Investigating Cognitive and Affective Empathy as Predictors of Prosocial Behaviour in Typically Developing South African Children

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Acknowledgements

Abstract

Prosocial behaviour includes socially desirable actions such as sharing and is associated with individual and community-level benefits. In South Africa, a country characterised by high levels of antisocial behaviour such as violence, fostering prosocial behaviour is relevant. It is therefore pertinent to understand how factors such as empathy, consisting of separable cognitive and affective components, may contribute to its age-related development. This study primarily aimed to determine how cognitive and affective empathy differentially impact sharing behaviour in typically developing, South African children. The secondary aim was to compare direct and indirect measures of empathy to determine whether the testing technique impacts the predictive utility of cognitive and affective empathy in terms of prosocial behaviour. Participants of lower middle socioeconomic status were recruited from 2 English-medium primary schools in the Western Cape using a purposive (non-probability) sampling technique. A cross-sectional design was employed in correlating multiple empathy measures with sharing in 75 coloured children between the ages of 9 and 12 years. It was hypothesized that cognitive and direct measures of empathy would be stronger predictors than affective and indirect measures of empathy, respectively. However, results indicated that empathy is not a significant predictor of sharing in South African children, regardless of the measure used. This is inconsistent with international literature and, therefore, the association between empathy and sharing warrants further investigation within this context. Gender, however, was significantly correlated with prosocial behaviour, suggesting that girls are more likely to share than boys. Although a significant model for this potential predictor of sharing was also not established, this study serves as a useful foundation for future enquiry in South Africa.

Keywords: prosocial behaviour, sharing behaviour, cognitive empathy, affective empathy, direct measures, indirect measures, South Africa.

Introduction

Prosocial behaviour is an important area of research within the field of positive psychology as it is associated with advantageous outcomes within communities, families and individual lives (Seligman & Csikszentmihalyi, 2000). It is understood as being intentional, voluntary behaviour aimed at benefiting others and includes socially desirable actions such as sharing (Eisenberg & Miller, 1987). The occurrence of prosocial behaviour in typically developing children increases over the early school years, indicating that this process can be fostered to improve individual and social well-being (Eggum et al., 2011). In order to promote prosocial conduct in children, it is critical to understand the factors that contribute to its age-related development (Eggum et al., 2011). Empathy, consisting of separable cognitive and affective components, is one such factor (Decety, 2011). The main aim of this study was to clarify how these two components of empathy exert unique and combined effects on prosocial behaviour.

Decety and Jackson (2006) define empathy as the subjective comprehension of others' emotional states and the matching of feelings. Studies using this broad definition of empathy indicate positive correlations between empathy-related processes and prosocial behaviour (Decety & Cowell, 2014; Decety & Lamm, 2006; Eisenberg & Miller, 1987). For example, higher levels of observed emotion understanding have been associated with increased reports of prosocial behaviour (Eggum et al., 2011) and, emotional insight has been identified as a predictor in both sexes (Roberts & Strayer, 1996).

According to the literature, it is becoming increasingly apparent that "empathy" is a complex, umbrella term which should not be regarded as a unitary construct (Decety & Cowell, 2014; Kerem, Fishman, & Josselson, 2001). Although unconfirmed, recent developments suggest that empathy is acknowledged as having a cognitive aspect involving perspective-taking as well as an affective aspect pertaining to the sharing of emotion (Blair, 2005; Dadds et al., 2008; Decety & Cowell, 2014; Decety & Jackson, 2006).

Cognitive empathy is similar to Theory of Mind (ToM) which is a theoretical construct describing the ability to understand others' mental states, intentions, beliefs and desires and, to recognise that these may differ from one's own (Blair, 2005; Decety, 2011;Wellman, Cross, & Watson, 2001). This is essential in allowing one to explain and predict the actions of others, which is a skill that has directly been linked to prosocial behaviour (Eggum et al., 2011;Wellman, 1990).

For example, in bargaining games, children with higher ToM abilities are more likely to share (Takagishi, Kameshima, Schug, Koizumi, & Yamagishi, 2010).Additionally, peer relations studies suggest that ToM allows for the dynamic adjustment of one's thoughts and interactions which is translated into prosocial behaviour such as helpfulness (Caputi, Lecce, Pagnin, & Banerjee, 2012). Moreover, children with higher levels of ToM are more likely to be accepted by their peers via prosocial behaviour (Caputi et al., 2012; Goldstein & Winner, 2012). As cognitive empathy is reliant on higher-order functions like ToM, similar relationships are assumed to exist between cognitive empathy and prosocial behaviour (Decety, 2011; Decety & Lamm, 2006).

In contrast, affective empathy refers to one's ability to feel others' emotions on a visceral level (Decety & Cowell, 2014; Soto & Levenson, 2009). For example, viewing facial expressions triggers similar expressions in the face of the observer (Decety & Jackson, 2006). Additionally, studies have shown that the autonomic and somatic response of observers matches that of the person being observed, indicating physiological linkage (Soto & Levenson, 2009). Affective empathy has also been suggested as a reliable predictor of prosocial behaviour such as sharing. For example, affective empathy determined by physiological measures and self-ratings, has been positively correlated with the size of charity donations that people are willing to give (Sze, Gyurak, Goodkind, & Levenson, 2012).

Although affective and cognitive empathy are distinct concepts, they appear to be correlated to one another and to prosocial behaviour (Decety & Lamm, 2006; Kerem et al., 2001). For example, deficits in both components are associated with offending (Joliffe & Farrington, 2004; Joliffe & Farrington, 2007). If prosocial and antisocial behaviour are viewed as existing on opposite ends of a continuous spectrum, this finding suggests that both cognitive and affective empathy can predict prosocial behaviour. Logically, having a greater awareness of others' emotional states (i.e., ToM and cognitive empathy) may directly motivate prosocial behaviour (Eggum et al., 2011). In turn, this may lead to empathic arousal (i.e., affective empathy) which indirectly fosters prosocial behaviour (Blair, 2005; Eggum et al., 2011).

Despite the fact that cognitive and affective empathy are generally associated with increased prosocial behaviour, the exact relationship is unclear (Joliffe & Farrington, 2004; Joliffe & Farrington, 2007). This is because results are inconsistent depending on the specific component of empathy being measured (Van Langen, Wissink, Van Vugt, Van der Stouwe, & Stams, 2014).

