

**Exploring the relationships between gender, affective and cognitive empathy,
and aggressive behaviour in young Western Cape children**



Panashe Agatha Moyosvi

MYSPAN001

A minor dissertation submitted in *partial fulfillment* of the requirements for the award
of the degree of Master of Arts in Clinical Psychology

Faculty of the Humanities

University of Cape Town

2018

COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: Signed by candidate

Date: 16/02/2018

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

Acknowledgements

Thank you to the National Research Foundation for funding this project.

Special thank you to my supervisor, Associate Professor Susan Malcolm-Smith for your steadfast support and guidance throughout the project.

Thank you to the Acsent socio-emotion group who worked tirelessly during data collection.

Thank you to my mother, Evelyn Moyosvi for the love and always supporting me

Finally, thank you to the participants-the children and parents. Without you this project would not have been possible.

Table of Contents

List of figures.....	5
List of Tables	6
Abstract.....	7
Introduction.....	8
Literature Review	9
Aggression.....	9
Aggressive Behaviour among South African Children.....	10
Aggressive behaviour and gender.....	11
Defining Empathy	12
Empathy and Gender	14
Callous Unemotional Traits	15
Relationship between Empathy and Aggression	16
Empathy, gender and aggression.....	18
Age as a predictor of Aggression	18
SES as predictor of Aggression.....	19
IQ as a predictor of Aggression	19
Rationale.....	20
Aims and Hypotheses.....	21
Method	22
Research Design	22
Participants.....	22
Exclusion Criteria	23
Ethical Considerations.....	23
Measures	24
Demographic Information.....	24
Socio-economic status	24
General Intellectual Functioning.....	24
Externalizing behaviour	25
Affective and Cognitive Empathy.....	26
General Procedure	26
Data Analysis.....	27
Results	29
Descriptive Statistics of Sample	29
Gender differences in Aggressive behaviour	31
Gender Differences in Empathy	32

Predicting aggressive behaviour with multiple hierarchical linear regression	33
Discussion	43
Aggressive behaviour in Western Cape Children.....	43
Gender as a predictor of aggressive behaviour	45
Gender and Affective Empathy	46
Gender and Cognitive Empathy	47
Affective empathy as a predictor of Aggressive behaviour.....	48
Affective empathy, gender and aggressive behaviour	49
Cognitive empathy as a predictor of Aggressive behaviour.....	49
Cognitive empathy, gender and aggressive behaviour	50
Age as a predictor of Aggressive behaviour	50
IQ as a predictor of aggressive behaviour	51
SES as a predictor of Aggressive behaviour	52
Limitations and directions for future research	53
Problems with measuring and conceptualizing empathy	54
Possible implications for interventions	55
Summary and Conclusions.....	57
References.....	58
Appendix A.....	74
Demographic Questionnaire	74
Appendix B.....	80
Ethical approval from the UCT Department of Psychology.....	80
Appendix C.....	81
Ethical approval from Western Cape Education Department	81
Appendix D.....	82
Information sheet.....	82
Appendix E.....	84
Consent form.....	84
Appendix F.....	85
Assent form.....	85
Appendix G.....	87
Confirmation of ethics approval of the larger study and subsequently of this study	87
Appendix H.....	88
Coefficients for predictors in all the models of first regression analysis.....	88
Appendix I.....	91
P Plots.....	91

List of figures

Figure 1 -The Interaction between cognitive empathy and aggressive behaviour in males and females..... 42

List of Tables

<i>Table 1 Sample Characteristics across Gender</i>	<i>30</i>
<i>Table 2 Pearson Correlation Co-efficients between Empathy and Aggression Scores.....</i>	<i>33</i>
<i>Table 3 Correlations between Outcome and Predictor Variables</i>	<i>35</i>
<i>Table 4 Initial regression analysis.....</i>	<i>36</i>
<i>Table 5 Anova.....</i>	<i>38</i>
<i>Table 6 Second regression analysis.....</i>	<i>39</i>
<i>Table 7 Anova.....</i>	<i>39</i>
<i>Table 8 Coefficients for predictors in model 4 of second regression analysis.....</i>	<i>40</i>
<i>Table 9 Final regression analysis.....</i>	<i>41</i>
<i>Table 10 ANOVA.....</i>	<i>41</i>
<i>Table 11 Coefficients for predictors in model 3 of final regression analysis</i>	<i>41</i>

Abstract

Aggression among children and adolescents has been a major area of focus for many researchers across the world. In South Africa, specifically, aggressive behaviour has increasingly become problematic. Aggression can be regarded as antisocial or offending behaviour. Aggressive behaviour usually results in unfavorable consequences for both the victim and the assaulter. Although aggression usually manifests itself physically, it also has underpinning psychological factors. One of the factors that most research has looked at in relation to aggressive behaviour is empathy. Most studies have, however not looked at how the different components of empathy separately affect or predict aggressive behaviour. Females have generally been found to be more empathic and less aggressive; however the relationships between the variables have not been adequately simultaneously investigated. This project therefore assessed the effect of both affective empathy and cognitive empathy on the manifestation of aggressive behaviour in young Western Cape children. The study focused specifically on externalized aggressive behaviour. The study further aimed to investigate if the association between these two components of empathy and externalized aggressive behaviour differed across gender. The study made use of quantitative measures to examine the relationships between the above-mentioned variables. The study recruited a total of 249 Colored, English speaking learners aged 3 to 12 and their parent or caregiver. The sample had approximately equivalent numbers of boys and girls and an approximately equal number of children from low, middle and high SES to ensure that each demographic stratum was represented sufficiently. Statistical analyses of the data indicated that in general the children in the sample had low levels of aggressive behaviour. No statistically significant gender difference in aggression was found. A non-significant relationship was found between affective empathy and aggressive behaviour. A significant negative relationship was however found between cognitive empathy and aggressive behaviour. The correlation between cognitive empathy and aggressive behaviour was significantly evident only among boys; boys who scored low in cognitive empathy scored high on the externalized subscale of CBCL. The study also investigated the effect of potential covariates, Age, SES and IQ on aggressive behaviour; none of these covariates seemed to influence aggressive behaviour. The results of this study provide vital inferences regarding prevention of aggressive behaviour in children. There were however some disparities from what literature reports and that require further exploration.

Keywords: affective empathy, cognitive empathy, externalized aggressive behaviour, gender

Introduction

Aggressive behaviour and violence remain problematic worldwide and the same is true for South Africa (Jolliffe & Farrington, 2006; Leoschut & Burton, 2006). Research done in Cape Town and Durban investigating bullying, violence and risk behaviour, showed that a relatively large number of students (36,3%) were participating in some sort of aggressive behaviour (Liang, Flisher, & Lombard, 2007). Many research studies have indicated that childhood aggression often leads to unfavorable outcomes for the aggressor as well the target (Prinstein, Boergers, & Vernberg, 2001). Phelps (2001) states that, victims of aggressive behaviour often end up with many psychological problems including depression and anxiety. Conversely bullies end up with no friends as most are rejected by their peers (Vaillancout & Hymel, 2006).

Involvement in antisocial behaviour among children in whatever form is often a sure indicator of adult delinquency (Baldry & Farrington, 2000; Liang et al., 2007). Considering the rise in aggressive behaviour in schools (Bray, 2005), it is of uttermost importance to understand aggressive behaviour and its correlates. The bulk of available literature on aggression in schools, reports on patterns from Western countries, where aggression remains a problem (Jolliffe & Farrington, 2006; Leoschut & Burton, 2006). It is essential to investigate if the findings reported in the literature are generalizable to South Africans specifically in the Western Cape.

The disparity of power between the victim and the bully in antisocial and aggressive behaviour does not show physical strength only, but also mirrors specific character traits (Jolliffe & Farrington, 2006). For example, among other possible correlates, several studies have suggested that the individual's level of empathy may be an indicator of either prosocial or antisocial behaviour (Gini, Albiero, Benelli, & Alto, 2007). Empathy is an essential human trait that affects how an individual display both prosocial and offensive conducts (Eisenberg, Damon, Lerner, 2006). It is a complex construct with several dimensions that include cognitive and affective elements (Hoffman, 2000). It is typically defined as an expressive reaction caused by the apprehension of someone else's affect (Decety, 2013).

Empathy plays an essential role in social interactions and is important for healthy coexistence (Eisenberg, Damon, Lerner, 2006). Literature has suggested that empathy reduces aggressive behaviour because of the ability to be able to share in the distress of another (Munoz, Qualter, Padgett, 2011). Only one study in South Africa has explored affective and cognitive empathy, and their relationship with aggressive behaviour. The study however looked at grade 1 learners only, which leaves a huge gap in South African literature.

Additionally, literature has not thoroughly explored how the correlation between empathy and externalized aggression may differ according to gender.

International literature on empathy and gender has consistently shown females to be more empathic than males (Litvack-Miller, McDougall, & Romney, 1997; Masten, Eisenberger, Pfeifer, Colich, & Dapretto, 2013; Smith, 2004).

The aim of this study was therefore, to examine the relationship between affective empathy, cognitive empathy, gender and aggressive behaviour among children in a South African context. Below I will discuss existing literature on aggression and aggressive behaviour worldwide and specifically among South African youths and children. Furthermore, I will discuss the construct empathy and the relation of two of its components to aggressive behaviour. I will further discuss the effect of gender on aggressive behaviour and the complex relation between all the above-mentioned variables.

Literature Review

Aggression

Literature defines aggression in various ways based on the context in which it is being used. Many researchers have resorted to defining aggression building around the aim of the aggression, for example instrumental aggression is used to claim an object or to acquire status (Achenbach & Edelbock, 1979; Eisenberg, 1988). The types of aggression mentioned in literature vary considerably, and this variability has resulted in some researchers failing to clearly conceptualize and operationalize aggressive behaviour.

This study will be examining externalized aggressive behaviour. This behaviour is directed towards the external environment; it is conveyed outwardly and mostly likely to affect other people (Jolliffe & Farrington, 2011; Loeber, 1982). Types of externalized behaviour include physical aggression that is attacking and fighting others, stealing, destruction of property and disobedience of authority (Achenbach & Edelbock, 1979; Anderson & Bushman, 2002; Ostrov & Keating, 2004). Externalizing behaviours are most commonly present in children, but can however also be experienced in adulthood (Anderson & Bushman, 2002).

Aggressive behaviour in school settings can be classified under three different categories, overt, relational and cyber (Jolliffe & Farrington, 2006). Overt aggression can either be corporal or spoken: corporal overt aggression is when a pupil intentionally beats up another or throws things like stones at another to cause harm, whereas, verbal overt aggression is when a pupil threatens harm to another or uses harsh, unfriendly words with the

intention of hurting (Dempsey, Sulkowski, Dempsey & Storch, 2011; Jolliffe & Farrington, 2006). Spreading of malicious rumors or preventing another child from participating in school activities is what is referred to as relational aggression (Leff, 2010; Liang et al., 2007). With fast moving technology, cyber aggression is becoming more prevalent in schools and it can comprise of either overt or relational aggression using electronic devices or technology (Any & Goh, 2010).

Children spend most of their day at school and at aftercare programs; there is therefore a special need to belong and to fit in with other peers. Children who display aggressive behaviour, often do not have many friends and thus end up exhibiting even more unfriendly behaviour (Vaillancout & Hymel, 2006).

Many parts of South Africa, in particular the Western Cape experience high rates of violent crime and gangsterism (Ward & Bakhuis, 2010). These crimes are not only present in the youths and adults, but are also quite prevalent in schools (Fineran, Bennet, & Sacco, 2001). It is of high importance to identify potential causes of the development of antisocial behaviour (Ward & Bakhuis, 2010).

Aggressive Behaviour among South African Children

South Africa has been denoted “as a country of violence”, due to the rise in violent behaviour amongst the youth and school going children (WHO, 2002). A study done by Ward et al. (2001), stated that harassment and victimization amongst the youth and preadolescents in South Africa was about 50%, and over 80% reported having seen an aggressive act. An exploratory research study that looked at the incidences of violent behaviour in South African schools showed that over 35% of victims reported having been exposed to violent and aggressive behaviour recurrently (Nesser, 2006). Disturbingly, over 10% of the participants had stayed home once or twice and 70 % more than twice because of peer violence and victimization at school (Nesser, 2006).

Many South African learners have now acquired a pro-violence attitude, meaning that they have become accustomed to the frequent use of violence and now regard it as something acceptable (Van Der Merwe, 2010). Many learners in South Africa have become desensitized to violent acts and this in turn leads to violent behaviour as they do not perceive it as something severe or criminal as it really is (Collings & Magojo, 2003). The number of child offenders in South Africa is rapidly increasing, with some learners carrying around knives and scissors to stab each other in cases of arguments (Van de Westhuizen & Maree, 2009). Some researchers have described South African schools as ‘war zones’, as incidences of violent acts in schools are reported almost daily (Steyn & Naicker, 2007). Violence and

aggression in South African schools has resulted in low staff morale, resulting in many teachers not paying attention to children and sometimes not reporting for work (Bray, 2005).

A study that was done on a school in Johannesburg reported that about 36% of learners had fought with a fellow learner in the preceding 12 months (Fineran et al., 2001). A similar study that was carried out in KwaZulu-Natal reported that over 73% of the students stated that they had been a part of or had seen a violent act in the past year and about 10 % of male learners admitted to having killed a person (Govender & Killian, 2001). Some researchers have described South African schools especially those situated in townships and informal settlements as unmanageable and disorganized places, where learners openly display aggressive acts (Bray, 2005). Violence in South Africa is an ongoing problem with alarmingly high rates of violent crimes of over 600 hundred thousand crimes reported each year (South African Police Service, 2013). All the above incidences rationalize the importance of knowing potential causes of aggressive behaviour.

Exposure to violent behaviour at an early age has detrimental effects like the likelihood of delinquent behaviour taking root as well as an increase in substance abuse (Leoshout & Burton, 2006). About 66% of criminals reported to have been frequently involved in fighting, kicking and aggressive behaviour whilst at school (Schiff & Louw, 2000). Many researchers have singled out gender as one of the most important predictors of aggressive behaviour (Dinic, Kodzopeiljic, Sokolovska, & Milovanovic, 2016).

Aggressive behaviour and gender

Studies looking at gender differences in aggression, have consistently reported boys as having higher aggression than girls (Archer, 2004; Baillargeon et al., 2007; Ogwo, 2013). Variances in aggressive behaviour between boys and girls begin to surface during preschool years and remain relatively constant throughout childhood (Lussier, Corrado, & Tzoumakisi, 2012). During preschool years (2-5 years) boys become more aggressive and remain like that till the school going age when aggression typically declines. Scientists have attributed the differences in aggression between males and females to the hormone testosterone. These differences, however, become smaller as children reach adolescence (Jolliffe & Farrington, 2011; Scheithauer, Hayer, Petermann & Jugert, 2006). This is mainly due to raging hormonal changes and puberty in both boys and girls (Scheithauer et al., 2006).

Research findings have generally established that females display more verbal aggression than physical aggression, and this is due to biological and sociocultural factors (Archer, 2009; Strayer & Roberts, 2004). Across cultures, females are generally expected to

be more well-behaved and calmer, thus the distinction in the upbringing of males and females shapes the way they exhibit aggressive behaviour and its frequency (Olgeman, 2013).

It has been shown that boys tend to display more physical and verbal aggression especially towards other boys than girls (Ogwo, 2013). A study that was done on 7year olds, who were allowed to play in pairs, showed that pairs of boys exhibited the greatest amount of physical aggression. When the pair was made up of a boy and a girl the amount of physical aggression was intermediate, however boys were observed to be the primary initiators (Munroe, Hulefeld, Rodgers, Tomeo, & Yamazaki, 2000).

The incidence of aggressive behaviour cannot however, be attributed to one single factor, but to a complex interaction of factors. Much research has found a positive relationship between non-aggressive behaviour and empathy in children (Dadds et al., 2009; Jolliffe & Farrington, 2006)

Defining Empathy

Empathy is an important but complex construct whose definition is not clear (Malcolm-Smith, Woolley, & Ward, 2015). It is applied to different phenomena, ranging from feelings that motivate helping behaviour, feelings that mimic another's feelings, comprehension of someone else's feelings to muddling between oneself and the other (Hodges & Klein, 2001). Earlier experimental and theoretical literature could not agree on a definition of empathy (Eisenberg & Miller, 1987). Developmental and social psychologists have defined empathy as an emotional state that mimics someone else's emotions or anticipated emotional reaction under certain circumstances (Decety, 2011; Eisenberg, Shea, Carlo, & Knight, 1991).

Reflecting the confusion associated with the definition of empathy some researchers have conflated empathy and sympathy. Empathy is the capacity to acknowledge the emotions of another and be able to share in their emotions, whereas sympathy refers to caring about the wellbeing of others (Decety, 2011). Sympathy stems from the understanding of another's affective condition but it doesn't entail sharing the emotions (Decety, 2011).

Although many researchers have failed to agree regarding the conceptualization of empathy, they appear to have agreed about certain aspects of empathy. Firstly, empathy is a personality trait which varies between individuals (Farrington & Jolliffe, 2011). Secondly empathy is a measurable construct and some tools have been found to be valid and reliable. Finally, empathy is thought to affect how humans behave (Kaukiainen et al., 1999).

Empathy can either be viewed as continuous variable that is one can have high or low empathy or it can be viewed as a dichotomous risk factor meaning that one can actually lack

empathy (Jolliffe & Farrington, 2004). Viewing empathy as a continuous variable makes more sense, however the dichotomous view identifies abnormal persons.

Eisenberg (2000) describes empathy to be “an affective response that stems from the apprehension or comprehension of another’s emotional state or condition and is similar to what the other person is feeling or would be expected to feel” (pg 671). Given that literature provides various definitions, Decety and Cowell (2014) stated that there is a strong possibility that empathy may mean various things in accordance to the context in which it’s being used.

Over the past decades, some researchers have defined empathy more cognitively (Hogan, 1969), whilst others have defined and focused on the affective element (Mehrabian & Epstein, 1972). Despite the debate regarding how to define empathy, Cohen and Strayer (1996) have provided a definition that most have agreed upon, that it is the capacity to be able to share and to comprehend someone’s affective state and the circumstances surrounding it. This definition indicates that empathy comprises of a cognitive and affective element (Jolliffe & Farrington, 2006).

Previous research viewed and measured empathy as an inherent part of an individual’s temperament, however the conceptualization that empathy consists of different processes clarifies that every study that measures empathy should describe precisely which aspect of empathy is being measured (Jolliffe & Farrington, 2006; Malcolm-Smith et al., 2015)

Dadds et al. (2008) referred to affective empathy as “a response more appropriate to congruent with someone else’s situation than to one’s own situation” (pg 112). Blair (2005) further states that the response may either be to another person’s emotional display for example facial expressions or body movement or a response to another emotional stimulus for example “Jane failed her end of year exam”. Affective empathy is a bottom up, unconscious, automatic activation where one shares in the affective state of the other. (Decety & Mariguchi, 2007). Additionally, the notion of shared automatic and somatic responses indicates a linkage between psychological and physiological domains (Levenson & Raef, 1992; Soto & Levenson, 2009).

