

## Figure Caption

*Figure 1.* Mean indirect aggression scores over the five waves for males and females.

*Figure 2.* Mean direct aggression scores over the five waves for males and females.

*Figure 3.* Mean total aggression scores over the five waves for males and females.