For example, some research has indicated that aggression and offending are associated with lower levels of affective empathy rather than cognitive empathy (Joliffe & Farrington, 2007; Lovett & Sheffield, 2007). This is because, individuals may have normal ToM and cognitive empathy abilities allowing them to identify the perspectives and emotions of others but, be unable to affectively experience this on a visceral level (Schechtman, 2002). The inability to affectively experience the negative emotion of others may facilitate aggression (Sutton & Koegh, 2000). This is particularly relevant to bullying, a form of antisocial behaviour characterised by manipulative tendencies linked with superior perspective-taking abilities (cognitive empathy) but, lower levels of empathic concern and affective arousal (affective empathy; Sutton, Smith, & Swettenham, 1999). Although assumed from antisocial behavioural research, the opposite pattern of results is expected to predict prosocial behaviour such as generosity whereby high levels of affective empathy should translate into increased sharing.

In contrast, some research has indicated that antisocial behaviour is more convincingly associated with deficiencies in cognitive, rather than affective empathy (Joliffe & Farrington, 2004; Van Langen et al., 2014). The suggested explanation proposes that individuals lacking cognitive empathic ability may fail to understand, tolerate and interpret the perceptions of others (Dodge & Frame, 1982; Gini, Albiero, Benelli, & Altoè, 2007). In turn, hostile attributions may be assigned to the intentions of others, which are often central to aggression (De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

These findings suggest that affective and cognitive empathy do not predict antisocial behaviour in the same way and, consequently, should not be expected to equivalently predict prosocial behaviour. However, the pattern of aggression associated with affective empathy deficiencies and bullying is linked with psychopathy, an uncommon form of antisocial behaviour (Barry et al., 2000; Sutton et al., 1999). Therefore, in considering typically developing children, cognitive empathy is a more likely predictor of prosocial behaviour such as sharing. Although one should take caution in making such assumptions on the basis of antisocial behavioural research, this prediction is rational.

Additionally, neuroscientific research has found cognitive empathy to be a stronger predictor of generosity than affective empathy (Cowell & Decety, 2015). This was evident in that later electroencephalogram (EEG) waveforms associated with cognitive control were more predictive of sharing than early EEG waveforms linked to automatic affective processes (Cowell & Decety, 2015). Reinforcing this finding, a cross-cultural study has indicated that cognitive empathy predicts generosity while affective empathy fails to explain

significantly greater variance (Cowell et al., in press). However, further evidence is required to support such findings, particularly in South Africa.

Rationale

Fostering prosocial behaviour is beneficial as it is associated with academic success, improved social adjustment and the reduced likelihood of aggression, psychopathology and social failure (Bierman, Torres, Domitrovich, Welsh, & Gest, 2009; Crick, 1996; Eron & Huesmann, 1984). Therefore, research aimed at identifying the predictors of sharing (a proxy for prosocial behaviour) is relevant to South Africa, a country characterised by high levels of antisocial behaviour.

The confusion regarding cognitive versus affective empathy presents a gap in the literature for further studies to determine how these two components of empathy differentially impact prosocial behaviour (Caputi et al.,2012). This will enable the formation of a more reliable conceptual framework for empathy and provide improved predictive opportunities for prosocial behaviour such as sharing (Decety & Cowell, 2014).

Additionally, most studies comparing both cognitive and affective empathy have focused on antisocial behaviour such as offending (Joliffe & Farrington, 2004; Joliffe & Farrington, 2007; Van Langen et al., 2014). Although it may be assumed that high levels of empathy predict prosocial behaviour in the same way as low levels of empathy predict antisocial behaviour, these two outcomes differ. Moreover, the few studies that do focus on prosocial behaviour either only examine one component of empathy or empathy in broad terms (Decety & Cowell, 2014). Therefore, research aimed at simultaneously comparing cognitive and affective empathy in terms of their ability to predict prosocial rather than antisocial behaviour is required.

A final limitation of research thus far, is the considerable variation in the methods used to measure empathy, making it difficult to compare outcomes when determining how empathy impacts behaviour (Decety, 2011; Van Langen et al., 2014). However, it has been suggested that direct measures, despite being less established, provide a more accurate indication of empathy than indirect measures as the latter tend to be more vulnerable to response biases such as impression management and social desirability bias (Kämpfe, Penzhorn, Schikora, Dünzl, & Schneidenbach, 2009). However, many studies fail to differentiate between the two and, therefore, further research is necessary. This is important as the extent to which empathy predicts prosocial behaviour depends on how empathy is operationally defined and measured (Dadds et al., 2008; Eisenberg & Miller, 1987).

In sum, empathy is a complicated construct with several aspects requiring independent consideration. Although there appears to be a positive relationship between empathy and prosocial behaviour, there is room for further research - particularly regarding the separable effects of cognitive and affective components. Using appropriate methods, this type of research has the potential to contribute towards defining empathy more constructively which could serve as the basis for positive interventions at an individual and social level.

This study thus aimed to determine how cognitive and affective empathy differentially impact prosocial behaviour such as sharing in typically developing, South African children. The primary research question was to provide insight into the unique and combined effects of these two empathy components in order to determine their predictive value in terms of sharing. Given findings on antisocial behaviour (Joliffe & Farrington, 2004; Van Langen et al., 2014) and prosocial behaviour (Cowell & Decety, 2015; Cowell et al., in press), it was hypothesized that cognitive empathy would be a stronger predictor of sharing than affective empathy (hypothesis 1).

The secondary research goal of this study was to address the methodological inconsistencies associated with empathy research by comparing direct and indirect measures. Therefore, the aim was to determine whether the testing technique impacted the predictive utility of cognitive and affective empathy in terms of prosocial behaviour in children. Based on previous findings (Kämpfe et al., 2009), it was hypothesized that direct measures of empathy would be stronger predictors of sharing than indirect measures (hypothesis 2).

Method

Design and Setting

This study was part of a larger research initiative examining empathy, social cognition and moral development in typically developing children. Several neuropsychological tests were administered to all participants by a team of researchers. However, only data relevant to this study's research question was used.

This quantitative study was cross-sectional and correlational in design, allowing assessment of the relationship between empathy (both cognitive and affective components) and prosocial behaviour (sharing). Data collection took place at two public, primary schools in Cape Town, South Africa. Tasks and questionnaires were administered during school hours in a quiet room.

Participants

Seventy five neuro-typical, coloured children aged 9 to 12 years participated in this study. A roughly equal number of both boys and girls of lower-middle socio-economic status (SES) were recruited from two English-medium primary schools in The Western Cape. Purposive (non-probability) sampling was used as participants were selected based on their availability, eligibility and willingness to participate. Demographic characteristics of the participants are presented in Table 1.