Dadds et al. (2008) also referred to cognitive empathy as “the ability to intellectually take the role or perspective of another person involving the ability to decode and label emotions and their situational cues” (pg112). Cognitive empathy is mental depiction of someone else’s emotions, whereas affective empathy is the actual experiencing of someone else’s emotions (Hogan, 1969; Reniers, Corcoran, Drake, Shryane, & Vollm, 2011; Spinella, 2005).

Cognitive empathy is sometimes perceived to mean the same thing as Theory of Mind (ToM). Cognitive empathy focuses on the awareness of another's feelings. ToM focuses on the acknowledgment of another's mental states, which however, also includes emotions (Decety & Jackson, 2004). Cognitive empathy is a top down conscious regulation of responses and is controlled by higher order functioning (Decety & Jackson, 2004).

Affective and cognitive empathy appear to be correlated to altruistic behaviour (Decety & Lamm, 2006). How humans behave in their everyday life is largely controlled by how they interpret the actions of others (Blackmore & Frith, 2003). Research has found that understanding the development and maintenance of empathetic behaviour is of great clinical importance (Reniers et al., 2011). Empathy is largely considered as an important predictor of emotional competence, particularly in the promotion of social bonds (Blackmore & Frith, 2003). Inconsistent findings have been recorded regarding the association between empathy and gender

Empathy and Gender

Earlier research studies showed no notable variances in the way males and females identified with other's feelings (Borke, 1971). Later research, however, suggested that males were less empathic (Litvack-Miller et al., 1997; Masten et al., 2013; Smith, 2004). A study that was done by Jolliffe and Farrington (2006) found that girls had greater levels of affective, cognitive as well as total empathy than boys, however, the distinction between females and males was more evident for affective than for cognitive empathy. A study done by Reniers et al. (2011) which utilised the Questionnaire of Cognitive and Affective empathy on over 600 people found that females were more empathic than males in that they scored significantly higher in all the components of empathy. This finding supports other empirical research (Baron-Cohen & Wheelwright, 2004).

The difference in empathic behaviour among males and females is also likely a result of the difference in upbringing, where females are taught to invest emotion in their interactions (Decety & Svetlova, 2012). The disparity in levels of empathy across gender has been shown to be a result of socialization principles in which males are seen as more dominant and less emotional (Sigelman & Rider, 2009).

Although several studies have reported females to be more empathic than males, it should be noted that most used self-reported data (Derntl et al., 2010). Self-report measures are highly subjective and prone to social-desirability bias (Dinic et al., 2016). It is possible that the participants answered according to how they have been socialized to believe men and women should act and feel.

Empathy has been found to be an essential protective factor for both boys and girls (Decety, 2013). Empathic concern acts as a catalyst in building of relationships and engagement in prosocial behaviour (Decety, 2013). Empathy reduces the display of aggression toward others and increases feelings of remorse (Munoz et al., 2011). Empathic dysfunction or lack of empathy has been found to be related with several psychological disorders, including callous and unemotional behaviour, aggressive and antisocial behaviour often resulting in problematic social relations as well as impaired communication skills (Blair, 2005). An important aspect that separates psychopaths from other offenders is the apparent lack of empathy (Decety, Skelly, & Kiehl, 2013).

Callous Unemotional Traits

Callous Unemotional (CU) traits are unchanging behaviours, characterized by interpersonal shortfalls like the absence of remorse and absence of empathy as well uncontrollable behaviour (Decety et al., 2013). The construct of empathy or the lack thereof is at the heart of this disorder. People with CU traits have a marked disregard for others (Decety, 2011). Empathic sensitivity is significant in the creation of relationships and communication; it develops first before other elements of empathy emerge. Empathic sensitivity helps one to be motivated to help others and encourages empathic concern for others; the lack of it during growth of an individual can hinder the process of normal interaction with others (Decety et al., 2013). Empathic dysfunction or the lack of it is the major diagnostic criteria of psychopathy (Decety, 2011; Decety et al., 2013).

Psychopathic individuals inflict harm to others repeatedly and this is a clear sign of a disturbance in the 'empathic' response to another's suffering (Flight & Forth, 2007). Literature has differing views regarding which type of empathy is lacking in psychopathic individuals. Several studies have concluded that psychopathic individuals have intact cognitive empathy; with others stating that they are able to adequately process a facial emotion which is a sign of cognitive empathy (Book, Quinsey, & Langford, 2007; Glass & Newman, 2006). Contrary to the above, other studies have shown that psychopathic individual have a profound lack of cognitive empathy (Robinson & Rogers, 2015; Stevens, Charman, & Blair, 2001). These studies also indicate that psychopathic individuals lack both components of empathy because without cognitive empathy it would be difficult to share in someone's experiences (affective empathy) (Blair & Coles 2000; Robinson & Rogers, 2015).

Other studies have conveyed that CU traits are correlated with the lack of affective empathy as most psychopathic people are unable to stop inducing pain in an individual even though the victim is in distress (Dadd et al., 2006; Kimanis, Frick, Fazeka, & Loney, 2006).

Children who have elevated levels of CU traits and also diagnosed with conduct disorder have affective empathy deficits, but they seem to have intact cognitive empathy (Kimanis et al., 2006). A study that was done by Dadds et al., found only boys who had CU traits lacked in affective empathy and not girls, but an explicit lack in cognitive empathy for girls. Literature has mixed finding regarding cognitive empathy in children who have CU traits, however literature seem to agree that children with CU traits lack affective empathy as they fail to share in the affective state of others. Assessment of empathy is very critical in the evaluation of offender's risk level and harm to others (Lyon, Hart, & Webster, 2001).

Although it is well documented that people with callous unemotional traits are very aggressive, it should be noted aggressive behaviour is also exhibited by non-psychopaths.

Relationship between Empathy and Aggression

Vast amount of research has documented that high levels of empathy are predictive of non-offensive behaviour (Decety et al., 2012; Decety, Norman, Bernston, & Cacioppo, 2012; Gini et al., 2007). However, literature on the correlation between empathy and aggressive behaviour in children is indecisive. Most research has reported that lack of empathy in children is predictive of aggressive behaviour (Decety et al., 2012; Decety & Svetlova, 2012; Gini et al., 2007; Malcolm-Smith et al., 2015). Richardson, Hammock, Smith, Gardner and Signo (1994) provide a theoretical rationale for this relationship by stating that when a child with low empathy is teased or exasperated, it causes a decrease in cognitive functioning which then causes impulse behaviour like kicking and fighting. Richardson et al. (1994) argue that children with low empathy tend to behave aggressively because of this decrease in cognitive functioning. Children with low empathy usually have damage to the regulatory component of empathy as well, this then results in exacerbation of aggressive behaviour due to poor impulse control (Reebye, 2005).

43 studies that looked at the relationship between empathy and aggressive behaviour were systematically reviewed by Miller and Eisenberg (1988). In the review empathy was operationalized as the sharing of someone else's emotive state (affective empathy), it was also assessed using picture/story presentations, questionnaires, facial expressions, gestures and behavioural responses. Empathy was found to have an inverse relationship with aggressive behaviour but only when it was assessed by questionnaires (Miller & Eisenberg 1988).

A more current meta-analysis that was conducted by Jolliffe and Farrington (2004) found a robust negative correlation between cognitive empathy and aggressive behaviour. In the meta-analysis only 35 studies that looked at both cognitive and affective empathy and

used the questionnaire method were employed. Another meta-analysis that was done by Lovett and Sheffield (2007) found a negative correlation between antisocial behaviour and affective empathy only amongst adolescents and older people. Similar to previous studies the relationship was stronger when questionnaires were used to measure empathy. It is however not clear why the relationship would be more apparent using questionnaires.

When exploring the relationship between low levels of empathy and aggression, some literature suggests that it is lack of affective empathy that has a correlation with aggressive and antisocial behaviour (Blair et al., 2004; Dadds et al., 2009). Individuals may have intact cognitive empathy abilities, meaning they have the ability to identify others' emotions but are however not able to viscerally experience their emotions (Jolliffe & Farrington, 2006). Failure to experience the emotions of others then leads to the exhibitions of aggressive behaviour (Sutton & Keogh, 2000). This feature is mostly common in manipulative individuals usually with elevated CU traits. On the other hand, diminished levels of cognitive empathy mean a reduced capacity to comprehend another person's point of view and thus often lead into aggressive behaviour (Eisenberg & Fabes, 1998). Furthermore, people with low levels of cognitive empathy are unable to apprehend how their aggressive behaviour might be causing distress and thus fail to act to reduce the victim's distress (Jolliffe & Farrington, 2006). They may also attribute other people's intentions as hostile which then will lead to aggressive acts (De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

Adequate social adaptation of young children mostly relies on their capacity to comprehend and to appropriately react to others' emotional states (Hobson, 1993). All components of empathy are essential in understanding how empathy develops in children (Reniers et al., 2011). All the studies that have explored the relationship between empathy and violent behaviour has therefore emphasized the importance of specifying exactly which type of empathy is being measured (Jolliffe & Farrington, 2006; Dadds et al., 2009). The comprehension of various social situations will determine whether a child will respond in an aggressive manner or not. Most of the published material investigating the relationship between empathy and aggressive behaviour has focused on adults and adolescents. A minute number has explored the relationship in children. These few studies have however not been conclusive regarding which type of empathy is mostly associated with aggressive behaviour in children.

Research done by Dadds et al. (2009) showed that in 3 to 13-year olds, deficits in affective empathy were strongly correlated with aggressive behaviour. The opposite pattern occurs in children with callous-unemotional traits, where intact cognitive empathy along with

reduced affective empathy is shown to have a strong correlation with aggressive behaviour (Jolliffe & Farrington, 2004). A study done by Sutton, Smith and Swettenham (1999) found the relationship between cognitive empathy and aggression to be positive owing to the fact that people with high cognitive but low affective empathy may fail to vicariously feel the emotions exhibited by another (Arsenio & Lemerise, 2001). It is therefore important to consider if the individual has callous-unemotional traits when exploring the relationship between empathy and aggressive behaviour; however, this group of children is rare if sampling a normal population. Results from various studies prove that the various elements of empathy are predictive of aggressive behaviour in different ways (Jolliffe & Farrington, 2004). However, the link between deficiencies in affective empathy and aggressive behaviour is common in psychopathy and is unlikely to be present in typically developing children (Barry et al., 2000; Sutton et al., 1999).

In neurotypical children, an intact affective empathy seems to be related to aggressive behaviour, as (over) affective arousal is associated with difficulties in regulating emotions; this together with failure to comprehend the next person's psychological state can then result in aggressive behaviour (Malcolm-Smith, Woolley, & Ward, 2015). Empathy is necessary for adequate development of emotional competence, particularly in the formation and preservation of social ties. Despite some variances in literature stressing the importance of either cognitive or affective empathy, both are required in order to respond adequately to the expressive behaviour of others (Malcolm-Smith et al., 2015).

Empathy, gender and aggression

Generally, it has been found that typically developing children who exhibit aggressive behaviour have less cognitive empathy regardless of their sex (Ang & GoH, 2010). A study by Gini et al. (2007) established that males who were involved in aggressive behaviour had low levels of both cognitive and affective empathy. Literature has not sufficiently explored this relationship, moreover the few studies that have been done have been outside of South Africa. There are other covariates like Age, SES and IQ that are worth being looked at when exploring the predictors of Aggressive behaviour.

Age as a predictor of Aggression

Literature states that preschoolers before the age of 5 are more aggressive than school going age children (Scheithauer et al., 2006). As children age aggressive behaviour decreases as they learn new social and language skills (Fujisawa, Katsukake, & Hasegawa, 2006). As children mature they develop new experiences and competencies (Strayer & Roberts, 2004).

Aggressive behaviour then peaks again during puberty and adolescence (Craig, Henderson, & Murphy 2000). The cause of the peak in aggression is that the child will be trying to establish his/her own identity and in some cases aggression will be a demonstration of strength (Craig et al., 2000). In boys, the hormone testosterone which has been found to be linked to aggressive behaviour peaks during adolescents (Ogwo, 2013).

The only contrast in literature is at what age exactly the differences in gender emerge with some stating that the differences are evident during preschool years (Bowen, 2005) and others finding that differences are already present among toddlers (Archer & Côté, 2005).

SES as predictor of Aggression

Socioeconomic status is “the social and material resources an individual possesses” (p.1716) based on income, education and occupation (Piff, Kraus, Côté, Cheng, & Keltner, 2010). There are numerous factors that lead to the progression of aggressive behaviour, however the interaction with peers and environment seems to exacerbate the process (Piff et al., 2010). Social learning theorists have over the years agreed that aggressive behaviour can be learned and maintained through one’s experiences of the environment (Bandura, 1973; Gasa, 2010). These theorists state that children raised in antisocial environments tend to engage in antisocial behaviour (Gasa, 2010). The surroundings in which a child grows in play an essential part in the development of pro-social behaviour. Behavioural theorists also provide a rationale that poverty is usually predictive of lower levels of empathy and conversely behaviours are shaped through observation and modelling (Sigelman & Rider, 2009). Children who are exposed to violent environments learn to exhibit violent behaviour (Sigelman & Rider, 2009).

Many of South Africa’s communities are exposed to much violence, crime and poverty. If a child is continuously exposed to adverse living conditions, it negatively impacts on their social and emotional competence (Paterson & Parold, 2013). Continuous contact with actual violence “may alter cognitive, affective and behavioural processes” (p23) that may lead to numbing of emotions. (Funk, Baldacci, Pasold, & Baumgardner, 2004). A study that was done to examine the classroom behaviour of children from low SES communities, showed that they exhibited externalizing disruptive behaviour and were frequently involved in drugs (Sigelman & Rider, 2009) It is therefore important to deliberate on the effect of SES when investigating aggressive behaviour.

IQ as a predictor of Aggression

Large amounts of research have linked aggressive behaviour to intellectual deficit, more specifically to decreased verbal ability (Huesmann, Eron, & Dubow, 2002; Park et al.,

2005). Using a variety of methodologies, many research studies have found presence of verbal deficits in antisocial youth and children (Estrem, 2005; Woods & Wolke, 2004). A deficit in verbal ability hinders a person's capacity to participate in private speech which is paramount in regulating behaviour (Keenan & Shawn, 1997). Lack of verbal skills also reduces the ability to label other's emotions, leading to misinterpretation and consequently aggressive behaviour (Matthys & Lochman, 2005). Grasping of language is the means by which humans gain experience from past experiences and therefore understand human socialization (Ashington, 2003; Luria, 1963).

In order to obey behavioural rules, a child must be able to make sense of new situations, while combining past and present information. This is especially difficult for children with intellectual deficits, as they are not able to self-verbalize which then makes it very difficult to organize, prevent and change behavioural patterns (Carlson & Moses, 2001). Verbal deficits also impede an individual's capacity to foresee possible repercussions of behaviour and the ability to differentiate right from wrong. This then results in failure to delay impulses and to behave in conventional manner (Loney, Frick, Ellis, & McCoy, 1998). Verbal deficits can also lead to failure in school, which then results in school rejections and a consequently a child will identify with antisocial peers (Hinshaw, 1992)

Rationale

Vast amounts of research have reported that long term effects of aggressive behaviour among school children are not only physical harm but also social and mental difficulties (Hawker & Boulton, 2000). Aggressive behaviour results in low self-esteem, stress and other psychological problems that affect both the victim and the perpetrator (Van Der Westhuizen & Maree, 2009). Violence and aggression especially in South Africa has remained problematic resulting in low morale for both the staff and learners (Bray, 2005). This is very detrimental to the learner's psychological wellbeing and may result in learning difficulties (Van der Merwe, 2010). Exposure to violence at an early age is predictive of problematic behaviour in adulthood, depression and alienation (Burton, 2008). Research aimed at exploring factors that lead to the progression of aggressive behaviour is very relevant in a South African context.

Children's capacity to experience empathy develops very early (Dadds et al., 2008). Early detection and remediation of problems is thus of paramount importance. There has been confusion regarding which type of empathy is predictive of aggressive behaviour in children and that warrants further investigation. This study will contribute to filling the gap and help

to better conceptualize empathy and its components. Furthermore, studies that have looked at the relationship between aggressive behaviour and empathy, have examined empathy as a whole (Decety & Cowell, 2014). Research separating affective empathy and cognitive empathy and how they each predict aggressive behaviour (if they do) is important.

Generally, boys are physically more aggressive than girls (Scheithauer et al., 2006). Girls usually exhibit verbal aggression and research has shown that this is a result of sociocultural and biological factors (Sigelman & Rider, 2009). Females have also been reported to have higher levels of empathy than males (Baron-Cohen & Wheelwright, 2004). In various cultures it is expected for girls to be calmer, softer and more emotional (Sigelman & Rider, 2009). Such a point of view may affect how children express aggressive behaviour

Creating effective preventive techniques and interventions for boosting good behaviour and preventing and reducing aggressive behaviour in children especially in the school environment is essential for overall academic, personal and social success. If teachers, parents and care givers become more able to predict incidences of antisocial behaviour, then techniques and prevention methods like empathy training will most likely be more effective. There is an alarmingly high prevalence of crime in South Africa, it is thus essential that by the time children leave school, not only will they have acquired academic abilities but also acceptable social skills that will shape them into law abiding citizens (Greenberg et al., 2003).

The relationship between empathy and aggression has received support; however, there may be variances in the relationship between boys and girls, especially in regard to affective vs. cognitive empathy, thus it is important to examine this.

Aims and Hypotheses

The aim of this study is to explore the relationship between affective empathy and cognitive empathy and aggressive behaviour and to see if this relationship differs according to gender.

Research question 1. Do South African children show differences in aggressive behaviour according to gender?

Hypothesis 1: Boys are more aggressive than girls

Research question 2. Do South African children show differences in the levels of empathy according to gender?

Hypothesis 2: Affective and cognitive empathy are greater in females

Research question 3: How do the different levels of empathy relate to aggressive behaviour?

Hypothesis 3: Lower levels of both affective empathy and cognitive empathy are related to higher incidences of aggressive behaviour

Research question 4: Does the relationship between empathy and aggressive behaviour differ according to gender?

Hypothesis 4: Minimal levels of empathy are predictive of aggressive behaviour, and this relationship should hold across gender

Method

Research Design

The study took place as a component of a current project examining socioemotional development in South African children. This larger study commenced in 2013 and data collection continues at several schools around Cape Town. Various measures are used to measure different variables; however, this study was only concerned with measures that were directly linked to the research questions.

This study implemented a cross sectional, relational research design to explore the relationship between cognitive and affective empathy and aggressive behaviour and whether this differs across gender. A cross sectional, relational design explores the relationship between variables as they exist in a defined population at a specific time (Rindfleisch, Malter, Ganesan, & Moorman, 2008).

General intellectual functioning, socio-economic status and age were also investigated as potential covariates (Warden & McKinnon, 2003). A demographic questionnaire was utilized to ascertain socio-economic status and quantitative measures were used to calculate IQ. Parent-report questionnaires were utilised to measure child behaviour and empathy.

Participants

249 participants from the ages of 3 to 12 years and a parent or caregiver were recruited for this study. The sample consisted of 146 females and 103 males. Purposive and stratified sampling techniques were used to recruit participants as selection relied on both willingness and eligibility. Only English speaking, coloured learners were included in the study so that the sample remained relatively homogenous. Fully stratifying across the heterogeneous population of Cape Town would not be possible in a limited MA study. Keeping the sample homogenous ensured that the focus was on investigating the effects of gender and SES and excluded potential confounds such as language, and potentially different community normative behaviour and views. The sample comprised of roughly an equivalent

number of boys and girls across each age in the range, as well as an approximately equal number of children from low, middle and high SES to ensure that each demographic stratum was represented sufficiently.

A power analysis was done to determine the smallest sample size required for a hierarchical regression analysis to identify a significant relationship between Aggressive behaviour and the predictor variables assuming a small-moderate effect size (Cohen's $f^2 = 0.15$). The analysis indicated that in order to detect a significant relationship using a regression analysis with parameters of $\alpha = .05$ and $\beta = 0.95$, the smallest sample size was to be 160. The sample size of 249 participants was sufficient to guarantee that statistical analyses done on the data sustained sufficient power, therefore minimizing the occurrence of Type II errors.

Exclusion Criteria

The study intended to explore the socio-emotional and behavioural characteristics of typically developing South African children. Children diagnosed with Autism Spectrum Disorder, any neurological conditions like epilepsy, and those who had sustained head injuries were excluded from this study. Participants diagnosed with ADHD were, however, not excluded as they display behavioural features that are relevant for the study.

Ethical Considerations

Ethics approval from the Department of Psychology UCT and the Western Cape Education Department was obtained in 2012 and 2013 respectively (Appendix B and Appendix C). The approval runs till September 2018. A letter confirming ethics approval of the larger study and subsequently of this study as well is attached (Appendix G). The study adheres to principals for ethical research outlined in the Declaration of Helsinki and by the University of Cape Town.

Before participating in the study, parents were required to read and to understand the information sheet (Appendix D). The information sheet explained the study in detail and parents got to keep this form; this was important in case they had questions later or decided to withdraw, they would have contact details for the researchers. Parents were assured that partaking in the study was voluntary and if they wanted to withdraw they could do so without penalty any time. If they were willing to partake in the study, they were then required to sign a consent form (Appendix E), which was returned to us. Parents were guaranteed that the participant data would be kept in a secure, password-protected folder. Questionnaires and score sheets that were completed by the parents were safely secured in a cabinet; this was to

ensure that all information was kept confidential. Parents were also assured that no identifying information would be disclosed in any research report.

The study posed no risks to either parents or children; we however, acknowledge the fact that by virtue of being minors, these children were vulnerable. At the beginning of the initial session, each child was to sign an assent form (Appendix F); we emphasized that their participation was voluntary. If they said they didn't want to participate, the session was ended immediately. Children were also told that if they felt tired during the session they were allowed to rest. The child was allowed to pull out from the session anytime if they wished to. This study recruited typically developing children; however, if at any point a researcher noticed any problems with a particular child, the researcher would need to inform the supervisor.

When the session was over the participants were thanked and debriefed. Compensation was provided in the form of R100 for the parents and sweets or stickers for the children. The parents and the schools are given a brief summary of what was found in the study at the end of each study year.

Measures

Demographic Information.

A Demographic questionnaire (see Appendix A) was used to determine if the participants met the inclusion criteria aforementioned. The questionnaire was filled in by a parent or primary caregiver of the child. The first part of the questionnaire required the parent to give details of the child's home language, race, gender, age, and medical history. The last section of the questionnaire required the parent to provide information regarding the total yearly household income, the level of education of the parent as well their material and financial resources.

Socio-economic status

This variable was derived from responses given in the demographic questionnaire (Bradley & Corwyn, 2002). SES was measured using both total family income per year and the maternal highest level of education in years. Often in the literature it is regarded as preferable to use more than one indicator of SES (Currie, Elton, Todd, Platt, 1997; Dahly, Gordon-Larsen, Popkin, Kaufman, Adair, 2010; Myer, Stein, Grimsrud, Seedat; Williams, 2008).

General Intellectual Functioning

The short form of the *Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999)*, the *Wechsler Preschool and Primary Scale of Intelligence (WPPSI-IV; Wechsler,*

2012) and the *Wechsler Intelligence Scale of children (WISC-IV, Wechsler, 2004)* were used as measures of general intelligence in this study.

The WASI was used to measure verbal IQ (VIQ) and performance IQ (PIQ). The WASI is normed for people from the ages of 6 to 89 years. Due to time constraints this study utilized the short form of WASI that comprises of the Vocabulary and Matrix reasoning subtests only. The WASI has a good reliability index of .94 for PIQ (Psychological Corporation, 1999). For individuals aged 6 and younger, verbal and performance IQ were measured by equivalent subtests from the WPPSI-IV, which are the Receptive Vocabulary and the Matrix reasoning subscale.

Since only 2 subtests were used from the WPPSI-IV, it was not possible to get a FSIQ, thus the scaled scores that give an indication of Verbal IQ and Performance IQ were used separately to check if they had an effect on the relevant variable of interest in this study. Raw scores from the subscales of the WASI were converted to scaled VIQ and PIQ scores and were also used separately, to ensure that the same procedure was done for all participants

To measure attention and working memory, the digit span subtest of the WISC-IV was administered to participants above the age of six. Specifically, the digit span forward task measured attention and the digit span backward measured working memory. The picture memory subtest from the WPPSI-IV was used to measure attention and working memory in younger children.

The WASI, WPPSI-IV and the WISC-IV have been proven to have strong psychometric properties (McCrimmon & Smith, 2013). Furthermore, psychometric evaluation of these measures that was done by Ferrett (2011) has shown that it is appropriate to use WASI in a South African context. The WISC-IV has been used in Nigerian, Zimbabwean and other non-western countries (Fakolade, 2006; Zindi, 1994). The WPPSI-IV was also found to be a better measure of intelligence on Australian preschoolers compared to the Binet (Melinda & Gilmore, 2012). It was vital to consider IQ in this study as it often shown to have a negative relationship with aggression (Loeber et al., 2012; Koenem, Caspi, Moffitti, Rijdsdijk, & Taylor, 2006). It is vital to note that these Western assessments have to be used with caution because they were not developed for our context. However, scores were only used as predictors and not as absolute determinants of children's ability.

Externalizing behaviour

The Child Behaviour Checklist (CBCL; Achenback & Rescorla, 2001) is a parent-report measure whose main purpose in children and teenagers is to identify socioemotional and behavioural problems. The CBCL is used to measure externalizing as well as

internalizing behaviour. In this particular study, however, only the subscale that measures externalizing behaviour was utilized. The items in the externalizing subscale tap into various antisocial behaviours such as rule breaking, theft, property destruction and truancy (Achenback & Rescorla, 2001).

The CBCL is a well-known and widely used measure which is highly proficient in identifying delinquency and patterns of antisocial behaviour. This measure has been validated as an appropriate measure for use across various cultures. It has been used in both Western countries and African countries like Ghana and Ethiopia (Achenback & Rescorla, 2001; Roessner, Becker, Rothenberger, Rhode, & Bandschgewlo, 2007). Psychometric evaluation of the externalizing subscale done by two separate studies, showed that this assessment tool has a high level of internal consistency in the South African context: the study done by Malcolm-Smith et al. (2015) found an alpha coefficient of .87. The other study conducted by Palin et al. (2009) found an alpha coefficient of .88.

Affective and Cognitive Empathy

The Questionnaire of Cognitive and Affective Empathy (QCAE) is a parent-report measure of cognitive empathy as well as the affective empathy of a child (Reniers et al., 2011). The QCAE consists of 31 items which were derived from four reliable measures of empathy; amongst them the Empathy Quotient (Reniers et al., 2011). The measure was proven to not have intrinsic bias for boys and girls (Reniers et al., 2011). The psychometric properties of all the items were evaluated in order to validate its proficiency in the measurement of the variables (Reniers et al., 2011). The 31 items of this measure are graded on a Likert scale consisting of four points ranging from “strongly agree” to “strongly disagree”.

The QCAE has been proven to have high construct and convergent validity as well as good internal consistency in both Western and non-Western countries (Lockwood, Seora-Cardoso & Viding, 2014; Reiniers et al., 2011; Robinson & Rogers, 2015). So far in unpublished South African studies the measure has shown acceptable internal consistency, with values $>.80$. Furthermore, the QCAE is reported to reliably predict prosocial behaviour (Lockwood et al., 2014).

General Procedure

As previously mentioned, this project is a component of a bigger project which began in 2013. Ethics clearance from the department of Psychology was obtained in 2012 (see Appendix B). Ethical approval from the Western Cape Education Department was granted in February 2013 (see Appendix C) and will extend until 30 September 2018 and thus large

amounts of data had already been collected. Collection of data continued to be done by a group of postgraduate students from the University of Cape Town.

The researchers looked for schools around Cape Town that might have learners who met the demographic criteria required for the study. The researchers then met with the relevant school authorities to explain the nature of the research and everything else that they needed to know. Once the school agreed and granted its permission, information concerning the study was sent out to parents; this included a demographic questionnaire, a parent information sheet (see Appendix D) and a consent form (see Appendix E). The information sheet explained the study and had contact information so that parents could get in touch with the team to ask any questions they could have. For lower SES schools and creches, a big parent meeting was arranged, where the study was explained to groups of parents who then decided if they wanted to participate. Parents who consented then sent through the signed consent form as well as the demographic questionnaire. The team of researchers then went through the demographic questionnaires to see which parent-child pairs were suitable to take part in the study.

Parents were asked to come through to the school at an agreed upon time to complete the parent-report questionnaires. A researcher was always present to ensure that any questions from the parents were answered. The parent session took a maximum of 60 minutes. After the session, parents were thanked and received a R100 compensation for their time.

Each learner was then also assessed within the school premises in a quiet room during school hours. Children were assessed over two sessions, as assessing them in one session would most likely tire them. It should be noted that this assessment included measures that are not part of the study reported here. Each session took between 45 -60 minutes. Prior to starting the session, the researcher read out an assent form (see Appendix F) to the child explaining what would be done during the session. After the session each child was thanked and received stickers or sweets for their participation.

Data Analysis

Firstly, descriptive statistics were explored to detect any concerns with normality. All predictor variables were normally distributed therefore no data transformations were performed. All assumptions for the regressions were checked; all VIF figures were close to 1, meaning that there were no issues with multicollinearity.

This study utilised raw scores of the empathy measures; but raw scores for working memory and Verbal IQ were converted into equivalent t scores and then additionally changed

into equivalent scaled scores. The total family income per year and the maternal highest level of education in years were used to measure the socio-economic status. Age was entered as a continuous variable and it was changed into months, but for the sake of reporting it was converted back into years after analysis.

All statistical analyses were conducted using Version 24 of Statistical Package of the Social Sciences (SPSS; IBM Corporation, 2016)

To answer the first research question, independent sample *t*-tests were conducted to test for differences across gender in terms of cognitive and affective empathy.

To answer the second research question, Pearson correlation coefficients were examined so as to determine the relationship between the different types of empathy and Aggressive behaviour.

To further respond to the second research question as well as the third question, a regression analysis was performed. Zero-order correlations were examined between all study variables to investigate any significant relationships between the outcome variable (Aggressive behaviour) and the predictor variables. In order to model the relationship between key study variables as well as covariates, a linear hierarchical regression analysis was conducted on the whole sample. Initially, based on theory and previous findings and to find out if the covariates SES, AGE and IQ had any effect on aggressive behaviour, SES was entered first into the model followed by AGE which was entered second. IQ was entered third, then Cognitive empathy, Affective empathy, gender and lastly the interactions (Gender x Cognitive empathy and Gender x Affective empathy) each in a separate block. None of the models in this regression were significant.

Thereafter, a second hierarchical regression was run using only predictor variables that had slightly larger beta values in the initial regression. Age was entered in the first block, cognitive empathy in the second block, gender in the third block and finally the interaction of gender and cognitive empathy.

Finally, a regression with just cognitive empathy, gender and their interaction was run.

Results

Descriptive Statistics of Sample

Initially, p-plots were examined to investigate the spread and normality of the data (see Appendix I). Since none of the variables' distributions were severely abnormal or skewed, no changes or transformations were made to the original dataset.

Table 1
Sample Characteristics across Gender

Domain	Full sample (N=249)	Females (N=146)	Males (N=103)	<i>t</i>	<i>p</i>	<i>d</i>
Age ^a	8.81 (2.77)	8.99 (2.72)	8.56 (2.84)	-1.23	.219	.15
Verbal IQ ^b	7.65(3.10)	7.80 (2.99)	7.49 (3.23)	-0.75	.456	.10
Working Memory ^c	7.85 (2.79)	7.87 (2.55)	7.83 (3.06)	-0.09	.929	.01
QCAE Cognitive Subscale	3.08 (16.97)	4.39 (16.14)	1.21 (18.00)	-1.46	.146	.19
QCAE Affective Subscale	6.46 (7.37)	7.98 (6.82)	4.31 (7.61)	-3.98	.001*	.51
QCAE Total	9.53 (19.58)	12.37 (18.67)	5.52 (20.22)	-2.75	.006*	.35
CBCL Externalising Subscale	9.86 (7.50)	9.37 (7.02)	10.06 (8.16)	0.34	.781	.09
Family Income	124178.68(109708.83)	126256.88(168871.50)	121232,88(111331.99)	-0.36	.723	.04
Mother's HLOE	12.16 (2.07)	12.33 (2.12)	11.92 (1.97)	-1.54	.126	.20

^a Means are presented with standard deviations^b Standardized scores are presented. The Vocabulary subtest of the *Weschler Abbreviated Scale of Intelligence* (WASI, Weschler, 1999) was used to obtain an estimate of the Verbal IQ. A higher score indicates better performance. ^c Standardized scores are presented: The Digit Span subtest of the *Weschler Intelligence Scale for Children* (WISC-IV, Weschler, 2004) was used as an index of Working Memory (i.e., digits backward). * $p < .05$.

The children recruited for this study were between the ages of 3 and 13.

Descriptive statistics for the full sample (and by gender) as well as between-gender comparisons are presented in Table 1. Mean scores showed that, for the entire sample, scores of the Externalizing subscale of CBCL ($M=9.86$; $SD=7.50$) fell very near the minimum of possible scores (minimum 0 – maximum 78), indicating that on average, the sample had low levels of aggressive behaviour.

The descriptive statistics for maternal HLOE revealed that on average, mothers had at least a matric education ($M=12.16$; $SD = 2.07$), ranging from primary education to postgraduate qualification. The total annual income for the sample ($M=124\ 178.68$; $SD=109\ 708.33$) ranged from R8 997 to R500 500.00. The maternal HLOE combined with the total yearly income revealed that the participants ranged from low SES to high SES.

Analyses of the Verbal IQ ($M=7.65$; $SD=2.79$) and Working memory ($M=7.85$; $SD=2.79$) scores, revealed that participants scored below the midpoint of these scales (the possible scores for these measures ranged from 0 to 18). Participants' scores on these measures ranged from extremely low scores of 2 for both the Verbal IQ and Working memory to superior scores of 17 and 16 for Verbal IQ and Working memory respectively.

Analyses of Cognitive empathy ($M=3.08$; $SD=16.97$), showed that in general participants scored a little above the midpoint of the subscale (the possible scores for this measure ranged from -38 to 38). The participants' scores on this subscale ranged from -38 to 38. Analyses of both Affective empathy ($M= 6.46$; $SD=7.37$) and Total empathy ($M=9.53$; $SD= 19.58$) also showed that generally participants scored just above the midpoint of these subscales. The possible scores for the Affective scale were from -24 to 24 and the participant's scores on the affective empathy subscale ranged from -20 to 22. The possible score for the Total scale ranged from -62 to 62. The participant's scores on the total empathy scale ranged from -39 to 59.

Two-tailed independent samples *t*-tests comparing male and female children showed that for all the variables no significant gender differences were found, except on the Affective ($p = .001$) and Total subscale ($p = .006$) of the QCAE. The order of means on the empathy scales indicated that female scores were significantly higher on the Affective subscale than males. Females also scored significantly higher on the Total scale.

Gender differences in Aggressive behaviour

An independent samples *t*-test revealed that there was no significant gender difference in aggressive behaviour, $t(247) = -2.75, p = .731, d = 0.09$

Gender Differences in Empathy

Cognitive empathy. An independent samples *t*-test found no significant gender difference in the level of cognitive empathy, $t(247) = -1.46, p=.073, d=0.19$

Affective empathy. An independent samples *t*-test showed that females had significantly higher level of affective empathy than males, $t(247) = -3.98, p<.001, d=.051$, confirming the first hypothesis for this study that affective empathy is higher in females than males.

Total empathy. An independent samples *t*-test revealed that females had significantly higher levels of total empathy when compared to males, $t(247) = -2.75, p<.003, d=0.35$

Empathy and Aggression

Table 2

Pearson Correlation Co-efficients between Empathy and Aggression Scores

	CBCL
Cognitive Empathy	-.175**
Affective Empathy	-.042
Total Empathy	-.168**

* $p < .05$. ** $p < .01$

A significant negative correlation was found between cognitive empathy and aggressive behaviour ($r = -0.175$, $p = .003$). This confirms the second part of the second hypothesis; that higher cognitive empathy was significantly associated with less externalizing behaviour. However, contrary to the study's second hypothesis (that lower levels of affective empathy are correlated to higher level of aggressive behaviour), no significant relationship between affective empathy and aggressive behaviour was found ($r = -.042$, $p = .255$). This study hypothesized that lower levels of affective empathy would be predictive of higher levels of aggressive behaviour. The results of the study, however showed no relationship between the two variables

Predicting aggressive behaviour with multiple hierarchical linear regression

A hierarchical linear regression was done in-order to determine the relation between aggressive behaviour and the potential predictors. Affective empathy, cognitive empathy and gender were of special interest in this study. Informed by previous theory, a model was proposed for predicting aggressive behaviour in this sample.

Individual variables (excluding empathy and gender), were entered early in the model as they are known to be predictive of aggressive behaviour. Given the vast amount of research including South African research regarding the impact of SES on aggression, it was entered first in the model. This was very important especially in a South African context. Age was entered second in the model. IQ was then entered third in the model. The variables of interest that is cognitive empathy, affective empathy and gender were entered later in the model to see if they contributed to the outcome (aggression) over and above any effects that earlier covariates may have. The interactions (Gender x Cognitive empathy and Gender x Affective empathy) were entered last in the model.