Inclusion and exclusion criteria. Children of both genders were included in this study as there are evident gender differences in empathy and its behavioural outcomes such as aggression and prosocial behaviour (Eisenberg, Cumberland, Guthrie, Murphy, & Shepard, 2005; Reukert & Naybar, 2008; Warden & MacKinnon, 2003). Only children between 9 and 12 years old were eligible as this represents middle childhood, a relatively stable age group (Eisenberg et al., 1987; Eisenberg et al., 2005). Age has been positively associated with empathic ability and prosocial behaviour. Thus, younger children are likely to have under-developed cognitive empathy and moral reasoning skills, whereas adolescence (13+) is associated with puberty and complex changes in empathic and prosocial development (Eisenberg et al., 1987; Eisenberg et al., 2005).

Additionally, all participants were schooled in English and only coloured participants were included to obtain a maximally homogenous sample. Socio-economic status (SES) was also controlled for as only children of lower-middle SES were included. This was imperative as SES has been found to influence the relationship between empathy and prosocial behaviour (Joliffe & Farrington, 2004; Joliffe & Farrington, 2007). In controlling for SES, both annual total family income and the mother's highest level of education were considered.

Maternal education was used as a proxy of SES as the mother tends to be the primary caregiver and a lack of maternal education has been associated with long-term deficits in health and social competence (Cowell et al., in press; Winkleby, Jatulis, Frank, & Fortman, 1992).Multiple SES indicators were used in preference to a single monetary indicator as this more appropriately reflects the variation in SES within developing countries such as South Africa (Barnes, Wright, Noble, & Dawes, 2007; Booysen, 2001; Cooper, Lund, & Kakuma, 2012; Myer, Stein, Grimsrud, Seedat, & Williams, 2008).

Exclusion criteria included a history of head injury, infantile meningitis, pervasive developmental disorders and any diagnosed neurological disorder. Participants were also excluded if their home-language was neither English nor Afrikaans.

Sample size. A priori sample size requirement was estimated using *G*Power* (Faul, Erdfelder, Buchner & Lang, 2009). An alpha level (0.05) and power level (0.8) were chosen according to convention (Cohen, 1988) along with effect size estimates from meta-analyses on empathy (cognitive and affective) and offending (weighted mean effect size 0.28 and 0.24 respectively; Joliffe & Farrington, 2004; Joliffe & Farrington, 2007). Given these figures from antisocial behavioural research, G*Power calculated a desired sample size of 38 and 44 participants, respectively (Faul et al., 2009). When the effect size was set to the conventional level of strength classified as small (d=0.2; Cohen, 1988), the required sample size was 52. Therefore, 52 participants were necessary to have 80% power for detecting a small effect (0.2) at $\propto$=0.05 (Faul et al., 2009). This study had sufficient time and resources to recruit 75 participants, surpassing both sets of calculations. Therefore, it was deemed capable of producing statistically significant results.

Measures

This study used task-based child assessments and parent-report questionnaires. Thus, direct and indirect measures were obtained for cognitive and affective empathy as well as a direct measure for sharing. Basic demographic information was also collected to determine whether or not potential participants fulfilled the inclusion and exclusion criteria.

Basic demographic information. Prior to testing, the parents/legal guardians of all potential participants completed a demographic questionnaire (Appendix A), including information on age, home language, history of maternal and paternal education and annual total family income. Additionally, questions pertaining to the medical history of the child determined whether participants met the exclusion criteria or not.

Child measures. These measures were comprised of direct and indirect assessments of cognitive and affective empathy. The direct measures included the *UCT Theory of Mind*

(ToM) Battery and the *Chicago Empathy for Pain Task* for cognitive and affective empathy, respectively. The *Questionnaire of Cognitive and Affective Empathy (QCAE;* Appendix B*)* was used to obtain an indirect measure for both components of empathy.

  UCT ToM Battery. The *UCT ToM Battery* was employed as a direct measure of cognitive empathy. This battery, developed by Hoogenhout and Malcolm-Smith (2014), is based on work done by Steel, Joseph and Tager-Flusberg (2003) and includes additional ToM tasks (Baron-Cohen, Leslie & Frith, 1985; Happé, 1995). It tests children's ToM using 11 tasks divided into four levels of increasing difficulty including Early, Basic, Intermediate and Advanced modules. The Early module assesses children's ability to understand the desires of others and engage in pretend play. The Basic and Intermediate modules include classic first-order and second-order false belief tasks, respectively. Lastly, the Advanced module assesses children's ability to detect irony, faux pas and sarcasm as well as distinguish between lies and jokes.

  Assessment begins at the level designated as age-appropriate which, in this study, was the Intermediate module. Upon passing, credit was automatically received by participants for all tasks prior to the starting module. If participants achieved less than half the maximum score on their starting level, testing restarted at the previous module. Failure to pass a module resulted in testing discontinuation. A final score was calculated out of 100 for each participant. The *UCT ToM Battery* has previously been used to assess the South-African population and found to be relevant within this context (Hoogenhout & Malcolm-Smith, 2014).

  Chicago Empathy for Pain Task. The *Chicago Empathy for Pain Task* was developed by Jackson, Meltzoff and Decety (2005) and serves as a direct measure of affective empathy. This computer-based task measures participants' ability to share others' feelings on a visceral level (Decety, Michalska, & Akitsuki, 2008). The test involved the presentation of photos depicting either pain or no pain, and reflected every-day scenarios. All images were appropriate for children over the age of 3. For each image, participants answered two questions using a rating scale with scores from 0 to 100. The first question was: "How much pain is the person in this picture experiencing?" rated from "no pain" to "lots of pain." The second question asked: "How bad do you feel for the person in this picture?" rated from "not bad" to "very bad." Scores from the first question indicated affective sharing while the second question assessed empathetic concern. Only scores from question 1 were used to provide a direct measure of affective empathy, calculated as a mean score out of 100 from 18

trials. This measure has been used in 5 different contexts and appears to be appropriate for use in South Africa (Cowell et al., in press).