None of the data violated assumptions of normality or independence. Furthermore, most of the independent variables in the regression analyses were not too extremely

correlated (see Table 3), and all VIF figures were close to 1, indicating an absence of multicollinearity issues.

Table 3
Correlations between Outcome and Predictor Variables

	CBCL	Gender	Age	Mother HLOE	VIQ	WM	QCAE Cog	QCAE Affect	Gender x Cog	Gender x Affect	Age x Cog	Age x Affect	Income
CBCL	1.000	.022	-.125*	.002	-.005	.010	-.175*	-.042	-.192*	-.050	-.190*	-.052	-.050
Gender		1.000	-.078	-.098	-.050	-.006	-.092	-.246*	.052	.399*	-.028	-.213*	-.044
Age			1.000	-.027	.042	.252*	.278*	.027	.317*	.028	.261*	.278*	.108
Mother HLOE				1.000	.126	-.020	-.071	.018	-.049	-.055	-.039	-.027	.051
VIQ Scaled					1.000	.264*	.109	.013	.107	-.046	.092	.004	.140*
WM Scaled						1.000	.136*	-.124	.133*	-.096	.102	-.080	.058
QCAE Cog							1.000	.164*	.675*	.024	.951*	.209*	.087
QCAE Affect								1.000	.052	.509*	.161*	.932*	-.096
Gender x Cog									1.000	.110	.615*	.108	.057
Gender x Affect										1.000	.061	.487*	-.086
Age x Cog											1.000	.217*	.077
Age x Affect												1.000	-.091
Income													1.000

Aggressive behaviour, as well as the predictor variables IQ, cognitive empathy, and affective empathy were coded as continuous variables. Sex was coded as a categorical variable; having 2 levels (Male and Female). Dummy coding was applied to this categorical variable, such that Female was the reference group for the category. Income was coded as a categorical variable; having 2 levels (Low (< R100 500) and High (> R100 500)) split on the median value. When left as a continuous variable, the high values were disturbing the regression. Dummy coding was applied to this categorical variable, such that Low income was the reference group for the category.

From the descriptive statistics, all predictor variables had a weak relationship with participants' CBCL externalizing behaviour scores (all $r_s < .190$), and all predictor variables were negatively correlated with externalizing behaviour.

Our initial hierarchical regression was based on theory and previous findings therefore all the predictor variables were entered even if the zero order correlations were not significant. It was specified that SES would be entered first into the model, followed by AGE, IQ, cognitive empathy, affective empathy, gender and then lastly the interactions (Gender x Cognitive empathy and Gender x Affective empathy) each in a separate block. None of the models in this regression were significant. (See Table 5).

Table 4
Initial regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F	F Change	Sig.
1	.08	.01	.01	7.52	.01	1.35	1.35	.246
2	.16	.03	.02	7.47	.02	2.84	4.30	.039
3	.17	.03	.01	7.49	.01	1.55	.28	.757
4	.21	.05	.02	7.44	.02	2.01	3.79	.053
5	.22	.05	.02	7.45	.01	1.78	.68	.411
6	.22	.05	.02	7.46	.01	1.56	.22	.642
7	.25	.06	.03	7.43	.012	1.71	2.72	.100
8	.25	.06	.02	7.45	.01	1.52	.01	.905

1. Predictors: Income
2. Predictors: Income, Age
3. Predictors: Income, Age, IQ
4. Predictors: Income, Age, IQ, Cognitive Subscale of QCAE
5. Predictors: Income, Age, IQ, Cognitive Subscale of QCAE, Affective Subscale of QCAE
6. Predictors: Income, Age, IQ, Cognitive Subscale of QCAE, Affective Subscale of QCAE, Gender
7. Predictors: Income, Age, IQ, Cognitive Subscale of QCAE, Affective Subscale of QCAE, Gender, Gender x Cognitive Subscale of QCAE
8. Predictors: Income, Age, IQ, Cognitive Subscale of QCAE, Affective Subscale of QCAE, Gender, Gender x Cognitive Subscale of QCAE, Gender x Affective Subscale of QCAE

Table 5

Anova

Model	Sum of squares	Df	Mean Square	F	Sig.
1 Regression	76.54	1	76.54	1.35	.249
Total	12413.11	219			
2 Regression	316.13	2	158.07	2.84	.061
Total	12413.11	219			
3 Regression	347.46	4	86.86	1.55	.189
Total	12413.11	219			
4 Regression	557.22	5	111.44	2.01	.078
Total	12413.11	219			
5 Regression	594.91	6	99.15	1.79	.103
Total	12413.11				
6 Regression	607.02	7	86.72	1.56	.150
Total	12413.11	219			
7 Regression	757.61	8	94.70	1.71	.097
Total	12413.11	219			
8 Regression	758.40	9	84.27	1.52	.143
Total	12413.11	219			

A second hierarchical regression was run using only predictor variables that had slightly larger beta values from the initial regression (Age: $\beta = -.14$, cognitive empathy: $\beta = -.14$, Gender x Cognitive empathy: $\beta = -.16$ (see Appendix H). Age was entered in the first block, cognitive empathy in the second block, gender in the third block and finally the interaction of gender and cognitive empathy. This analysis was exploratory to see which of the variables might be significant predictors of aggression, once variables that clearly were having no effect were removed. Results of the regression indicated that all of the 4 steps of the model were significant (see Table 7). Although not significant on its own, the Gender x Cognitive Empathy interaction explained the most variance ($\beta = -.12$, $t = -1.40$, $p = .162$) (see

table 8). It must be noted that none of the predictors were significant on their own. Only in combination did they explain some of the variability in aggressive externalizing behaviour. Overall, the model explained 4.5% of the variance in participants' aggressive behaviour scores; $F [4.248] = 2.86, p = .02; R^2 = .05$; see Table 6 and table 7).

Table 6
Second regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F	F Change	Sig.
1	.13	.02	.01	7.45	.02	3.95	3.95	.048
2	.20	.04	.03	7.39	.02	4.74	5.46	.020
3	.19	.04	.03	7.40	.01	3.15	.01	.983
4	.21	.04	.03	7.39	.01	2.86	1.96	.162

1. Predictors: Age

2. Predictors: Age, Cognitive Subscale of QCAE

3. Predictors: Age, Cognitive Subscale of QCAE, Gender

4. Predictors: Age, Cognitive Subscale of QCAE, Gender, Gender x Cognitive Subscale of QCAE

Table 7
Anova

Model	Sum of squares	Df	Mean Square	F	Sig.
1 Regression	219.22	1	219.22	3.95	.048
Total	13939.36	248			
2 Regression	517.12	2	258.56	4.74	.010
Total	13939.36	248			
3 Regression	517.15	3	172.38	3.15	.026
Total	13939.36	248			
4 Regression	624.31	4	156.08	2.86	.024
Total	13939.36	248			

Table 8
Coefficients for predictors in model 4 of second regression analysis

Variables	<i>B</i>	Std. Error	Beta	<i>T</i>	<i>p</i>
Age	-.02	.02	-.07	-.98	.330
Cognitive Subscale of QCAE	-.03	.04	-.07	-.85	.398
Gender	.25	.97	.02	.26	.798
Gender x Cognitive Subscale of QCAE	-.079	.06	-.12	-1.40	.162

When examining the standardized betas from the second regression, it was noted that Age only was only significant when entered on its own $F [4.248] = 3.94, p = .02; R^2 = .02$; see Table 6 and table 7). Cognitive empathy exerted an effect and although the interaction of gender and cognitive empathy was not significant it had the largest beta ($\beta = -.12, t = -1.40, p = .162$) (see table 8).

Based on the above findings a final regression with just cognitive empathy, gender and their interaction was run. Results of the regression indicated that all models were significant (see Table 9). The final regression model explained more variance than models 1 and 2 (4.1% vs 3.1%). The previous set of models including age explained negligibly more variance than this (4.5%), thus this final model was considered the best fit for the data. Overall, the model explained 4.1% of the variance in participants' aggressive behaviour scores $F [3.248] = 3.50, p = .016, R^2 = .04$; see Table 9 and table 10.

Examining the beta values in this regression (although none of them were significant individually), it is clear that cognitive empathy exerted some effect on its own ($\beta = -.08, t = -.92, p = .357$), whereas gender on its own did not ($\beta = .022, t = .34, p = .733$) (see table 11). The interaction between gender and cognitive empathy impacts aggression, although the beta is not significant according to its p value, its size indicates that it is meaningful ($\beta = -.14, t = -1.62, p = .106$) (see table 11).

Table 9
Final regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F	F Change	Sig.
1	.18	.03	.03	7.40	.031	7.83	7.83	.006
2	.18	.03	.02	7.41	.001	3.90	.01	.928
3	.20	.04	.03	7.39	.010	3.50	2.63	.106

1. Predictors: Cognitive Subscale of QCAE
 2. Predictors: Cognitive Subscale of QCAE, Gender
 3. Predictors: Cognitive Subscale of QCAE, Gender, Gender x Cognitive Subscale of QCAE

Table 10
ANOVA

Model	Sum of squares	Df	Mean Square	F	Sig.
1 Regression	428.40	1	428.40	7.83	.006
Total	13939.36	248			
2 Regression	428.86	2	214.43	3.90	.021
Total	13939.36	248			
3 Regression	572.25	3	190.75	3.50	.016
Total	13939.36	248			

Table 11
Coefficients for predictors in model 3 of final regression analysis

Variables	B	Std. Error	Beta	T	p
Cognitive Subscale of QCAE	-.04	.04	-.08	-.92	.357
Gender	.33	.97	.02	.34	.733
Gender x Cognitive Subscale of QCAE	-.09	.06	-.14	-1.62	.106

By exploring this interaction visually (see Figure 1), one can see that at low levels of cognitive empathy males have higher aggressive behaviour whereas at higher levels of cognitive empathy males have relatively lower aggressive behaviour. However, for females, the amount of cognitive empathy seems to play no role in their aggressive behaviour (aggressive behaviour is similar at both low and high levels of cognitive empathy). This interaction helps answer the research question of whether the relationship between empathy and aggressive behaviour differs according to gender. It does appear that low levels of cognitive empathy are predictive of aggressive behaviour in males, but this relationship does not hold across gender.

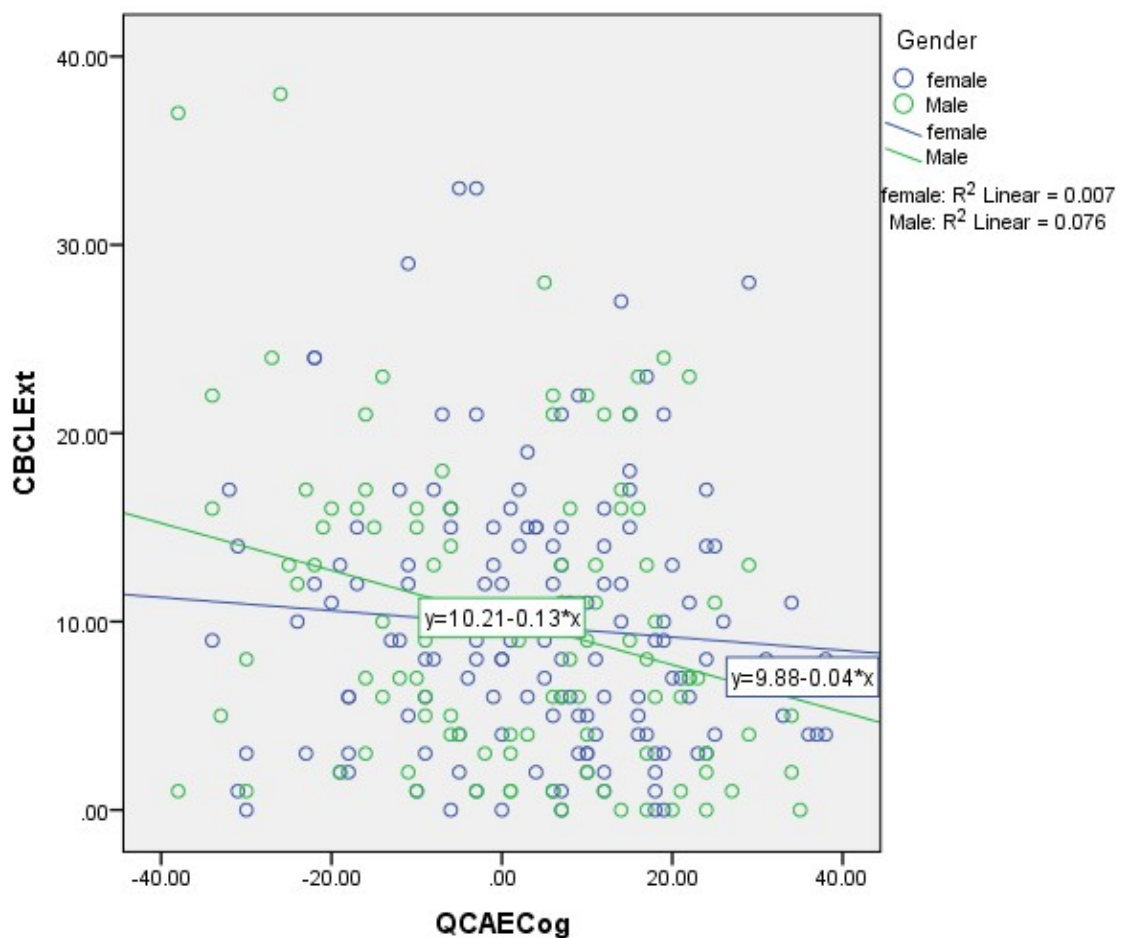


Figure 1 -The Interaction between cognitive empathy and aggressive behaviour in males and females.

Discussion

The main findings of the study were that generally children in the Western Cape exhibit low levels of aggressive externalizing behaviour. There was no significant gender difference in aggressive behaviour - boys did not score higher on aggressive externalizing behaviour than girls. Contrary to predictions, the study found no significant relationship between affective empathy and aggressive behaviour. However, cognitive empathy was found to be negatively associated with aggressive behaviour. The interaction between gender and cognitive empathy was significantly predictive of aggressive behaviour only among boys – boys with low levels of cognitive empathy scored higher on the externalizing subscale of the CBCL.

Aggressive behaviour in Western Cape Children.

This study found that children in the Western Cape generally have low levels of aggressive externalizing behaviour. As indicated by the descriptive statistics of this data, most of the participants scored in the bottom end of the range of possible scores ($M=9.86$; Range: 0-38), indicating a sample of low aggression. This is contrary to findings from many research studies done among South African children and adolescents. Many of the studies done in South Africa indicate that many children have been exposed to aggressive behaviour and have themselves become more aggressive (Ward et al., 2001; WHO, 2002). Studies have shown that many children are involved in some form of aggressive behaviour or exposed to aggressive behaviour at some point in their lives (Leoschut&Burton, 2006). Different studies in South Africa have used varied methodologies to measure aggression among children and adolescents (Nesser, 2006). The results showed that more than 12% of the participants had been absent from school at least once for fear of being victimized (Nesser, 2006). One study used indicators of trouble with the law when they showed that most violent criminals in jails had been involved in some sort of bullying or fighting at school (Schiff & Louw, 2000). Van der Westhuizen and Maree (2009), showed aggressive behaviour using contact with the law. They reported that some children admitted to slicing another child's throat with a sharp object whilst wearing a mask. Some had also threatened a person's life with a pair of scissors, a knife and in some cases a gun. A study that was done in Johannesburg aimed to evaluate how many children had been in trouble at school stated that over 30% of learners admitted having beaten, kicked or stolen from a fellow learner (Collings & Magojo, 2003).

Given these reports of serious aggression, our findings are somewhat reassuring regarding levels of aggression in the schools we sampled.

Much of the differences in the incidence of children's aggressive behaviour are because of environmental factors in the context they grow up in and how they experience their surroundings. The Western Cape has high rates of violent crime and gangsterism (Ward & Bakhuis, 2010). Leggett (2004) also reported that compared to other regions of South Africa, the Western Cape Province has higher incidences of violent behaviour and this is very problematic.

The reason this study found low levels of aggressive externalizing behaviour might be due to the fact that the sample consisted of quite young children - the oldest was/were 12 years old, which is preadolescent. Loeber (1982), states that aggressive behaviour peaks during adolescence, this might explain why the sample used in this study showed lower levels of aggression. Adolescence is a period of fast changes both physiological and psychological. Most of the changes in mood and behaviour are usually negative and are a result of raging hormones (Buchanan, Eccles, Becker, 1992), thus more problems are seen in adolescence.

Regardless of where children stay, parents usually protect their very young children from dangerous environments. Parents limit the impact the surrounding environment has on younger children. It is however quite difficult to ensure that adolescents are not corrupted by the context in which they live (Buchanan et al., 1992).

It should also be noted that this study used parent reports to measure aggressive behaviour; parents might have been biased in favor of their children. Parents may not have wanted to disclose problematic and socially undesirable behaviour. The self-report measure that was used to measure aggressive behaviour can be criticized as highly subjective and prone to social-desirability bias (Dinic et al., 2016). It is also probable that parents lack knowledge of children's behaviour in some contexts; hence they may not have an entirely accurate picture of their child's behaviour.

It might be useful for future studies to implement observation of behaviour. As stated above the self-report measure may be somewhat biased hence observing children's behaviour in various contexts may provide a more accurate picture. Gathering information

from teachers and other care givers might also be very helpful as parents alone might not know their children's behaviour at school or in other contexts. Importantly the current study only measured externalized behaviour; it is possible that some children may exhibit different types of aggression like instrumental aggression which was not measured in this research project. Cyber bullying is another form of aggression which is on the rise and was not measured by us.

Gender as a predictor of aggressive behaviour

Findings from this study showed a non-significant gender difference in aggressive externalizing behaviour. The first research question was if there are gender differences in aggressive, externalized behaviour and this study predicted that boys would be more aggressive. Looking at the descriptive data, boys had a slightly higher average score on the externalizing subscale of the CBCL ($M=10.06$; $SD=8.16$) than girls ($M=9.37$; $SD=7.02$), nevertheless this difference was statistically non-significant ($p=.781$). The effect size was also very small ($d=0.09$). Given this, and that the sample size yielded sufficient power (refer to pg. 15) to detect an effect, we can conclude that the lack of gender difference is a reliable finding.

However, these results deviated from what is commonly expected and found. Most previous findings have expected and shown that boys are more aggressive than girls (Archer, 2004; Jolliffe & Farrington, 2006; Ogwo, 2013). A study that was done on victimized learners in South Africa found that more than 50% of the aggressive incidents were initiated by a boy or a group of boys (Neser, 2006). Various studies have shown that males are usually more physically aggressive than the opposite sex in all the societies studied (Archer, 2004; Baillargeon et al., 2007; Ogwo, 2013).

Literature states that gender variances in aggressive behaviour appear during the early years, with boys being more aggressive and remaining so throughout childhood (Lussier et al., 2012). Sex differences in aggression become smaller during adolescence, thus studies that have shown non-significant gender differences in aggressive behaviour typically had their sample consisting of adolescents and older children (Jolliffe & Farrington, 2011; Scheithauer et al., 2006). Given that the current sample comprised of younger, preadolescent children, a similar pattern was expected, where boys were more aggressive.

It is possible, and has been suggested previously by Nesser (2006) that the girls have adapted to high risk societies and view violence as the only way of survival; they are just as aggressive as the boys (Nesser, 2006). Gangsterism and violent behaviour is very prevalent in Cape Town and thus girls might have acclimatized to violence and have themselves become more aggressive and pro-violence (Van Der Merwe, 2010; Collings & Magojo, 2003). We did not directly assess this possibility, but it is worth bearing in mind. It's also essential to bear in mind that overall, externalizing behaviour scores were low in this sample.

Findings from previous research have found that boys usually display direct forms of aggression like physical and verbal violence. Conversely girls usually exhibit indirect and relational forms of violence (Arbor, 2002; Crain, Finch, & Foster, 2005), however this study did not measure these latter types of aggression. Very few research studies have focused on aggression in girls as many have mainly focused on direct forms of aggression like hitting and kicking (Zalecki & Hinshaw, 2010).

It is also possible that the various research findings that have found males to be more aggressive than females have been biased based on the expected societal gender roles. In different cultures girls are expected to be calmer thus it is possible that the observers' bias influenced how observers evaluated the children's behaviour (Lussier et al., 2012; Olgeman, 2013). This gender bias was not evident in our sample. To obtain a better image of children's aggressive externalizing behaviour, future research should implement a variety of methodologies including, behavioural observations and parent and teacher reports (as discussed above).

Both boys and girls in this sample evidenced low levels of aggression: the result was unexpected in a sample where many children come from high risk areas, but good news for the context.

Gender and Affective Empathy

This study found that females scored significantly higher on affective empathy than males. The effect size was moderate ($d=0.51$) indicating that the relationship is substantial. The findings of this study were in line with what was hypothesized and what most literature says – i.e. that girls are more empathic than boys (Gini et al., 2007; Warden & Mackinnon, 2003). Girls on the whole are perceived as more empathic, however, the greater ability

appears to be expressed in their capacity to experience the emotions of another person rather than in their ability to perceive and understand another's emotional state (Baron-Cohen & Wheelwright, 2004; Reiners et al., 2011; Smith, 2004)

However, the overall mean score of affective empathy for this sample was 6.47 ($SD = 7.37$) indicating general low levels of empathy seeing the possible scores were from -24 to 24. This mean score is on the low end of the positive side of the affective empathy score continuum.

Females are socialized to be emotional beings, whereas men are seen as strong and dominant (Sigelman & Rider, 2009). Societal expectations may result in boys keeping their emotions in, as showing emotion may be deemed as a sign of 'weakness', as result boys become hesitant to show emotion (Eisenberg & Fabes, 1998). Females on the other hand are taught to invest emotions in all their interactions (Decety & Svetlova, 2012). It should be noted that the measure used was a parent report and hence parent ideas about gender roles may have influenced how they answered to the questionnaire.

Gender and Cognitive Empathy

The study found no significant gender difference in cognitive empathy. The effect size estimate, however, indicated that a small effect was present ($d=0.19$), in favour of females (Refer to page 30). Clearly the sample size was not sufficient to detect this small effect. Examining the descriptive data, there was a very wide range of scores for both males and females showing a great deal of variability around the means, this could also have contributed to the non-significant results.

The means for both boys ($M=1.21$; $SD=18.00$) and girls ($M=4.39$; $SD=16.14$) were just slightly above zero, which is indicative of relatively low scores of cognitive empathy for this sample. The possible scores ranged from -38 to 38; the mean scores are just on the low end of the positive side of the cognitive empathy score continuum. It should be noted that the participants in this study were aged between 3 and 13, thus the low scores are probably indicative of a cognitive empathy maturation threshold which the participants were still to achieve (Schwenck et al., 2012). Affective empathy, which is an innate, bottom-up process is present from very early childhood and is fully developed by school-going age (Schwenck et al., 2012). Cognitive empathy however, takes time to develop and needs higher order

thinking (Schwenck et al., 2012). Age is therefore an important predictor of cognitive empathy. Many children in our sample were quite young, so probably not fully developed in their cognitive empathy capacity.

On the other hand, cognitive empathy unlike affective empathy can easily be hidden, thus boys can still maintain their 'macho' masculinity. The non-significant result may possibly be influenced by societal factors which expect males to be tough and less emotional (Eisenberg & Fabes, 1998). Despite this possibility, parents did not report their male or female children as differing on this ability.

Affective empathy as a predictor of Aggressive behaviour

I found no significant relationship between aggressive behaviour and affective empathy. Zero order correlations showed no significant relationship between affective empathy and aggressive behaviour. Affective empathy was entered into the first regression model (Refer to page 29); however, it did not predict aggressive behaviour. This was contrary to hypothesis 4 of this study which proposed that low levels of affective empathy would be related to increased aggressive behaviour. This finding is also in contrast with previous studies indicating that lower levels of affective empathy are predictive of aggressive behaviour (Dadds et al., 2009; Jones, Happe, Gilbert, Burnett, & Viding, 2010; Schwenck et al., 2012).

There is mixed literature on the role of affective empathy in aggression. Systematic reviews on affective empathy and aggression have generally reported a negative correlation but only in adolescents and older people (Miller & Eisenberg, 1988; Lovett & Sheffield, 2007). A negative correlation means that more empathy is associated with reduced aggression. It must be noted that the hypothesis of this study was based on adolescent literature as there is not enough literature on children. The divergence from literature is possibly because of the age of the participants in the current sample (3-13years).

It must also be noted that the negative correlation that has been consistently found between affective empathy and aggressive behaviour in adults has been robust only when using questionnaires (Lovett & Sheffield, 2007; Miller & Eisenberg 1988). Studies that have used behavioural measures have found non-congruent findings (Lovett & Sheffield, 2007). Many empirical studies have proven the relationship between lack of affective empathy and

aggressive behaviour particularly among adolescents; very few have explored what happens in preschool age children. Much research still needs to be done to explore this relationship in South African children.

Affective empathy, gender and aggressive behaviour

The interaction between gender and affective empathy did not significantly predict aggressive externalizing behaviour. This contrasts with studies that have reported that lower levels of affective empathy are associated with aggressive behaviour among boys (Jolliffe & Farrington, 2004). This difference may be due to the fact that this study recruited typically developing children as opposed to children with callous unemotional traits. Deficits in affective empathy are usually only present in children with elevated callous unemotional traits (Barry et al., 2000; Sutton et al., 1999). Empathic dysfunction or lack of empathy is associated with numerous psychological disorders, callous and unemotional behaviour, aggressive and antisocial behaviour often resulting in problematic social relations as well as impaired communication skills (Blair, 2005). Our sample of typically developing children did not show reduced affective empathy, so the lack of association is perhaps not surprising.

Cognitive empathy as a predictor of Aggressive behaviour

I found a negative correlation between cognitive empathy and aggressive behaviour. This relationship means that less cognitive empathy is predictive of more aggressive behaviour. Zero order correlations showed a negative correlation between the two variables, and cognitive empathy was predictive of aggressive behaviour in all the regressions that were run. The findings were supportive of hypothesis 4 of this study. Several research studies and meta-analysis have also found a negative correlation between cognitive empathy and aggressive behaviour (Gini et al., 2007; Jolliffe & Farrington, 2006; Malcolm-Smith et al., 2015).

In typically developing children like the ones in this study, the understanding of other's emotions seems to impede the manifestation of aggressive behaviour (Malcolm-Smith et al., 2015). Cognitive empathy enables children to better anticipate the possible repercussion of their behaviour, and to better understand the pain inflicted on others (Gini et al., 2007).

Studies that have reported a positive relationship between cognitive empathy and aggressive behaviour have mostly recruited children with callous unemotional traits (Arsenio & Lemerise, 2001). A study done by Sutton et al. (1999) found the relation between cognitive empathy and aggression to be positive owing to the fact that people with high cognitive but low affective empathy may fail to vicariously feel the emotions exhibited by another (Arsenio & Lemerise, 2001). This pattern is common in children who have high callous unemotional traits. Children high in cognitive empathy and low in affective empathy are also able to manipulate others and do not feel any form of remorse (Decety, 2011). The heightened cognitive skills are used to manipulate and to use others for personal gain (Munoz et al., 2011). In our sample of typically developing children, high levels of callous unemotional traits would not be expected. Thus, a negative relationship between cognitive empathy and aggression is present, as predicted.

Cognitive empathy, gender and aggressive behaviour

The main result of this study is that the cognitive aspect of empathy was inversely associated with aggressive behaviour and that the interaction between gender and cognitive empathy was significantly predictive of aggressive behaviour only among boys. It seems that boys unlike girls, when they do not recognize and understand the emotional state of another and fail to take another person's perspective, tend to react in an aggressive manner. Acknowledging and apprehending another's emotional state seem to prevent the exhibition of aggressive behaviour especially in boys (Kokkinos & Kipritsi, 2012)

In the next section the covariates age, IQ and SES will be discussed. Given the relationship with aggressive behaviour in studies that were done outside South Africa, it was essential to investigate if these factors would also predict aggressive externalizing behaviour in this sample.

Age as a predictor of Aggressive behaviour

Although the focus of this research project was to investigate how the two different constituents of empathy predict aggressive behaviour, other potential covariate variables such as Age were also examined.

When zero-order correlations were examined, a significant inter-correlation was seen between Age and aggressive behaviour. Literature consistently shows that aggressive

behaviour increases with age, peaking during puberty and adolescence (Craig et al., 2000). Adolescence is a time when a child must establish his/her self-concept, in some cases this may result in an exhibition of opposition or strength (Craig et al., 2000).

On the other hand, some studies have shown that preschoolers (3-5years) are more aggressive than school going children (Archer & Côté, 2005; Bowen, 2005). A study done by Strayer & Roberts(2004), showed that 5year old children were more aggressive than 6-year-old children, this is because 4 to 5-year olds are at a stage where they are forming friendships and may imitate aggressive behaviour(Scheithauer et al.,2006). As children approach school going age, there is a decrease in aggression as they learn new social and language skills (Fujisawa et al., 2006). There weren't many preschoolers in this sample so the pattern of high aggression at this age was not evident in our results. In the current sample, aggression increased from school going age to adolescence.

It should be, however, noted that during the regression age was only significant when entered on its own, this shows that when other predictors like gender and empathy are added the effect of age on aggressive behaviour is negligible. The findings in this study may be a result of the age range of the participants which ended at just before adolescence. Preadolescence is an unchanging period with regard to prosocial development and behaviour (Buchanan et al., 1992)

In subsequent research, it might be advantageous to compare age groups such as preschoolers (3-5), foundation (6-8), pre-adolescence (9-12) and adolescence (13-19) so as to get a more nuanced picture the relationship between age, gender and aggressive behaviour in a South African context.

IQ as a predictor of aggressive behaviour

When examining zero order correlations, no significant relationship was found between IQ and aggressive behaviour in this study. IQ was entered in the first model, but it had a very small beta ($\beta = -.004$) meaning it had no effect on aggressive behaviour. This finding is contrary to what most literature reports. Verbal IQ is essential in the progression of social cognition thus it was evaluated in this study as a potential covariate (Ashington, 2003; Huesmann et al., 2002; Park et al., 2005). Ample research has shown low levels of general cognitive functioning to be associated with more aggressive responses and more hostile

attributions (Runions & Keating, 2010; Nieuwanhuzi, Orobio de Castro, Van Alken, & Matthys, 2009).

The divergence of this study's findings is most likely due to the difference in measures used to measure IQ and aggression. Where low IQ is associated with increased aggression, it's usually found in children who are intellectually disabled (Huesmann et al., 2002). These are the children falling below the rest of their peers on intelligence. The average Verbal IQ for this sample was ($M=7.65$: $SD=2.79$) and Working memory was ($M=7.85$: $SD=2.79$). Ongoing research at UCT is showing that values in this range are average for Western Cape children from low SES backgrounds. These results thus show that the children in this sample have average intelligence. We therefore would not expect to see the association between IQ and aggression in an average group. It is important to note the reasons low SES SA children score lower on western IQ tests. Firstly, there is cultural bias as tests are not designed for this context (Foxcroft & Aston, 2006, Shuttleworths-Edwards, 2015). Secondly, low SES is very often associated with poor quality schooling. (Foxcroft & Aston, 2006, Shuttleworths-Edwards, 2015)

It must also be noted that full IQ scores were not calculated, it was just the Verbal IQ and Working memory. Full IQ tests have also several subtests that together estimate VIQ- perhaps that would have been a better measure also. It is possible that this might have caused the divergence of this study's findings from what is normally reported in literature.

SES as a predictor of Aggressive behaviour

Examining zero order correlations, both SES indicators in this study (Income and HLOE) were not significantly correlated to aggressive behaviour. In the regression only income was entered as income and HLOE were highly correlated (see page 33) Income was entered in the first model of the regression and had a very small beta ($\beta= -.063$) meaning it had no effect on aggressive behaviour. This is contrary to many research studies that have shown that children from low SES families often exhibit high levels of aggressive behaviour (Gasa, 2010; Paterson & Parold, 2013; Van Der Merwe, 2010). As previously stated this sample had low levels of aggressive behaviour overall so this perhaps contributed to the effect of SES on aggressive behaviour being insignificant.

South Africa, is however a country with a diverse range of SES. In this sample the minimum annual income was R8 997 and the maximum was R500 500.00. In South Africa the lowest income ranges from between R200 to R500 per month (R2400-R6000 per year) - with social grants having become important sources of income (leibbrandt, Finn, & Woolard, 2012). On the other end there are people who earn more than R60 000.00 per month (\geq R720000). Despite trying to sample from low to high SES communities, we clearly had a somewhat restricted range of income. It is advantageous if future research try to sample from the very lowest and very highest i.e. across the whole range of income to get a more explicit understanding of the effect of SES in predicting aggressive behaviour. It must nevertheless be pointed out that in a country like South Africa it would be very difficult to represent the whole spectrum from extreme poverty to extreme wealth, especially within the constraints of a Masters project.

Limitations and directions for future research

Several limitations and suggestions for subsequent studies have been mentioned in the discussion. There are however, additional issues which need to be considered when interpreting the findings of this research project. These include some difficulties with the instruments, design and standardization.

Both aggressive behaviour and empathy were assessed using parent-report measures; these can be considered highly subjective and prone to social-desirability bias (Dinic et al., 2016). Despite the bias these parent-report measures are standardized and widely used. This means findings are reliable, and it is also possible to compare the current findings with other research findings. These measures are also easier to administer and takes less time to complete compared to other methods (Thal, Jackson-Maldonado, Acosta, 2000). In future research it is suggested that multiple sources be incorporated to get a more accurate picture of a child's behaviour. Physiological measures could be used in conjunction with empathy tasks to assess empathic responsiveness. Behavioural observations and classmate rating may also help in getting a more precise depiction of the child's aggressive behaviour (Neumann, Chan, Boyle, Wang, Westbury, 2015). There are many other kinds of aggression including instrumental and relational aggression, it is recommended that future studies also consider these.

Secondly the study used cross sectional design which makes it difficult to ascertain whether empathy precedes aggressive behaviour or if aggression leads to low levels of empathy. Considering that this is a Masters Research study and had to be done in a limited space of time, a cross sectional design was most ideal. A longitudinal study would, however more accurately explore the relationship between the variables over time.

As previously mentioned the study was done as part of a larger research project. Assessments were therefore not always administered and scored by the same individual. On big projects it is standard practice to have teams of data collectors. However, since everyone had their own hypothesis, experimenter bias might have played a role. All the researchers in the project were strictly trained to confirm standardization, however, it was not ensured that standardization was upheld at the site. In future it is suggested to do site checks to ensure standardization during task administration and scoring.

Further research should utilize a much wider range of SES and Age so as to accurately ascertain the extent to which these variables predict aggressive behaviour. South Africa is made up of a very wide spectrum of SES from the poorest to the richest. Although it would be a bit difficult to include the whole spectrum in one study, the effect of SES on aggressive behaviour is of paramount importance in SA. Studies found varying results in respect of the effect of age on aggressive behaviour. A wider range of Age would depict a more accurate picture of its effect of aggressive behaviour in a South African context. Lastly the contradictory findings of the relationship between IQ and aggressive behaviour should be investigated. It would be beneficial to utilise full IQ scores and see if IQ affects the manifestation of aggressive behaviour in South African children. More research should be done to get a more explicit depiction of the relationship.

Problems with measuring and conceptualizing empathy

The QCAE has good empirical support (Dadds et al., 2008), however it is highly subjective and prone to social desirability bias as it is based on parent's perceptions of their children. Empathy is a very difficult construct to conceptualize and to measure; it is possible that measures used to measure empathy may be a problematic.

There is debate if empathy is a stable dispositional characteristic that is shown by a general response pattern or whether it is a context specific trait (Eisenberg et al., 1991;

Matthys & Lochman, 2005). Direct measures of empathy which take into account the context in which certain behaviours are displayed are considered by some to be more accurate than the indirect measures of dispositional empathy like the QCAE (De Wied, Goudena, & Matthys, 2005). Also, important to note, is that, out of the 31 questions that make up the QCAE only 12 tap into the affective empathy construct, this raises questions regarding the accuracy of the measure (Reniers et al., 2011).

Affective and Cognitive empathy are treated as entirely distinct in this research project, this is a bit problematic as there should be some relation between the two. Affective empathy is characterized as an involuntary response, whereas cognitive empathy builds on this involuntary response through top-down regulation (Decety, 2011). This indicates that these components are not entirely discriminable and thus some relationship should exist between them (Decety, 2011)

A third regulatory aspect of empathy has been proposed by latest research (Decety & Jackson, 2004). This finding is very important as self-regulation mediates how affective empathy and cognitive empathy relates to each other, affecting how they both are related to prosocial behaviour. Research has also shown that problems with this regulatory aspect are predictive of aggressive and delinquent behaviour (Eisenberg & Fabes, 1998). However, the role of this third component of empathy is often left out when operationally defining empathy. It is thus very important that future studies assess for the regulatory component of empathy.

Possible implications for interventions

Regardless of the above limitations, exploring these important variables simultaneously allowed for a more inclusive understanding of their complicated interactions. More specifically it provided a more nuanced understanding of the possible gender differences in the level of empathy in Western Cape children. The most important finding was the effect of cognitive empathy on aggressive behaviour and how it is especially important in boys.