Questionnaire of Cognitive and Affective Empathy (QCAE; Appendix B*).* Dispositional empathy (i.e. general response patterns), including affective and cognitive components, was indirectly measured using the *QCAE (*Reniers, Corcoran, Drake, Shryane, & Völlm, 2011). This measure was originally a self-report questionnaire although in this study, a modified parent-report version was used. This consisted of 31 statements to which parents responded according to a likert scale (scored from -2 to 2) with rating options of: "strongly disagree," "slightly disagree," "slightly agree" and "strongly agree". The statements were designed to measure participant's cognitive ability to understand what other people are thinking (cognitive empathy subscale) and feel what other people are feeling (affective empathy subscale.) Although it is an indirect measure of empathy, its reliability and validity has been well-established (Reniers et al., 2011.) Importantly, a local study (*n*=92) found the *QCAE* to be a reliable measure of overall empathy in the South African context ($\propto$ = 0.95) with high levels of internal consistency for the cognitive subscale ($\propto$ = 0.94) and the affective subscale ($\propto$ = 0.88; Louw, 2014).

The Dictator Game. The *Dictator Game* was used as a measure of prosocial behaviour. This game is well-known within the field of behavioural economics and involves decision-making where the player (dictator) splits a "prize" between themselves and a passive recipient (Bolton, Katok, & Zwick, 1998). The aim is to determine how participants allocate resources and challenges the economic assumption that people act purely out of self-interest (Guala & Mittone, 2010). In children, *The Dictator Game* provides a direct measure of prosocial behaviour as indicated by their willingness to share stickers (Benenson, Pascoe, & Radmore, 2007; Gummerum, Hanoch, Keller, Parsons, & Hummel, 2010).

Participants were asked to choose ten stickers for themselves from a standardized selection. Following this, they were given an envelope and told that, if they wanted to, they could give some of their stickers to another child by putting them in the envelope. The participant was then given time to allocate as many stickers as they would like to the recipient and, in this manner, forced to decide how many stickers they wanted to keep and how many they were willing to give away. In order to avoid the experimenter effect, researchers turned their back while the participant made their decision. Although there was no actual recipient, the number of stickers that participants "shared" provided an indication of their generosity, a proxy for prosocial behaviour.

The *Dictator Game* is known to be valid and useful for measuring prosocial behaviour in the form of sharing (Benenson et al., 2007; Edel, Dziobek, & Keller, 2013). Additionally, cross-cultural studies have found this measure to be a robust indication of behavioural economics and sharing which suggests that it is appropriate to use in South Africa (Henrich et al., 2004).

Procedure

General procedure. Following receipt of ethical approval from the University of Cape Town (UCT) Psychology Department's Ethics Committee (Appendix C) and permission from The Western Cape Department of Education (Appendix D), testing commenced. This involved child sessions and sessions with the parents/ legal guardians. The ethical guidelines of research on human subjects provided by the Health professions Council of South Africa as well as UCT were adhered to.

Recruitment occurred via the schools and all information letters, consent and demographic forms were sent home with children. Prior to testing, each participant's parents/legal guardians provided written informed consent (Appendix E) and completed the demographics questionnaire. All data collected remained confidential, only being used for research purposes.

Child sessions. On the first day of assessment, written assent (Appendix F) was obtained from each child who then participated in 2 individual sessions of 45- 60 minutes, on separate days. The *Chicago Empathy for Pain Task* and *The Dictator Game* were administered in session 1 while the *UCT ToM Battery* was administered in session 2. There were minimal risks associated with the study, participation was voluntary and participants were allowed to rest if necessary. The children also received stickers and sweets as part of the procedure and, at the end of the second session, were thanked for their participation and adequately debriefed.

Parent sessions. Once the children had been assessed, their parents/legal guardians were contacted and requested to complete the *QCAE* alongside other questionnaires from the broader study, in a meeting with the researchers (60-90 minutes). Again, participation was voluntary and the parents/legal guardians were assured that they could withdraw from the study without penalty. Following completion of the questionnaires, parents/legal guardians received R100 compensation and were adequately debriefed.

Data Analysis

All statistical analyses were conducted using Version 22 of *Statistical Package for the Social Sciences* (*SPSS*; IBM Corporation, 2014). Stage 1 of analysis involved inspecting the descriptive statistics to assess the distribution of the data. All predictor variables were expected to have directional relationships with prosocial behaviour (sharing) and, therefore, one tailed significance tests were used to examine the zero-order correlations .This was useful in determining whether the relationship between the predictors and outcome variable was worth examining. Alpha was set to convention ($\alpha = 0.05$) for all significance tests.

For the main analysis, a hierarchical Multiple Regression Analysis (MRA) was employed. Therefore, the individual and combined predictive abilities of cognitive and affective empathy were studied simultaneously. Additionally, potentially extraneous variables such as SES, sex and age were considered. All assumptions were upheld unless otherwise stated.

For the indirect measures of both cognitive and affective empathy, the calculated raw scores from the *QCAE* were used. Twelve of the 31 *QCAE* items assessed affective empathy while 19 assessed cognitive empathy. Therefore, the number of items were standardised so that 12 items represented each empathy subscale. Each *QCAE* item was scored on a likert scale from -2 to 2. Consequently, a minimum score of -24 and a maximum score of +24 could be obtained for each subscale.

The direct measures of cognitive empathy (*UCT ToM Battery*) and affective empathy (*Chicago Empathy for Pain Task*) were entered into the analyses as calculated scores, each out of 100. Sharing, the outcome variable reflecting prosocial behaviour, consisted of the raw scores pertaining to the number of stickers shared out of 10.

SES was indicated by both annual total family income (TFI; Rands) and the highest level of maternal education (HLOE; No. of years). Like SES, age was entered as a continuous variable as it was converted into months. However, post-analysis, age was converted back into number of years for the sake of reporting. In contrast, gender was entered as a categorical, binary variable with boys coded as 1 and girls coded as 2.

All the continuous predictor variables were normally distributed with the exception of age and SES. However, the deviation from normality in terms of age and SES was not marked and, therefore, no data transformations were warranted. The data pertaining to gender (only categorical variable) was roughly equally distributed.

Results

Sample Characteristics

Sample characteristics are presented in Table 1. Two-tailed independent sample t-tests were conducted. There were no significant differences in the continuous variables, namely age and SES (TFI and HLOE), across gender. A chi-squared (x^2) contingency analysis to evaluate the distribution of home language (categorical variable) across gender, could not be conducted. This was due to the fact that more than 60% of the categories had expected values of less than 5 as few participants spoke home languages other than English.