The study also has important implications regarding prevention of aggression in children. If teachers, parents, caregivers, and psychologists understand better the link

between empathy and aggressive behaviour, they will be better able to strengthen the child's emotional development before they enter adolescence and adulthood.

Promotion of prosocial behaviour through school curricula and programs meant to assist children develop social and emotional competencies results in reduced aggressive behaviour (Greenberg et al., 2003). The findings of the study further point to the role of cognitive empathy compared to affective empathy in minimizing aggressive behaviour in children particularly boys. As previously mentioned cognitive empathy is age dependent, thus it becomes more apparent as children get older (Smith, 2006). Cognitive empathy includes the understanding of another's emotional state, thus intervention programs in schools should focus more helping the children gain an insight into the affective state of others (Dinic et al., 2016). Cognitive empathy also encompasses the understanding of all sorts of mental states and therefore understanding other people's behaviour in terms of those mental states (emotions, intentions, motivations etc). Children should then be trained in Theory of Mind which is the understanding of mental states of others. Research on preschool children has found the process of induction to be particularly effective in the development of empathy (Hoffman, 2000). Induction is a method by which caregivers use reasoning and explanations to assist children understand the consequences of their behaviour (Krevans & Gibbs, 1996), for example explaining how kicking another child might injure him and make him sad. If the process of induction is started during the early years of life it might prevent aggressive behaviour from happening.

The relationship between cognitive empathy and aggressive behaviour was clear in boys thus prevention programs should strongly focus on assisting the boys anticipate the consequences of aggression. Seeing the importance of cognitive empathy in understanding aggression, future research should explore the effects of the various components of cognitive empathy. Blair (2005) states that these various components of cognitive empathy (interpretations of other's emotional states, interpretations of other's complex intentions and beliefs), have distinct neural correlates. It is therefore important to understand which part of the comprehension of people's viewpoints and emotions is predictive of aggressive behaviour.

Apart from the vast amount of research exploring the relationship between empathy and aggression, not enough has explored the effects of gender. Future research should explore the gender effects on other possible correlates of aggressive behaviour.

Summary and Conclusions

The study has contributed to the body of literature by investigating the complex relationships among cognitive empathy, affective empathy, gender and aggressive behaviour. Separating the components of empathy was important in that it enabled us to get a more nuanced understanding of its effect on aggression.

Firstly, the study found that children in the Western Cape generally had low levels of externalizing aggressive behaviour. Secondly no gender differences in aggressive behaviour were found. Furthermore, cognitive empathy was found to be predictive of aggressive behaviour, whereas no relationship was found between affective empathy and aggression. More importantly the relationship between cognitive empathy and aggressive behaviour was primarily found in boys, with low levels of cognitive empathy predictive of increased aggressive behaviour. This has important implications for targeted interventions. In a country like South Africa where aggression and antisocial behaviour is alarmingly common it was important to investigate the possible correlates of aggression. These findings may inform schemes in the development of intervention programs in South Africa.

References

- Achenbach, T. M., & Edelbrock, C. S. (1979). The child behaviour profile II. Boys aged 12-16 and girls aged 6-11 and 12-16. *Journal of Consulting and Clinical Psychology*, 47(2), 223-233. doi:10.1037//0022-006X.47.2.223
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington, VT: University of Vermont
- Archer, J., & Côté, S. (2005). Sex differences in aggressive behaviour: A developmental and evolutionary perspective. In R. E. Tremblay, W. W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (pp. 425-443). New York: Guilford Press.
- Anderson, C.A., & Bushman, B.J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27-51. doi:10.1146/annurev.psych.53.100901.135231
- Arbor, A. (2002). Relational aggression in girls. *The Educational Digest*, 68(2), 7-14.
- Archer, J. (2004). Sex differences in aggression in real world settings: A meta-analytic review. *Review of General Psychology*, 8(4), 291-322. doi:10.1037/1089-2680.8.4.291
- Archer, J. (2009). Does sexual selection explain human sex differences in aggression? *Behavioural and Brain Sciences*, 32(3), 249-311. doi:10.1017/S0140525X09990951
- Ang, R. P., & Goh, D. H. (2010). Cyberbullying among adolescents: The role of affective and cognitive empathy, and gender. *Child Psychiatry and Human Development*, 41(4), 387-397. doi:10.1007/s10578-010-0176-3
- Arsenio, W.F., & Lemerise, E.A. (2001). Varieties of childhood bullying: Value, emotion processes and social competence. *Social Development*, 10(1), 59-73. doi:10.1111/1467-9507.00148
- Ashington, J.W. (2003). Sometimes necessary, never sufficient: False belief understanding and social competence In B.Repachola & V Slaughter (Eds), *Individual differences in theory of mind: Implications for typical and atypical development* (pp 13-38), New York, NY: Psychology Press
- Baillargeon, R.H., Zoccolillo, M., Kennan, K., Cote, S., Perusee, D., Wu, H., Boivin, M., & Tremblay, R. E. (2007). Gender differences in physical aggression: A prospective population-based survey of children before and after 2 years of age. *Developmental Psychology*, 43(1), 13-26. doi:10.1037/0012-1649.43.1.13

- Baldry, A.C., Farrington, D.P. (2000). Bullies and delinquents: Personal characteristics and parental styles. *Journal of Community and Applied Social Psychology*, 10(1), 17-31. doi:10.1002/(SICI)1099
- Bandura, A. (1973). *Aggression: A social learning analysis*. Englewood cliffs, NJ: Prentice-Hall
- Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: An investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Problems*, 34(2), 163-175. doi:10.1023.B: JADD.000022607.1983.00
- Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M., Ellis, M., & Loney, B. R. (2000). The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology*, 109(2), 335-340. doi:10.1037/0021-843X.109.2.335
- Blair, R.J.R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric population. *Consciousness and Cognition*. 14(4), 698-718. doi.10.1016/j.concorg.2005.06.004
- Blair, R.J.R., & Coles, M. (2000). Expression recognition and behavioural problems in early adolescence. *Cognitive Development*, 15(4), 421-434. doi: 10.1016/S0885-2014(01)00039-9
- Blair, R.J.R., Mitchell, P.G.V., Peschardt, K.S., Colledge, E., Leonard, R.A., Shine, J.H....Perret,D.E. (2004). Reduced sensitivity to others fearful expressions in psychopathic individuals. *Personality and Individual Differences*, 37(66), 1111-1122. doi:10.1016/j.paid.2003.10.1008
- Blackmore, S.J., & Frith, U. (2003). The learning brain. *Developmental Science*, 8(6), 459-471. doi:10.1111/j.1469-7610.2006.01611x
- Borke, H. (1971). Interpersonal perception of young children. *Developmental Psychology*, 5(2), 263-268. doi: 10.1037/h0031267
- Book, A.S., Quinsey, V.C., & Langford, D. (2007). Psychopathy and the perception of affect and vulnerability. *Criminal Justice and Behaviour*, 34(4), 531-544. doi: 10.1177/0093854806293554

- Bowen, N.K. (2005). Histories of developmental task attainment in aggressive children and their relationship to behaviour in middle childhood. *Journal of Emotional and Behaviour Disorder, 13*(2), 113-124. doi: 10.1177/10634266050130020401
- Bradley, R.H., & Corwyn, R.F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*, 371-399. doi:10.1146/annurev.psych.53.100901.135233
- Bray, E. (2005). Codes of conduct in public schools: A legal perspective. *South African Journal of Education, 25*(3), 133-138. Retrieved from <http://hdl.handle.net/10520/EJC32049>
- Buchanan, C.M., Eccles, J.S., & Becker, J.B. (1992). Are adolescents the victims of raging hormones: Evidence for activational effects of hormones on mood and behaviour at adolescence. *Psychological Bulletin, 11*(1), 62-107.
- Burton, D.L. (2008). An exploratory evaluation of the contribution of personality and childhood sexual victimisation to the development of sexually abusive behaviour. *Sexual abuse: A Journal of Research and Treatment, 20*(1). 102-115. doi: 10.1177/1079063208315352
- Carlson, S.M., & Moses, L.J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72*(4), 1032-1053. doi: 10.1111/467-824.00333
- Collings, S.J., & Magojo, T.S. (2003). Youth violence: An analysis of selected aetiological pathways in a sample of South African high school male. *Acta Criminologica, 16*(2), 125-137. Retrieved from <http://hdl.handle.net/10520/EJC28768>
- Cohen, D., & Strayer, J. (1996). Empathy in conduct-disordered and comparison youth. *Developmental Psychology, 32*(6), 988-998. doi: 10.1037/0012-1649.32.6.988
- Craig, W.M., Henderson, K., & Murphy, J.M. (2000). Prospective teacher's attitudes towards bullying and victimisation. *School Psychology International, 21*(1), 5-21. doi:10.1177/01430021100
- Crain, M.M., Finch, C.L., & Foster, S.L. (2005). The relevance of the social information processing model of understanding relational aggression in girls. *Project Muse, 51*(2), 213-249. doi:10.1353/mpq.2005.0010
- Currie, C.E., Elton, R.A., Todd, J., & Platt, S. (1997). Indicators of socioeconomic status for adolescents: The WHO Health Behaviour in school aged children survey. *Health Education Research, 12*(3), 385-397. doi:10.1097/her/12.3.385

- Dadds, M. R., Hunter, K., Hawes, D. J., Frost, A. J., Vassallo, S., Bunn, P., & ... Masry, Y. E. (2008). A measure of cognitive and affective empathy in children using parent ratings. *Child Psychiatry and Human Development, 39*(2), 111-122.
doi:10.1007/s10578-007-0075-4
- Dadds, M. R., Hawes, D. J., Frost, A. J., Vassallo, S., Bunn, P., Hunter, K., & Merz, S. (2009). Learning to 'talk the talk': the relationship of psychopathic traits to deficits in empathy across childhood. *Journal of Child Psychology & Psychiatry, 50*(5), 599-606. doi:10.1111/j.1469-7610.2008.02058.x
- Dahly, D.L., Gordon-Larsen, P., Popkin, B.M., Kaufman, J.S. & Adair, L.S. (2010). Associations between multiple indicators of socioeconomic status and obesity in young adult Filipinos vary by gender, urbanicity and indicators used. *The Journal of Nutrition, 140* (2), 366-377. doi:10.3945/jn.109.114207
- De Castro, B.O., Veerman, J.W., Koops, W., Bosch, J.D., & Monshouwer, H.J. (2002). Hostile attribution of intent and aggressive behaviour: A meta-analysis. *Child development, 73*(3), 916-934. doi: 10.1111/1467-8624.00447
- Decety, J. (2010). The neurodevelopment of empathy in humans. *Development Neuroscience, 32*(4), 257-267. doi.org/10.1159/000317771
- Decety, J. (2011). Dissecting the neural mechanisms mediating empathy. *The International Society for Research on Emotion, 3*(11), 92-108. doi:10.1177/1754073910374662
- Decety, J., & Lamm, C. (2006). Human empathy through the lens of social neuroscience. *The Scientific World Journal, 6*, 1146-1163. doi: 10.1100/tsw.2006.221
- Decety, J., & Mariguchi, Y. (2007). The empathic brain and its dysfunction in psychiatric population: Implications for intervention across different clinical conditions. *BioPsychoSocial Medicine, 1*(22). doi: 10.1186/1751-0759-1-22
- Decety, J., & Michalska, K.J. (2010). Neurodevelopmental changes in the circuits underlying empathy and sympathy from childhood to adulthood. *Developmental Science, 13*(6), 886-899. doi:10.1111/j.1467-7687.2009.00940.x
- Decety, J., & Svetlova, M. (2012). Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental Cognitive Neuroscience, 2*(1), 1-24. doi: 10.1016/j.dcn.2011.05.003

- Decety, J., Norman, G.J., Bernston, J., & Cacioppo, T. (2012). A neuro behavioural evolutionary perspective on the mechanisms underlying empathy. *Progress in Neurobiology*, 98(1), 38-48. doi:10.1016/j.pneurobio.2012.05.001
- Decety, J., Skelly, L.R., & Kiehl, K.A. (2013). Brain responses to empathy-eliciting scenarios involving pain in incarcerated individuals with psychopathy. *Jama Psychiatry*, 70(6), 638-645. doi:10.1001/jamapsychiatry.2013.27
- Decety, J., & Cowell, J. M. (2014). The complex relation between morality and empathy. *Trends in Cognitive Science*, 18(7), 337-339. doi.org/10.1016/j.2014.04.008
- Dempsey, A.G., Sulkowski, M.L., Dempsey, J., & Storch, E.A. (2011). Has cyber technology produced a new group of peer aggressors? *Cyberpsychology, Behaviour, and Social Networking*, 14(5), 297-301. doi:10.1089/cyber.2010.0108
- Derntl, B., Finkelmeyer, A., Eickhoff, S., Kellermann, T., Falkenberg, D.I., Schneider, F.S. & Habel, U. (2010). Multidimensional assessment of empathic abilities, neural correlates and gender differences. *Psychoneuroendocrinology*, 35(1), 67-82. doi: 10.1016/j.psyneuen.2009.10.006
- De Wied, M., Goudena, P. P., & Matthys, W. (2005). Empathy in boys with disruptive behaviour disorders. *Journal of Child Psychology and Psychiatry*, 46(8), 867-880. doi: 10.1111/j.1469-7610.2004.00389.x
- Dinic, B.M., Kodzopeljic, J.S., Sokolovska, V.T., & Milovanovic, I.Z. (2016). Empathy and peer violence among adolescents: Moderation effects of gender. *School Psychology International*, 37(4), 359-377. doi: 10.1177/0143034316649008
- Eisenberg, N. (1988). The development of prosocial and aggressive behaviour. In M. H. Bornstein & M. E. Lamb (Eds.), *Developmental psychology: An advanced textbook* (pp. 461-495). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Eisenberg, N., & Miller, P.A. (1987). The relation of empathy to prosocial and related behaviours. *Psychological Bulletin*, 101(1), 91-119. doi: 10.1037/0033-2909.101.1.91
- Eisenberg, N., Shea, C.L., Carlo, G., & Knight, G.P. (1991). Empathy-related responding and cognition: A chicken and the egg dilemma. In Kurtines, W.M (Ed). *Handbook of moral behaviour and development* (pp 63-68). Hillsdale: Erlbaum
- Eisenberg, N., & Fabes, F. (1998). Prosocial Development. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed). *Handbook of child psychology: Vol 3. Social, emotional and personality development* (pp 701-778). New York, NY: Wiley

- Eisenberg, N. (2000). Emotion, regulation and moral development. *Annual Review of Psychology*, 51, 665-697. doi:10.1146/annurev.psych.51.1.665
- Eisenberg, N., Damon, W., & Lerner, R. M. (2006). *Handbook of child psychology: Social, emotional, and personality development*. Hoboken, NJ, US: John Wiley & Sons Inc.
- Estrem, T. (2005). Relational and physical aggression among pre-schoolers: The effect of language skills and gender. *Early Education and Development*, 16(2), 207-231. doi:10.1207/S15566935eed1602_6
- Fakolade, O.A. (2006). Efficacy of psychometric instruments of WISC-R and SIT in the identification of gifted and talented children. *An International Journal*, 14(2), 142-150. doi: 10520/EJC38664
- Ferrett, H. L. (2011). The adaptation and norming of selected psychometric tests for 12-to 15-year-old urbanized Western Cape adolescents (Unpublished doctoral dissertation) Stellenbosch: Stellenbosch UniversityGini,
- Fineran, S., Bennet, L., & Succo, T. (2001). Peer sexual harassment and peer violence: South African children at risk. *Social Work*, 37(3), 211-221
- Flight, J.I., & Forth, A.C. (2007). Instrumentally violent youth: the roles of psychopathic traits, empathy and attachment. *Criminal Justice and Behaviour*, 34(6), 739-782. doi:10.1177/0093854807299462
- Foxcroft, D.A. & Aston, S. (2006). Critically examining language bias in the South African adaptation of the WAIS-III. *SA Journal of Industrial Psychology*, 32(4), 97-102. Retrieved from <http://hdl.handle.net/10520/EJC89105>
- Fujisawa, K.K., Katsakuke, K., & Hasegawa, T. (2006). Peacemaking and consolation in Japanese pre-schoolers witnessing peer aggression. *Journal of Comparative Psychology*, 120(1), 48-57. doi: 1037/0735-7036120.48
- Funk, J. B., Baldacci, H.B., Pasold, T., & Baumgardner, J. (2004). Violence exposure in real-life, video games, television, movies and the internet: is there desensitization? *Journal of Adolescence*, 27(1), 23-29. doi: 10.1016/j.adolescence.2003.10.005
- Gasa, V.G. (2010). The community as a determinant of learner's aggressive behaviour in secondary school. *Commonwealth Youth and Development*, 8(2), 16-29. doi:10.1177/0093854807299462

- Gini, G., Albiero, P., Benelli, B., & Alto, G. (2007). Does empathy predict adolescents bullying and offending behaviour. *Aggressive Behaviour, 33*(5), 467-476. doi:10.1002/ab.20204
- Glass, S. J., & Newman, J. P. (2006). Recognition of facial affect in psychopathic offenders. *Journal of Abnormal Psychology, 115*(4), 815-820. doi:10.1037/0021-843X.115.4.815
- Greenberg, M.T., Weissberg, R.P., O'Brien, M.U., Zins, J.E., Fredericks, L., Resnik, H., & Elias, M.J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist, 58*(6-7), 466-474. doi:10.1037/0003-066X.58.6-7.466
- Govender, K. & Killian, B. J. (2001). The psychological effects of chronic violence on children living in South African Township. *South African Journal of Psychology, 31*(21), 1-21. Retrieved from <http://www.naspers.co.za>
- Hawker, D.S.J., & Boulton, M.J. (2000). Twenty years' research on peer victimisation and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *The Journal of Child Psychology and Psychiatry and Allied Disciplines, 41*(4), 441-455.
- Hinshaw, S.P. (1992). Academic underachievement, attention deficits and aggression. Comorbidity and implication for intervention. *Journal of Consulting and Clinical Psychology, 60*(6), 893-903. doi:10.1037/0022-006X.60.6.893
- Hobson, R.P. (1993) *Autism and the development of mind*. Hillsdale, NJ: Erlbaum
- Hodges, S.D., & Klein, K.J.K. (2001). Regulating the costs of empathy: the price of being human. *The Journal of Socio-Economics, 30*, 437-452
- Hogan, R. (1969). Development of an empathy scale. *J Consult Clin Psychol, 33*, 307-316
- Hoffman, M.L. (2000). *Empathy and moral development implications for caring and justice*. London: Cambridge University Press
- Huesmann, L.R., Eron, L.D., & Dubow, E.F. (2002). Childhood predictors of adult criminality: are all risk factors reflected in childhood aggressiveness. *Criminal Behaviour and Mental Health, 12*(3), 185-208. doi: 10.1002/obm.496
- Jolliffe, D., & Farrington, D.P. (2004). Empathy and offending: A systematic review and meta-analysis. *Aggression and Violent Behaviour, 9*(5), 441-476. doi: 10.1016/j.avb.2003.03.001
- Jolliffe, D., & Farrington, D. P. (2006). Examining the relationship between low empathy and bullying. *Aggressive Behaviour, 32*(6), 540-550. doi:10.1002/ab.20154