Table 1

Demographic Sample Characteristics Across Gender

Characteristic	Group			Significance Across Gender	
	Male (*n*=40)	Female (*n*=35)	Overall (*N*=75)	*t*	*p*
Age Range (Years: Months)	9:0 - 12:11	9:0 - 12:11	9:0 – 12:11	-	-
Age (Years)					
M(SD)	10.79 (1.29)	10.94 (1.24)	10.86 (1.26)	-0.51	0.614
Home Language					
English: Afrikaans: Mixed[a]	30:5:5	32:2:1	63:6:6	-	-
TFI (Rands per Year)					
M(SD)	123969.9 (118547.1)	131993.8 (116273.9)	127714.35 (130682.93)	-0.26	0.793
HLOE (No. Years)					
M(SD)	11.09 (1.76)	11.3 (2.49)	11.19 (2.12)	-0.43	0.668

Note. TFI = annual total family income. HLOE = highest level of education.

[a]Mixed home language refers to participants who speak a combination of languages at home with at least one of them being either English or Afrikaans. Five male participant's home language included English and Afrikaans while one female participant's home languages included Afrikaans and Xhosa.

Descriptive Statistics for Empathy and Sharing Measures

Descriptive statistics for empathy and sharing measures are presented in Table 2. The results from the *Dictator Game* (sharing measure) were of particular interest as, although children shared an average of 3.55 out of 10 stickers, some children shared none while others shared them all. This indicated a large range of demonstrated sharing behaviour.

Table 2

Descriptive Characteristics of Empathy and Sharing Measures

Measures	Range	*M*	*SD*
Indirect Measure of Affective Empathy *(QCAE Affective Subscale; Scale Min and Max: -24, 24)*	-16 – 20	6.24	8.87
Direct Measure of Affective Empathy *(Chicago Empathy for Pain Task;* Scale Min and Max:0, 100)	59.94 – 100	83.79	8.8
Indirect Measure of Cognitive Empathy *(QCAE Cognitive Subscale; Scale Min and Max:-24 and 24)*	-20 – 22.67	3.82	10.37
Direct Measure of Cognitive Empathy (*UCT ToM Battery;* Scale Min and Max: 0, 100)	55 – 92	76.71	10.15
Measure of Prosocial Behaviour *(The Dictator Game;* Scale Min and Max: 0, 10)	0 – 10	3.55	2.7

Note. QCAE = Questionnaire of Cognitive and Affective Empathy. ToM = Theory of Mind.

Associations between Predictor and Outcome Variables

Empathy and sharing. None of the empathy measures were significantly correlated with the measure for sharing behaviour (*Dictator Game;* see Table 3). However, the strongest correlation was between cognitive empathy (*ToM Battery)* and sharing (*Dictator Game*), r (73) =0.18, p=0.06. The next strongest association was between sharing (*Dictator Game*) and both the direct measure of affective empathy (*Chicago Empathy for Pain Task)* and the indirect measure of cognitive empathy (*QCAE* cognitive subscale). All of these associations were positive. Although inversely correlated with the *Dictator Game*, no association was found between sharing *(Dictator Game)* and the indirect measure of affective empathy *(QCAE* affective subscale).

There were no significant associations between direct and indirect measures for either component of empathy (see Table 3). The direct measure of cognitive empathy (*UCT ToM Battery*) was not significantly correlated with the indirect measure of cognitive empathy (*QCAE* cognitive subscale). Similarly, the direct measure of affective empathy (*Chicago Empathy for Pain Task*) was not significantly correlated with the indirect measure of affective empathy (*QCAE* affective subscale). Furthermore, comparisons across empathy components indicated that none of the empathy measures were significantly inter-correlated except for the indirect measures *(QCAE* subscales*)* of cognitive and affective empathy, r(73)=0.28, p=0.007.

SES, Age, Gender and Sharing. SES was not significantly correlated with sharing behaviour (*Dictator Game;* see Table 3). However, TFI and maternal HLOE were significantly inter-correlated with one another, reinforcing the fact that they are both measures of SES, r (73) = 0.47, p<0.001. Additionally, both SES indicators were positively and significantly inter-correlated with the direct measure of cognitive empathy (*UCT ToM Battery)*, TFI: r (73) =0.35, p=0.001; HLOE: r (73*)* =0.33, p=0.002. Although negatively associated, maternal HLOE was significantly inter-correlated with the indirect measure of cognitive empathy (*QCAE* cognitive subscale), r *(73)* =-0.2, p=0.04.

Age was also not significantly correlated with sharing (*Dictator Game;* see Table 3). However, it was positively and significantly inter-correlated with the direct measure of cognitive empathy (*UCT ToM Battery*), r (73) = 0.5, p<0.001.

Gender was positively and significantly correlated with prosocial behaviour (*Dictator Game), r* (73) = 0.22; p=0.03. Therefore, females appeared to share more than males. Although the strength of this association was weak, gender was later investigated as a potential predictor of sharing on the basis of this correlation.

Additionally, gender was positively and significantly inter-correlated with the direct measure of cognitive empathy and the indirect measure of affective empathy, *UCT ToM Battery*: r (73) =0.28, p=0.008; *QCAE* affective subscale: r (73) = 0.3, p=0.005. This suggests that females were more empathic. However, gender was not significantly inter-correlated with the direct measure of affective empathy (*Chicago Empathy for Pain Task;* see Table 3) or the indirect measure of cognitive empathy (*QCAE* cognitive subscale).

Multicollinearity. Considering the large number of empathy measures employed, particular emphasis was placed on assessing multicollinearity, a crucial MRA assumption. Although there were several significant inter-correlations between predictor variables (see Table 3), VIF and tolerance values indicated that this was unproblematic (Appendix G).

Table 3

Correlation Matrix

Predictor Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.Sharing Measure *(Dictator Game)*	-								
2.Age (Months)	0.10	-							
3.TFI (Rands per Year)	0.11	0.12	-						
4. HLOE (No. Years)	-0.01	-0.04	0.47***	-					
5.Gender	0.22*	0.06	0.03	0.05	-				
6.Indirect Measure of Affective Empathy *(QCAE Affective Subscale)*	-0.01	-0.07	-0.17	-0.09	0.30**	-			
7.Direct Measure Affective Empathy *(Chicago Empathy for Pain Task)*	0.05	-0.05	0.10	-0.07	-0.02	-0.07	-		
8.Indirect Measure of Cognitive Empathy*(QCAE Cognitive Subscale)*	0.05	-0.09	-0.18	-0.20*	-0.05	0.28**	0.08	-	
9.Direct measure of Cognitive Empathy *(UCT ToM Battery)*	0.18	0.50***	0.35***	0.33**	0.28**	0.06	-0.10	-0.07	

Note. TFI = Total family Income. HLOE = Highest Level of Education. *QCAE = Questionnaire of Cognitive and Affective Empathy. ToM = Theory of Mind.*

*p<0.05, **p<0.01, ***p≤0.001

Predictors of Sharing

A hierarchical MRA was employed to investigate the variation in a single outcome variable (sharing) as a result of the unique and cooperative effects of multiple predictors. Based on the weak zero-order correlations, the relationship between the predictors and outcome variable was not worth investigating. Therefore, it was unlikely that an MRA model would be significant in predicting prosocial behaviour, although analyses continued for the purpose of this project.