- Jolliffe, D., & Farrington, D.P. (2011). Is low empathy related to bullying after controlling for individual and social background variables? *Journal of Adolescence*, 34(1), 59-71. doi:10.1016/j.adolescence.2010.02.001
- Jones, A.P., Happe, F.G.E., Gilbert, F., Burnett, S., & Viding, E. (2010). Feeling, caring, knowin: different types of empathy deficit in boys with psychopathic tendencies and autism spectrum disorder. *Journal of Child Psychology and Psychiatry*, 51(11), 1188-1197. doi:10.1111/j.1469-7610.2010.02280.x
- Kaukiainen, A., Bjo" rkvist, K., Lagerspetz K., O" sterman, K., Salmivalli, C., Rothberg S., & Ahlbom A. 1999. The relationships between social intelligence, empathy, and three types of aggression. *Aggressive Behaviour*, 25(2), 81-89. doi:10.1002/(SICI)1098-2337(1999)25:2<81::AID-AB1>3.0.CO;2-M
- Keenan, K., & Shawn, P. (1997). Developmental and social influence on young girls' early problem Behaviour. *Psychological Bulletin*, 121(1), 95-113. doi:10.1037/0033-2909.121.1.95
- Kimanis, E.R., Frick, P.J., Fazeka, H., & Loney, B.R. (2006). Psychopathy, aggression, and the processing of emotional stimuli in non-referred children. *Behaviour Sci law*, 24(1), 21-37. doi:10.1002/bsl.668.
- Koenen, K. C., Caspi, A., Moffitt, T. E., Rijdsdijk, F., & Taylor, A. (2006). Genetic influences on the overlap between low IQ and antisocial behaviour in young children. *Journal of Abnormal Psychology*, 115(4), 787-797. Doi:10.1037/0021-843X.115.4.787
- Kokkinos, C.M., & Kipitsi, E. (2012). The relationship between bullying, victimization, trait emotional intelligence, self-efficacy and empathy and preadolescents. *Social Psychology of Education*, 15(1), 41-58. doi: 10.1007/s112118-011-9168-9
- Krevans, J., & Gibbs, J.C. (1996). Parent's use of inductive discipline: Relations to children's empathy and prosocial behavior. *Child Development*, 67(6), 3263-3277. doi:10.1111/j.1467-8624.1996+b01913.x
- Liang, H., Flisher, A.J., & Lombard, C.J. (2007). Bullying, violence, and risk behaviour in South African school students. *Child Abuse and Neglect*, 31(2), 161-171. doi:10.1016/jc

- Leggett, T. (2004). What's up in the Cape? Crime rates in Western and Northern Cape Provinces. *SA Crime Quarterly*, 2004(7), 15-20. Retrieved from <https://hdl.handle.net/10520/EJC47740>
- Leff, S.S. (2010). A review of existing relational aggression programs: strength, limitations and future directions. *School Psych Rev*, 39(4), 508-535. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3111222/>
- Leibbrandt, M., Finn, A., & Woolard, I. (2012). Describing and decomposing post-apartheid income inequality in South Africa. *Development Southern Africa*, 29(1), 19-34. doi: 10.1080/0376835X.2012.645639
- Leoschut, L. & Burton, P. (2006). How rich the rewards? Result of the 2005 national youth victimization study (Centre for Justice and Crime Prevention Monograph series No 1). Cape Town, South Africa: Centre for Justice and Crime Prevention.
- Levenson, R.W., & Raef, A.M. (1992). Empathy: A Physiological substrate. *Journal of Personality and Social Psychology*, 63(2), 234-246. doi: [10.1037/0022-3514.63.2.234](https://doi.org/10.1037/0022-3514.63.2.234)
- Litvack-Miller, W., McDougall, D., & Romney, D.M. (1997). The structure of empathy during middle childhood and its relationship to prosocial behaviour. *Genet Soc Gen Psychol Monogr*, 123(3), 303-324.
- Lockwood, P. L., Seara-Cardoso, A., & Viding, E. (2014). Emotion regulation moderates the association between empathy and prosocial behaviour. *PloS one*, 9(5), e96555.
- Loeber, R. (1982). The stability of antisocial and delinquent behaviours. *Child Development*, 53, (6), 1431-1446 .doi: 10.2307/1130070
- Loeber, R., Menting, B., Lynam, D. R., Moffitt, T. E., Stouthamer-Loeber, M., Stallings, R., ...Pardini, D. (2012). Findings from the Pittsburgh Youth Study: Cognitive impulsivity and intelligence as predictors of the age-crime curve. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51(11), 1136-1149. doi: [10.1016/j.jaac.2012.08.019](https://doi.org/10.1016/j.jaac.2012.08.019)
- Loney, B.R., Frick, P.J., Ellis, M., & McCoy, M. (1998). Intelligence, callous-unemotional traits and antisocial behaviour. *Journal of Psychopathology and Behavioural Assessment*, 20 (3), 231-247. doi: 10.1023/A:1023015318156

- Lovett, B.J., & Sheffield, R.A. (2007). Affective empathy deficits in aggressive children and adolescents: A critical review. *Clin Psychol Rev*, 27(1), 1-13. Doi:10.1016/j.cpr.2006.03.003
- Luria, A. R. (1963). *Restoration of function after brain injury*. Oxford, England: Macmillan.
- Lussier, P., Corrado, R., & Tzoumakisi, S. (2012). Gender differences in physical aggression and associated developmental correlates in a sample of Canadian preschoolers. *Behavioural Science and the Law*, 30(5), 643-671. doi: 10.1002/DSI.2035
- Lyon, D. R., Hart, S. D., & Webster, C. D. (2001). Violence and risk assessment. In R. A. Schuller & J. R. P. Ogloff (Eds.), *Introduction to psychology and law: Canadian perspectives* (pp. 314–350). Toronto, Ontario, Canada: University of Toronto.
- Malcolm-Smith, S., Woolley, D., & Ward, C. L. (2015). Examining empathy and its association with aggression in young Western Cape children. *Journal of Child and Adolescent Mental Health*, 27(2), 135-147. doi:10.2989/17280583.2015.1085386
- Masten, C. L., Eisenberger, N. I., Pfeifer, J. H., Colich, N. L., & Dapretto, M. (2013). Associations among Pubertal Development, Empathic Ability, and Neural Responses While witnessing peer rejection in adolescence. *Child Development*, 84(4), 1338-1354. doi:10.1111/1467-8624.00464
- Matthys, W., & Lochman, J.E. (2005). Social problem solving in aggressive children. In M. McMarron & J McGuire (Eds.), *Social Problem Solving and Offending. Evidence, Evaluation and Evolution*, (pp 51-66). Chichester, England: John Wiley & Sons
- McCrimmon, A. W., & Smith, A. D. (2013). Test Review: Review of the Wechsler Abbreviated Scale of Intelligence, (WASI-II). *Journal of Psychoeducational Assessment*, 31(3), 337-341. doi: 10.1177/0734282912467756
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality*, 40(4), 525-543. doi:10.1111/j.1467-6494.1992.tb00078.x
- Melinda, G., & Gilmore, L. (2000). To WPPSI or to Binnet, that is the question. A comparison of the WPPSI-III and SBS with typically developing pre-schoolers. *Journal of Psychologists and Counsellors in Schools*, 19(2), 104-115. doi:10.1375/ajgc.19.2.104
- Michalska, K.J., Kinzler, K.D., & Decety, J. (2013). Age related sex differences in explicit measures of empathy do not predict brain responses across childhood and

- adolescence. *Developmental Cognitive Neuroscience*, 3, 22-32.doi: 10.1016/j.dcn.2012.08.00
- Miller, P.A., & Eisenberg, N. (1988). The relationship of empathy to aggressive and externalising/antisocial behaviour. *Psychological Bulletin*, 103(3), 324-344.
- Munoz, L.C., Qualter, P., & Padgett, G. (2011). Empathy and Bullying: Exploring the influence of callous-unemotional traits. *Child Psychiatry and Human Development*, 42(2), 183-196.doi: 10.1007. /510578-010-0206-1
- Munroe, R.L., Hulefeld, R., Rodgers, J.M., Tomeo.D.L., &Yamazaki.S.K. (2000). Aggression among children in four cultures. *Cross-Cultural Research*, 34 (1), 1-35.doi: 10.1177/106939710003400101
- Myer, L., Stein, D. J., Grimsrud, A., Seedat, S., & Williams, D. R. (2008). Social determinants of psychological distress in a nationally-representative sample of South African adults. *Social Science and Medicine*, 66(8), 1828-1840. doi:10.1016/j.socscimed.2008.01.025
- Nesser, J.J. (2006). The prevalence of school and the impact on victimised learners: an explanatory study. *Child Abuse research in South Africa*, 7(1), 31-47. Retrieved from <https://hdl.handle.net/10520/EJC24304>
- Nieuwenhuis, M., Orobio de Castro, B., Van Alken, M.A.G., & Matthys, W. (2009). Impulse control and aggressive response generation as predictors of aggressive behaviour in children with mild intellectual disabilities and borderline intelligence. *Journal of Intellectual Disability Research*, 53(3), 233-242.doi:10.1111/j.1365-2788.2008.01112.x
- Neumann, P.L., Chan,R.C.K, Boyle, G.J., Wang, Y., & Westbury, H.R. (2015). Measures of empathy: Self-reports, behavioural and neuroscientific approaches. *Measures of Personality and Social Psychological Constructs*, 257-289.doi:10.1016/B978-0-12-386915-9000010-3
- Ogwo, A. (2013). Sex differences in the manifestation of aggression on internally displaced Nigerian children. *Gender and Behaviour*, 11(2), 5586-5592. doi:105201EJC144845
- Olgeman, H. (2013). Aggression levels of 5 to 6 year old Turkish children in terms of gender, age and peer relation. *Journal of Research in Childhood Education*, 27(1), 1-16.doi:10.1080/025685432012.739987

- Ostrov, J.M., & Keating, C.F. (2004). Gender differences in preschool aggression during free play and structured interactions: An observational study. *Social development, 13*(2), 255-277. doi: 10.1111/j.1467-9507.2004.00266.x
- Palin, F. L., Armistead, L., Clayton, A., Ketchen, B., Lindner, G., Kokot-Louw, P., & Pauw, A. (2009). Disclosure of maternal HIV-infection in South Africa: Description and relationship to child functioning. *AIDS and Behaviour, 13*(6), 1241–1252. doi: 10.1007/s10461-008-9447-4
- Park, J., Essex, M., Zahn-Waxler, C., Armstrong, J., Klein, M., & Goldsmith, H. (2005). Relational and overt aggression in middle childhood. Early child and family risk factors. *Early Education and Development, 16*(2), 233-256. doi:10.1080/10409289.2005.10472869
- Paterson, C., & Parold, M. (2013). Classroom behaviour of children living in contexts of adversity. *Child Abuse Research: A South African Journal, 14*(1), 1-13. Retrieved from <https://hdl.handle.net/10520/EJC135001>
- Phelps, C.E.R. (2001). Children's responses to overt and relational aggression. *Journal of Clinical Child Psychology, 30*(2), 240-252. doi.org/10.1207/S15374424JCCP3002_11
- Piff, P. K., Kraus, M. W., Côté, S., Cheng, B. H., & Keltner, D. (2010). Having less, giving more: The influence of social class on prosocial behaviour. *Journal of Personality and Social Psychology, 99*(5), 771-784. doi:10.1037/a0020092
- Prinstein, M.J., Boergers, J., & Vernberg, E.M. (2001). Overt and relational aggression in adolescents: Social – psychological adjustment of aggressors and victims. *Journal of Clinical Psychology, 30* (4), 479-491. doi.org/10.1207/S15374424JCCP3004_05
- Reebye, P. (2005). Aggression during early years, infancy and preschool. *Journal of Canadian Academy and Adolescent Psychiatry, 14*(1), 16-20.
- Reniers, R. L. E., Corcoran, R., Drake, R., Shiryane, N. M., & Völlm, B. A. (2011). The QCAE: A questionnaire of cognitive and affective empathy. *Journal of Personality Assessment, 93*(1), 84–95. doi: 10.1080/00223891.2010.528484
- Richardson, D. R., Hammock, G. S., Smith, S. M., Gardner, W., & Signo, M. (1994). Empathy as a cognitive inhibitor of interpersonal aggression. *Aggressive Behaviour, 20*, 275-289. doi: 10.1002/1098-2337(1994)20:4<275::AID-AB2480200402>3.0.CO;2-4

- Rindfleisch, A., Malter, J.A., Ganesan, S., & Moorman, C. (2008). Cross-sectional versus longitudinal survey research: concepts, findings and guidelines. *Journal of Marketing Research*, 45(3), 261-279. doi:10.1509/jmkr.45.3.261
- Risser, S.P. (2013). Relational aggression and academic performance in elementary school. *Psychology in the School*, 50(1).doi:10.1002/pits.21655
- Robinson, E. V., & Rogers, R. (2015). Empathy faking in psychopathic offenders: The vulnerability of empathy measures. *Journal of Psychopathology and Behavioural Assessment*, 37(4), 545-552. doi: 10.1007/s10862-015-9479-9
- Roessner, V., Becker, A., Rothenberger, A., Rohde, L. A., & Banaschewski, T. (2007). A cross-cultural comparison between samples of Brazilian and German children with ADHD/HD using the Child Behaviour Checklist. *European Archives of Psychiatry and Clinical Neuroscience*, 257(6), 352-359. doi: 10.1007/s00406-007-0738-y
- Runions, K.C. & Keating, D.P. (2010). Anger and inhibitory control as moderators of children's hostile attributions and aggressions. *Journal of Applied Developmental Psychology*, 31(5), 330-378. doi:10.1016/j.appdev.2010.05.006
- Saarnic, C. (1999). *The development of emotional competence*. New York: Guilford Press
- Shechtman, Z. (2002). Cognitive and affective empathy in aggressive boys: Implications for counseling. *International Journal for the Advancement of Counseling*, 24(4) 211-222. doi: 10.1023/A:1023316712331
- Scheithauer, H., Hayer, T., Petermann, F., & Jugert, G. (2006). Physical, verbal and relational forms of bullying among German students: age trends, gender differences and correlates. *Aggressive behaviour*, 32(3), 261-275. doi:10.1002/ab.20128
- Schiff, K.G., & Louw DA. (2000). Aggressive behaviour patterns in childhood: Comparing violent and nonviolent criminals. *Criminologica: Southern African Journal of Criminology*, 13(3), 116-123. Retrieved from <https://hdl.handle.net/10520/EJC28646>
- Schieman, S., & Gundy, K. (2000). The personal and social links between age and self-reported empathy. *Social Psychology Quarterly*, 63(2), 152-174. doi: 10.2307/2695889
- Schwenck, C., Mergenthaler, J., Keller, K., Zech, J., Salehi, S., Tourines, R., ... Freitag, C.M. (2012). Empathy in children with autism and conduct disorder: Group specific profiles and developmental aspects. *Journal of Child Psychology and Psychiatry*, 53(6), 651-659. doi: 10.1111/j.1469-7610.2011.02499.x

- Shuttleworth-Edwards, A.B. (2016). Generally representative is representative of none: Commentary on the pitfalls of IQ test standardization in multicultural settings. *The Clinical Neuropsychologist*, 30(7), 975-998. doi:10.1080/13854046.2016.1204011
- Shuttleworth-Edwards, A. B., Kemp, R. D., Rust, A. L., Muirhead, J. G., Hartman, N. P., & Radloff, S. E. (2004). Cross-cultural effects on IQ test performance: A review and preliminary normative indications on WAIS-III test performance. *Journal of Clinical and Experimental Neuropsychology*, 26(7), 903-920. doi: 10.1080/13803390490510824
- Sigelman, C. K. & Rider, E. A. (2009). Developmental psychopathology. Life-Span Human Development (6th ed) Belmont, CA: Wadsworth Cengage Learning.
- Smith, P.K. (2004). Bullying: Recent development. *Child Adolescent Mental Health*, 9(3), 98-103. doi:10.1111/j.1475-3588.2004.00089.x
- Smith, A. (2006). Cognitive empathy and emotional empathy in human behavior and evaluation. *The Psychological Records*, 56(1), 3-21. doi:10.1007/BF03395534
- Soto, J. A., & Levenson, R. W. (2009). Emotion recognition across cultures: The influence of ethnicity on empathic accuracy and physiological linkage. *Emotion*, 9(6), 874-884. doi:10.1037/a0017399
- South African Police Services. (2013). Retrieved from http://www.saps.gov.za/statistics/reports/crimestats/2013/downloads/crime_statistics_presentations_pdf
- Spinella, M. (2005). Prefrontal Substrates of empathy: Psychometric evidence in a community sample. *Biological Psychology*, 70(3), 175-181. doi:10.1016/j.biopsycho.2004.01.005
- Steyn, J., & Naicker, M.K. (2007). Learner, educator and community views on school safety at Strlitzia Secondary School. *Acta Criminological Southern African Journal of Criminology*, 20(3), 1-20. Retrieved from <http://hdl.handle.net/10520/EJC28947>
- Stevens, D., Chairman, T., Blair, R.J.R. (2001). Recognition of emotion in facial expressions and vocal tones in children with psychopathic tendencies. *The Journal of Genetic Psychology*, 162(2), 201-211. doi: 10.1080/00221320109597961
- Strayer, J., & Roberts, W. (2004). Empathy and observed anger and aggression in five-year olds. *Social Development* 13(1), 1-13. doi: 10.1111/j.1467-9507.2004.00254.x