Potentially extraneous variables that are known to be associated with the outcome variable (sharing) were entered first in order to determine whether the variables of interest (empathy measures) predicted sharing over and above the known correlates. The potentially extraneous variables (age, SES and gender) were not significantly inter-correlated (see Table 3) and, therefore, were entered independently rather than grouped for analysis. Based on the strength of their correlations with prosocial behaviour, age was entered first followed by SES (TFI and HLOE) and, lastly, gender.

The empathy measures were entered into the model next in order to determine the differential impact of cognitive and affective empathy on sharing. However, considering that the direct and indirect measures for both components of empathy were not significantly correlated (see Table 3), a composite for each type of empathy could not be created. Therefore, the direct and indirect measures for both cognitive and affective empathy were examined and commented on individually.

The sequence of input for the empathy measures was determined based on their hypothesized effects. Therefore, the indirect and direct measures of affective empathy were entered into the model first as hypothesis 1 proposed that cognitive empathy would be the strongest predictor of sharing. For both cognitive and affective empathy, the indirect measures were entered first as hypothesis 2 proposed that direct measures would be stronger predictors of sharing. Consequently, based on the combined predictions from both hypotheses, the indirect measure of affective empathy (*QCAE* affective subscale) was entered first, followed by the direct measure of affective empathy (*Chicago Empathy for Pain Task*), the indirect measure of cognitive empathy (*QCAE* cognitive subscale) and, lastly, the direct measure of cognitive empathy (*UCT ToM Battery*).

The effect size indicated that the proposed model explained 9.1% of the variance in sharing, R^2=0.091. However, the adjusted effect size indicated that the proposed model explained none of the variance, R^2=-0.02. Additionally, the overall model (see Table 4) was not statistically significant, F (8, 66) =0.83, p=0.579.

Table 4

Model Summary of the Predictors of Prosocial Behaviour (Sharing)

Model	Predictor Variables	R	R^2	Adj. R^2	Std. Error of Estimate	R^2 Change	Sig. F Change
						Change Statistics	
1	Constant, Age (Months)	0.10	0.01	0.00	2.7	0.01	0.40
2	Model 1 Predictors, TFI (Rands/year), HLOE (No. Years)	0.15	0.02	-0.02	2.72	0.01	0.61
3	Model 2 Predictors, Gender	0.26	0.07	0.02	2.68	0.05	0.07
4	Model 3 Predictors, Indirect Measure of Affective Empathy (*QCAE* affective subscale)	0.27	0.07	0.01	2.69	0.00	0.60
5	Model 4 Predictors, Direct Measure of Affective Empathy (*Chicago Empathy for Pain Task*)	0.27	0.07	-0.01	2.71	0.00	0.76
6	Model 5 Predictors, Indirect Measure of Cognitive Empathy *(QCAE* cognitive subscale)	0.29	0.08	-0.01	2.72	0.01	0.44
7	Model 6 Predictors, Direct Measure of Cognitive Empathy (*UCT ToM Battery)*	0.30	0.09	-0.02	2.72	0.01	0.42

Note. TFI = Total Family Income. HLOE = Highest Level of Education. *QCAE = Questionnaire of Cognitive and Affective Empathy. ToM = Theory of Mind.*

Although the overall model was not significant, the coefficients (*b* values; see Table 5) were examined in order to determine whether any of the individual variables could explain the variance in sharing behaviour. The extent to which this was possible was also analysed and, measures were compared based on their standardised coefficients (*beta* values).

Cognitive and affective empathy as predictors of sharing. In alignment with the fact that the overall model was not significant, none of the coefficients associated with the empathy measures were significant (see Table 5). Therefore, the results did not support hypothesis 1or 2 as neither cognitive nor affective empathy significantly predicted sharing behaviour in typically developing South African children, regardless of what measure was used. Consequently, the interpretation and comparison of coefficients across measures was irrelevant and the proposed MRA model was rejected.

SES, age and gender as predictors of sharing. None of the coefficients associated with potentially extraneous variables including SES, age and gender, were significant (see Table 5). Therefore, there were no significant predictors of sharing.

Table 5
Coefficients for Model 7 Predicting Prosocial Behaviour (Sharing)

Model	Predictor Variables	*b*	Std. Error	*beta*	*t*	*p*
	Constant	-0.72	5.04	-	-0.14	0.89
	TFI (Rands per Year)	0.00	0.00	0.10	0.72	0.48
	HLOE (No. Years)	-0.12	0.18	-0.10	-0.68	0.50
	Gender	1.17	0.69	0.22	1.69	0.10
	Age (months)	0.00	0.03	0.01	0.06	0.96
7	Indirect Measure of Affective Empathy *(QCAE)*	-0.03	0.04	-0.10	-0.76	0.45
	Direct Measure of Affective Empathy *(Chicago Empathy for Pain Task)*	0.01	0.04	0.04	0.31	0.76
	Indirect Measure of Cognitive Empathy *(QCAE)*	0.02	0.03	0.09	0.72	0.48
	Direct Measure of Cognitive Empathy *(UCT ToM Battery)*	0.03	0.04	0.13	0.81	0.42

Note. TFI = Total Family Income. HLOE= Highest Level of Education. *QCAE = Questionnaire of Cognitive and Affective Empathy. ToM = Theory of Mind.*

As previously stated, gender was the only variable significantly correlated with sharing, r (73) = 0.22; p=0.03. Although not significant, its coefficient indicated that it was the closest single predictor, b=1.17; $beta$=0.22; p=0.096. Therefore, a simple regression analysis was conducted to evaluate the relationship between gender and sharing. According to the adjusted effect size, this model explained 3.5% of the variance, adj. R^2 = 0.035. However, it was not significant, F (1, 73) =3.65, p=0.06. Therefore, this model was not accepted and no significant predictors of empathy were found.

Discussion

The primary aim of this study was to determine how cognitive and affective empathy differentially impact sharing, a proxy of prosocial behaviour. This study also purposed to address methodological inconsistencies associated with empathy research by comparing direct and indirect measures. Therefore, the secondary aim was to determine whether the testing technique affected the predictive utility of cognitive and affective empathy in terms of prosocial behaviour. Consequently, it was hypothesized that cognitive and direct measures would be stronger predictors of sharing than affective, indirect measures, respectively.