- Sutton, J., Smith, P.K., & Swettenham, J. (1999). Bullying and 'theory of mind': A critique of the social skills deficit view of anti-social behaviour. *Social development*, 8(1), 117-127. doi: 10.1111/11467-9507.00083
- Sutton, J., & Keogh, E. (2000). `Social Competition in School: Relationships with Bullying, Machiavellianism, and Personality. *British Journal of Educational Psychology* 70(3), 443-456. doi: 10.1348/000709900158227
- Thal, D., Jackson-Maldonado, D., & Acosta, D. (2000). Validity of a parent-report measure of vocabulary and grammar for Spanish-speaking toddlers. *Journal of Speech, Language, and Hearing Research*, 43, 1087-1100. doi: 10.1044/jslhr.4305.1087
- Vaillancourt, T., & Hymel, S. (2006). Aggression and social status: The moderating roles of sex and peer-valued characteristics. *Aggressive Behaviour*, 32(4), 396-408. doi.10.1002/ab.20138
- Van der Merwe, N. (2010). A quantitative study on the pro-violence attitudes among learners in South Africa. *Acta criminologica: Southern African Journal of Criminology*, 13(1), 107-125. Retrieved from <https://hdl.handle.net/10520/EJC28569>
- Van der Westhuizen, C.N.E., & Maree, J.G. (2009). The scope of violence in a number of Gauteng school. *Acta Criminology: Southern African Journal of Criminology*, 22 (3), 43-62. Retrieved from <https://hdl.handle.net/10520/EJC29019>
- Vollm, B.A., Taylor, A.N., Richardson, P., Corcoran, R., Stirling, J., Mckie, S... Elliot, R. (2006). Neuronal correlates of theory of mind and empathy: A functional magnetic resonance imaging study in a nonverbal task. *Neuroimagere*, 29(1), 90-98. doi.1016/j.neuroimage.2005.07.022
- Ward, C.L., Flisher, A.J., Zissis, C., Muller, M., & Combard, C. (2001). Exposure to violence and its relationship to psychopathology in adolescence. *Injury Prevention*, 7(4), 297-301. <http://dx.doi.org/10.1136/p.7.4.297>
- Ward, C. L., & Bakhuis, K. (2010). Intervening in children's involvement in gangs: Views of Cape Town's young people. *Children & Society*, 24(1), 50-62. doi.org/10.1111/j.1099-0860.2009.00195.x
- Warden, D., & MacKinnon, S. (2003). Prosocial children, bullies and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology*, 21(3), 367-385. doi:10.1348/026151003322277757

- Warden, D., & Mackinnon, S. (2003). Prosocial children, bullies and victims: An investigation of the sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology*, 21(3), 362-385. doi:10.1348/026151003322277757
- Wechsler, D. (1999). *Wechsler Abbreviated Scale of Intelligence manual*. San Antonio, TX: The Psychological Corporation.
- Wechsler, D. (2004). *Wechsler Intelligence Scale for Children fourth UK edition manual*. Oxford, UK: Pearson Assessment.
- Wechsler, D. (2012). *Wechsler Preschool and Primary Scale of Intelligence – fourth edition technical manual and interpretive manual*. San Antonio, TX: The Psychological Corporation.
- Wolke, D., Woods, S., Bloomfield, L., & Karsadt, L. (2000). The association between direct and relational bullying and behaviour problems among primary school children. *J Child Psychol Psychiatry*, 41(8), 989-1002. doi:10.1111/1469-7610.00687
- Woods, S., & Wolke, D. (2004). Direct and relational bullying among primary school children and academic achievement. *Journal of School Psychology*, 42(2), 135-155. doi:10.1016/j.jsp.2003.12.002
- World Health Organization (2002), World report on violence and health. Chapter 2 (pp 23-56). Retrieved March 6, 2006, from <http://www.who.org>
- Zalecki, C.A., & Hinshaw, S.P. (2010). Overt and relational aggression in girls with attention deficit hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology*, 33(1), 125-137. doi:10.1207/S15374424JCCP3301_12
- Zindi, F. (1994). Towards the standardization of the WISC-R for early childhood assessment in Zimbabwe. IFE Psychology 1A. *An International Journal*, 2(2), 19-32. Retrieved from https://hdl.handle.net/10520/AJA11171421_217

Appendix A

Demographic Questionnaire

DEMOGRAPHIC QUESTIONNAIRE

A. Child's Information:

Name: _____ School: _____

Age: _____ Date of Birth: _____

1. Sex (circle one): *Male* *Female*
1. Ethnicity: *White* *Black* *Indian* *Coloured*
 Asian *Other* *If other please specify:*

2. Home Language: _____
3. Handedness (circle one): *Left* *Right* *Ambidextrous*
4. Number of siblings: _____
5. Number of **older** siblings: _____
6. Who is the child's primary caregiver? _____
7. What is your relationship to the child (e.g. mother, father, etc)? _____
8. Has your child ever been diagnosed with Autism Spectrum Disorder? YES NO
 a. Please indicate any other diagnoses or information related to your child's Autism Spectrum Disorder:

9. Has your child ever been diagnosed with a disruptive, impulse-control, or conduct disorder, such as conduct disorder or oppositional defiant disorder (ODD)? YES NO
 If yes, please specify:

10. Has your child ever had a communication disorder? (For example: Having problems with understanding or producing speech, slow vocabulary development, difficulties recalling words or problems with producing sentences appropriate for his/her age.) YES NO
 If yes, please specify:

11. Has your child ever experienced learning difficulties such as dyslexia or attention-deficit / hyperactivity disorder (ADD/ ADHD)? YES NO

If yes, please specify:

12. Has your child ever experienced a head injury? (e.g., being hit on the head with an object and losing consciousness as a result) YES NO

If yes, please give details:

13. Has your child ever experienced any of the following medical conditions:

a. Neurological problems (e.g., epilepsy, meningitis, cerebral palsy, encephalitis, Tourette's syndrome, brain tumour, other) YES NO

If yes, please specify:

b. Depression YES NO

If yes, please specify:

c. Memory problems YES NO

If yes, please specify:

c. Problems with their vision: YES NO

If yes, please specify:

d. Problems with their hearing (e.g. difficulty hearing, needing hearing aids, needing grommets): YES NO

If yes, please specify (please include details on how this affected their language development):

e. Is he/she currently taking any prescription medication? YES NO

If yes, what medication(s)?

B. Parent / Guardian Information:

Please note that information on the primary caregiver is required. If the child is adopted, please indicate this. If the primary caregiver is not the biological or adoptive mother or father, please place their information under "Guardian".

1. What is the total monthly income of your household? (Tick the appropriate block):

[NOTE: This should be total household income, not personal income.]

0 – R2999		R3000 – R6299		R6300 – R 10 499		R10 500 – R 14599	
R14 600 – R18 799		R18 800 – R22 999		R23 000 – R26 999		R27 000 – R31 299	
R31 300 – R35 499		R35 500 - R39 499		R39 500 – R43 750		more than R43 750:	
What is the estimated value of your total monthly household income: R							

2. Highest level of education completed for mother, father, and/or guardian (please circle appropriate number).

	Mother	Father	Guardian
1) 0 years (Never went to school)	1	1	1
2) Grade 1	2	2	2
3) Grade 2	3	3	3
4) Grade 3 / Standard 1	4	4	4
5) Grade 4 / Standard 2	5	5	5
6) Grade 5 / Standard 3	6	6	6
7) Grade 6 / Standard 4	7	7	7
8) Grade 7 / Standard 5 [Completed primary school]	8	8	8
9) Grade 8 / Standard 6	9	9	9
10) Grade 9 / Standard 7	10	10	10
11) Grade 10 / Standard 8	11	11	11
12) Grade 11 / Standard 9	12	12	12
13) Grade 12 / Standard 10 [Matric; Completed high school]	13	13	13
14) Tertiary education: Higher education certificate	14	14	14
15) Tertiary education: Diploma received	15	15	15
16) Tertiary education: Bachelor's degree received	16	16	16
17) Tertiary education: Post graduate degree received	17	17	17
18) Don't know	18	18	18

3. Parental employment: (Please circle appropriate number)

	Biological mother	Biological father	Guardian
1. Higher executives, owners of large businesses, major professionals (e.g. doctors, lawyers)	1	1	1
2. Business managers of medium sized businesses, professions like nurses, opticians, pharmacists, social workers, teachers, accountants	2	2	2
3. Administrative personnel, managers, owners / sole proprietors of small businesses (decorator, actor, reporter, travel agent)	3	3	3
4. Clerical and sales, technicians, (e.g. bank teller, bookkeeper, clerk, draftsman, timekeeper, secretary)	4	4	4
5. Skilled manual – usually having had training (e.g. baker, barber, chef, electrician, fireman, machinist, mechanic, welder, police, plumber, electrician)	5	5	5
6. Semi-skilled (e.g. hospital aide, painter, bartender, bus driver, cook, garage guard, checker, waiter, machine operator)	6	6	6
7. Unskilled (e.g. attendant, janitor, construction helper, unspecified labour, porter)	7	7	7
8. Homemaker	8	8	8
9. Student, disabled, no occupation	9	9	9

4. Material and financial resources (please answer for each item).

Which of the following items, in working order, does your household have?

Items	Yes	No
1. A refrigerator or freezer	Yes	No
2. A vacuum cleaner or polisher	Yes	No
3. A television	Yes	No
4. A hi-fi or music center (radio excluded)	Yes	No
5. A microwave oven	Yes	No
6. A washing machine	Yes	No
7. A video cassette recorder or dvd player	Yes	No

Which of the following do you have in your home?

Items	Yes	No
1. Running water	Yes	No
2. A domestic servant	Yes	No
3. At least one car	Yes	No
4. A flush toilet	Yes	No
5. A built-in kitchen sink	Yes	No
6. An electric stove or hotplate	Yes	No

7. A working telephone / cellular phone	Yes	No
---	-----	----

Do you personally do any of the following?

Items	Yes	No
1. Shop at supermarkets	Yes	No
2. Use any financial services such as a bank account, ATM card or credit card	Yes	No
3. Have an account or credit card at a retail store	Yes	No

Appendix B

Ethical approval from the UCT Department of Psychology

UNIVERSITY OF CAPE TOWN



Department of Psychology

University of Cape Town Rondebosch 7701 South Africa
Telephone (021) 650 3414
Fax No. (021) 650 4104

5 March 2013

Dr. Susan Malcolm-Smith
Department of Psychology
University of Cape Town
Rondebosch 7701

Dear Dr Malcolm-Smith,

I am pleased to inform you that ethical clearance has been given by an Ethics Review Committee of the Faculty of Humanities for your project:

The development of moral reasoning

Please use the reference PSY2013-001 if required. I wish you all the best for your study.

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Jouw'.

Johann Louw PhD
Professor
Chair: Ethics Review Committee

Appendix C

Ethical approval from Western Cape Education Department



Directorate: Research

Audrey.wyngaard@westerncape.gov.za

tel: +27 021 467 9272

Fax: 0865902282

Private Bag x9114, Cape Town, 8000

wced.wcape.gov.za

REFERENCE: 20130315-8009

ENQUIRIES: Dr A T Wyngaard

Dr Susan Malcolm-Smith
Department of Psychology
UCT
Rondebosch

Dear Dr Susan Malcolm-Smith

RESEARCH PROPOSAL: THE DEVELOPMENT OF MORAL REASONING

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **15 February 2016 till 30 September 2018**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:
**The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000**

We wish you success in your research.

Kind regards.
Signed: Dr Audrey T Wyngaard
Directorate: Research
DATE: 11 February 2016

Lower Parliament Street, Cape Town, 8001
tel: +27 21 467 9272 fax: 0865902282
Safe Schools: 0800 45 46 47

Private Bag X9114, Cape Town, 8000
Employment and salary enquiries: 0861 92 33 22
www.westerncape.gov.za

Appendix D

Information sheet



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

The Development of Moral Reasoning

Principal Investigator:

Dr Susan Malcolm-Smith
Senior Lecturer
Department of Psychology
University of Cape Town

Principal Investigator:

Dr Jean Decety
Department of Psychology
University of Chicago

Dear Parent/Legal guardian,

You and your child are invited to participate in a research study investigating the development of moral reasoning in children. This study focuses on how children of different ages feel about good and bad behaviour.

What is involved in this study?

Approximately 360 children aged 3 to 13 years will participate in this study. If your child participates, a researcher will guide her/him through several computer-based tasks. In one task, children will be asked to view pictures of hands or feet in neutral situations (e.g. a hand opening a door) or in situations that could be painful (e.g. a hand getting stuck in a door). In another task, children will view short videos of one person accidentally hurting another person (e.g. a person being bumped) or one person intentionally hurting another person (e.g. a person being pushed). After viewing these pictures and videos, children will be asked how mean the person in the picture is and how good/bad the action was. All pictures are appropriate for children as young as 3 years of age and have been taken from situations children readily observe in every-day life.

Additionally, children will complete a number of pencil and paper tasks. In one such task, your child will answer questions about short stories. These questions will look at their ability to take another person's point of view. Children will also play a game where they have an opportunity to share rewards (stickers or sweets) with others or not, and their interactions

with others (such as their friends) will be observed. Altogether this study will take about 90 minutes of your child's time. All sessions will take place either right after school, or during the school day (depending on your and your child's school's preference). We will take a break after completing some of the tasks, and take additional short breaks if your child gets tired.

We also have a number of questionnaires that will ask you questions about your own views and questions about your child's views. Your completion of these documents is completely voluntary.

Are there any benefits to taking part in the study?

Your child will receive a snack for her/his participation, as well as some stickers of her/his choice, and you will receive R100 if you complete all questionnaires. The results of this research could provide essential information about how children process emotional and moral information and this may be helpful in planning effective educational programs for children with social difficulties.

What are the risks of the study?

There are no risks to you or your child through participating in this research. However, if any child does become at all upset, or tired, she or he may stop participating at any point. We would like to emphasise that participation in this study is entirely voluntary, and will not affect your child's education. All results will be securely stored, and kept strictly confidential.

If you would like your child to participate in the study, please complete the consent form, as well as the demographics survey, and return to your child's school. Please answer all the questions as accurately and truthfully as possible. We understand that some of this information may be sensitive, but be assured that all information will be kept strictly confidential.

Should you have any questions or queries about the research or your participation, please do not hesitate to contact Lea-Ann Pileggi: (email) leapileggi@gmail.com, or Susan Malcolm-Smith: (phone) 021 650 4605, (email) Susan.Malcolm-Smith@uct.ac.za, or contact Professor Johann Louw (Psychology Ethics Committee): (phone) 021 650 3414, (email) Johann.Louw@uct.ac.za.

Thank you for your participation.

Appendix E

Consent form

CONSENT FORM

The research project and the procedures associated with it have been explained to me. I hereby give my permission for my child to participate in the above-described research project.

Child's name: _____

Parent/guardian's name: _____

Signature of parent/guardian: _____

Date: _____

We will send the questionnaires to you via your child's school once we have received consent. Please provide a contact number below.

If you prefer to complete the questionnaires telephonically, please indicate which time/s would be most convenient to receive this phonecall. Alternatively, please provide an email address if you would prefer the questionnaires be forwarded to you via email.

Phone: _____ Time/s: _____

Email: _____

Appendix F

Assent form

UNIVERSITY OF CAPE TOWN

DEPARTMENT OF PSYCHOLOGY

The Development of Moral Reasoning

Assent Form

Hello! We want to tell you about a research study we are doing. A research study is a way to learn more about something. We would like to find out more about how children feel about good and bad behaviour.

If you agree to join this study, you will be asked to do some tasks on the computer. For example, we will show you some pictures and ask you how you feel about them. We will also show you some short movies on the computer screen. These are not the kind of movies you see on TV. They are movies that we made to help us study how children feel about good and bad behaviour. It is very important that you watch the pictures carefully. You will also be asked to do some other tasks, like tell us the meaning of some words, and we will ask you to answer questions about short stories we will read to you.

Together these tasks will take about 90 minutes. We will take a break after you've done some of the tasks. We can take other short breaks too if you get tired.

You do not have to join this study. It is up to you. No one will be angry with you if you don't want to be in the study or if you join the study and change your mind later and stop.

Do you have any questions about the study? If you think you can do it and you don't have any more questions about it, will you sign this paper? If you sign your name below, it means that you agree to take part in this study.

Child's Signature: _____

Date: _____

Interviewer's Signature: _____

Date: _____

Appendix G

Confirmation of ethics approval of the larger study and subsequently of this study

UNIVERSITY OF CAPE TOWN



Department of Psychology

University of Cape Town Rondebosch 7701 South Africa

Susan Malcom-Smith, Ph.D.

Senior Lecturer

Phone: (021) 650 4605

Fax: (021) 650 4104

Email: Susan.Malcolm-Smith@uct.ac.za

20 March 2017

PROJECT ETHICS

Panashe Moyosvi will be working on a project run by me; I confirm that Departmental ethics approval for the project was obtained in 2012, and WCED approval has also been obtained throughout and is valid until end 2018.

Sincerely,

A handwritten signature in black ink, appearing to be 'SM'.

Dr Susan Malcom-Smith
Neuropsychologist and Senior Lecturer

Appendix H

Coefficients for predictors in all the models of first regression analysis

Variables	<i>B</i>	Std. Error	Beta	<i>T</i>	<i>p</i>
Model 1					
Income	-1.18	1.02	-.079	-1.16	.246
Model 2					
Income	-.95	1.01	-.06	-.94	.350
Age	-.03	.015	-.14	-2.07	.039
Model 3					
Income	-.97	1.03	-.06	-.94	.348
Age	-.03	.02	-.15	-2.18	.030
VIQ	-.01	.17	-.004	-.050	.960
Working memory	.142	.19	.05	.73	.464
Model 4					
Income	-.88	1.02	-.06	-.86	.391
Age	-.03	.02	-.12	-1.59	.112
VIQ	.02	.17	.01	.11	.915
Working memory	.16	.19	.06	.82	.414
Cognitive of QCAE	-.06	.03	-.14	-1.95	.053
Model 5					
Income	-.97	1.03	-.07	-.94	.346
Age	-.03	.01	-.12	-1.59	.113
VIQ	.03	.17	.01	.15	.884
Working memory	.13	.20	.05	.68	.494
Cognitive of QCAE	-.06	.03	-.13	-1.76	.080

Affective of QCAE	-.06	.07	-.06	-.82	.411
Model 6					
Income	-1.01	1.03	-.067	-.98	.330
Age	-.03	.02	-.117	-1.61	.108
VIQ	.02	.17	.009	.13	.896
Working memory	.13	.20	.049	.68	.498
Cognitive of QCAE	-.06	.03	-.126	-1.76	.080
Affective of QCAE	-.07	.08	-.066	-.92	.360
Gender	-.49	1.06	-.033	-.47	.642
Model 7					
Income	-1.06	1.03	-.07	-1.03	.30
Age	-.02	.02	-.09	-1.28	.20
VIQ	.034	.17	.02	.22	.83
Working memory	.13	.20	.05	.67	.506
Cognitive of QCAE	-.01	.04	-.03	-.18	.852
Affective of QCAE	-.07	.08	-.07	-.10	.321
Gender	-.23	1.06	-.02	-.22	.825
Gender x Cognitive empathy	-.10	.06	-.16	-1.65	.100
Model 8					
Income	-1.06	1.03	-.07	-1.03	.303
Age	-.02	.02	-.09	-1.26	.211
VIQ	.04	.17	.02	.21	.832
Working memory	.13	.20	.05	.66	.509
Cognitive of QCAE	-.01	.04	-.02	-.20	.839

Affective of QCAE	-.07	.11	-.06	-.59	.554
Gender	-.13	1.39	-.01	-.09	.926
Gender x Cognitive empathy	-.10	.06	-.16	-1.62	.107
Gender x Affective empathy	-.02	.15	-.01	-.12	.905

Appendix I

P Plots