Cognitive and Affective Empathy as Predictors of Sharing

All the measures for cognitive and affective empathy were first evaluated on the basis of their zero-order correlations which did provide some weak support for the predicted pattern of results. For example, the strongest correlation was found between the *UCT ToM Battery* and *The Dictator Game*. This positive association suggested that as one's ToM (cognitive empathy) abilities increase, the likelihood of engaging in prosocial behaviour may increase. Therefore, of the empathy measures, the direct measure of cognitive empathy appeared to be the closest possible predictor of sharing, as initially hypothesized. However, this correlation was not statistically significant despite adequate statistical power, indicating that this relationship cannot be assumed to exist in the population.

Similarly, all the other correlations between empathy measures and sharing were weak and not statistically significant. However, it was interesting to note that, in contrast to the other measures of empathy, the indirect measure of affective empathy (*QCAE* affective subscale) was inversely correlated with prosocial behaviour. Therefore, high levels of affective empathy as indicated by the indirect measure were associated with decreased sharing. However, because the correlation was close to 0 and not significant, this result was essentially deemed meaningless.

Therefore, the zero-order correlations provided the initial evidence pertaining to the apparent lack of a relationship between empathy and sharing in this sample. This was established prior to running the MRA model, although analyses continued.

Unsurprisingly, the overall MRA model was not statistically significant and neither were any of the coefficients associated with each empathy measure. Therefore, hypothesis 1 and 2 were rejected as, according to this study, empathy does not predict sharing in typically developing South African children, regardless of whether cognitive or affective components are considered or whether these are measured directly or indirectly. This is inconsistent with

international literature and can be discussed by evaluating the empathy measures used in this study as well as the pattern of sharing behaviour specifically associated with South Africa.

Evaluating empathy measures. The apparent lack of a relationship between empathy and sharing may be attributed to the way in which empathy was conceptualised. Therefore, the suitability of this construct's operational definition serves as a potential explanation for such findings.

Based on the inter-correlations, most of the cognitive empathy measures were not significantly associated with the measures of affective empathy. This was an important finding as it suggested that these two components of empathy may be separable, as anticipated, and, in support of the literature. However, it is arguable that cognitive and affective components of empathy should not be as independent as this work suggests and, the lack of some associations between measures is problematic.

This is because, despite that fact that the measures were assessing separable subtypes of empathy, they should still have been measuring the same underlying construct (empathy). According to Decety (2011), affective empathy characterises one's primary involuntary responsiveness while cognitive empathy builds on this secondarily, via top-down regulation. From an evolutionary perspective, this aids goal-orientated behaviour. However, it also indicates that these two components of empathy are not independent of one another (Decety, 2011). As a result, one should have expected some relationship to exist between measures of cognitive and affective empathy.

However, this was not the case in this study with the exception of the *QCAE* which provided an indirect measure of both components of dispositional empathy. This complete lack of a significant association between most of the empathy measures, is concerning. Therefore, viewing cognitive and affective empathy as independent may have been a restrictive way of defining empathy.

Such findings may, however, be explained by evaluating the empathy measures. In this study, none of the empathy measures significantly predicted sharing and, therefore, no conclusions could be drawn regarding their relative strength. However, for both cognitive and affective empathy, the direct and indirect measures were not significantly correlated with each other and a composite for each empathy component could not be created. Therefore, direct and indirect measures evidently assessed empathy differently. This may be, because, the indirect measures (*QCAE* subscales) assessed reported dispositional empathy while the direct measures generally assessed behaviour which is not equivalent to disposition.

More specifically, there is controversy regarding whether or not empathy is a fixed dispositional characteristic demonstrated by general response patterns or a situational behaviour (De Wied, Goudena, & Matthys, 2005; Eisenberg et al., 1994). Therefore, the extent to which individuals exhibit empathic behaviour such as sharing may vary depending on the circumstances. This emphasizes the importance of direct measures of empathy which account for the context-specific nature of behaviour, rather than indirect measures of dispositional empathy. In alignment with this increased focus on behaviour, empathic concern as a direct indicator of affective empathy (*Chicago Empathy for Pain Task*) may be a better candidate than affective sharing.

However, this approach is still limited as research has identified discrepancies between empathic ability and the tendency to engage in prosocial behaviour (De Wied et al., 2005; Eisenberg et al., 1994).For example, an individual who does not behave empathically may not necessarily be incapable of doing so. Therefore, the way in which empathy has been conceptualised here, may be restrictive.

Although it is generally accepted that empathy consists of separable cognitive and affective components, recent research has identified a third, regulatory component (Decety & Jackson, 2006). This is relevant as self-regulation may mediate the relationship between affective and cognitive empathy, affecting how both components interactively contribute towards prosocial behaviour within context (Decety & Moriguchi, 2007). For example, individuals who successfully up and down-regulate their emotion and feelings of personal distress are more likely to employ empathic responses such as sympathy and, therefore, engage in prosocial behaviour (Eisenberg & Eggum, 2009; Eisenberg, Smith, Sadovsky, & Spinrad, 2004).

This is based on a model proposing that the extent of empathic experience and likelihood of engaging in prosocial behaviour depends on bottom-up processing of affective information and top-down processing including self-regulation (Decety, 2011; Decety & Moriguchi, 2007). Therefore, empathy may not automatically result in prosocial behaviour because it is regulated (Decety, 2011; Eisenberg & Fabes, 1990). Supporting this, research has also identified dysregulation as a risk factor for aggression, delinquency and reduced prosocial behaviour (Eisenberg & Fabes, 1990; Mullin & Hinshaw, 2007, Van Langen et al., 2014).

Therefore, the lack of relationship found here between empathy and sharing, a context-specific behaviour, may be attributable to the way in which empathy was conceptualised. Many studies, including this one, fail to consider the role of self-regulation

in operationally defining empathy. Consequently, it is suggested that future investigations incorporate tasks that assess this third component of empathy so that it can be accounted for in analysis. This may allow empathy to be defined and measured more constructively which may improve predictive opportunities in terms of prosocial behaviour.

Sharing in South Africa. Although there are difficulties associated with some of the measures used in this study, another explanation for the results may lie in the fact that sharing in South Africa is not influenced by the same factors as other countries. This is evident considering that this study on a South African sample identified several findings that are inconsistent with international literature.

Firstly, neither cognitive nor affective empathy predicted sharing in this sample of South African children. Secondly, this study did not identify any significant difference between the predictive ability of cognitive and affective empathy components in terms of sharing. Although research has indicated that both should predict prosocial behaviour, it is suggested that the strength of the relationship may vary depending on what aspect of empathy is being considered (Decety & Lamm, 2006; Joliffe & Farrington, 2004; Joliffe & Farrington, 2007; Kerem et al., 2001;Lovett & Sheffield, 2007; Schechtman, 2002; Van Langen et al., 2014).

For example, in typically developing children, cognitive empathy is expected to be a stronger predictor of generosity than affective empathy, as indicated by empathy deficiencies, neuroscience and cross-cultural studies (Cowell et al., in press; Decety & Cowell, 2015; Joliffe & Farrington, 2004). Monin, Pizarro and Beer (2007) rationalise this by proposing social cognition as the basis of moral judgement and sharing which serves as a proxy for prosocial behaviour. This is, because, generosity is associated with personal costs and is unlikely to be an innate characteristic (Gurven, 2004). Therefore, the ability to integrate others' perspectives and recognise that they, too, have a desire for resources is critical and should reliably predict sharing (Cowell et al., in press).

However, this was not the case in this study. Although the direct measure of cognitive empathy (*UCT ToM Battery*) had the strongest zero-order correlation with sharing, this association was not significant and, alongside all the other empathy measures, was not found to be a significant predictor.

Evidently, sharing in this South African sample of typically developing children was not predicted by empathy. A similar result was found by a recent cross-cultural study which, using the same sharing measure (*Dictator Game),* found South Africa to be the exception to the USA, Canada, China and Turkey (Cowell et al., in press). A model including SES, age,

gender and social cognitive mechanisms such as ToM and executive functions, explained 23% of the variance in sharing cross-culturally although nothing predicted generosity in South Africa (Cowell et al., in press).

This was evident despite the fact that Western and non-Western samples as well as individualistic and collectivist cultures were represented (Cowell et al., in press). A small economy and delayed market integration have found to be significant predictors of cross-cultural generosity differences which may explain this finding (Cowell et al., in press; Henrich et al., 2005; Oden, 1996). However, like South Africa, Turkey also had a small gross domestic product (GDP) but demonstrated predictable patterns of sharing behaviour (Cowell et al., in press). Additionally, for unknown reasons, South African children were found to share significantly less than those from other countries (Cowell et al., in press).

Therefore, according to recent research as well as this study's findings, further exploratory research regarding sharing within the South African context is necessary. As previously discussed, sharing is an empathic behaviour that is context-specific and self-regulated. Therefore, South Africa may be an exception in terms of sharing due to an unknown variable. This may be specifically related the context of South Africa or the way in which children are taught to regulate their behaviour in this country. Consequently, it is recommended that future studies investigate unconsidered variables such as family structure, religiousness and parenting styles (Cowell et al., in press).

Gender as a Predictor of Sharing

Although the aim of this study was to determine how empathy predicts sharing, other potentially extraneous variables such as gender were also evaluated. In examining the zero-order correlations, a significant inter-correlation was found between gender and some of the empathy measures including the direct measure of cognitive empathy (*UCT ToM Battery*) and the indirect measure of affective empathy (*QCAE* affective subscale). Additionally, gender was significantly correlated with sharing (*Dictator Game*). These positive associations indicated that females are more empathic and generous than males. Because there were no significant age or SES differences across genders, these results were meaningful.

This was consistent with other studies which have identified gender differences in empathy as well as related behavioural outcomes such as aggression and prosocial behaviour (Eisenberg et al., 2005; Hoffman, 1977; Klein & Hodges, 2001; Michalska, Kinzler & Decety, 2013; Warden & MacKinnon, 2003). For example, females have been found to be more empathic (Cohen & Strayer, 1996; Reniers et al., 2011) than males. Additionally,

females tend to engage in more prosocial and less antisocial behaviour which may be attributed to their higher levels of empathy (Eisenberg et al., 2005; Ostrov & Keating, 2004; Warden & MacKinnon, 2003).

According to Reukert and Naybar (2008), there may be a neural basis for gender differences in empathy, characterised by increased right hemisphere activation in females. Evolutionarily, superior empathy in females may be advantageous considering their increased and biologically-driven, parental investment (Michalska et al., 2013). In contrast, Klein and Hodges (2001) have proposed that females are more naturally motivated rather than more capable to behave empathically, than males.

However, disparities in empathic ability and prosocial behaviour may also be explained by Bandura's Social Learning Theory which proposes that behaviour is modelled on observations of others and learned within a social context (Bandura, 1977). Therefore, gender-specific patterns of empathic and prosocial behaviour may be reinforced by socially constructed views and gender stereotypes of male dominance and female intimacy (Eisenberg et al., 2005).

Socialisation practices may also play an important role as, in making decisions, females are taught to place more emphasis on others' internal states and needs (Eisenberg et al., 2005). For example, parents tend to discuss emotions and encourage prosocial behaviour more frequently with girls (Keubli, Butler, & Fivush, 1995; Power & Parke, 1986; Power & Shanks, 1989). Additionally, due to socialisation within the family context, males may be more vulnerable to inadequate parenting and the risk factors associated with empathy deficiencies (Moffit, Caspi, Rutter, & Silva, 2001). Therefore, the significant correlation between gender and some of the empathy measures as well as sharing, may be explained by theories of social learning and socialisation practices (Maccoby & Martin, 1983; Sigelman & Rider, 2009).

Although this study did find a significant correlation between gender and the direct measure of cognitive empathy (*UCT ToM Battery*), gender was not significantly correlated with the indirect measure of cognitive empathy (*QCAE* cognitive subscale). However, the *UCT ToM Battery* provides direct behavioural evidence of a gender difference. In contrast, gender was significantly correlated with the indirect measure of affective empathy (*QCAE* affective subscale) but not with the direct measure of affective empathy *(Chicago Empathy for Pain Task)*. This suggests that the *QCAE* and, particularly the affective subscale of this indirect measure, may be vulnerable to gender biases in parent reports where girls are expected to be more emotional.

In sum, there is some evidence of behavioural differences as well as differences in parent reporting between genders. However, while gender was significantly correlated with sharing, it was not a significant predictor based on the model and coefficients. Although this is inconsistent with international literature, it should be noted that cross-cultural studies have also found contrasting results in South Africa (Cowell et al., in press). Therefore, once again, this country is the exception and further investigation is necessary.

SES as a Predictor of Sharing

In this study, both SES indicators (TFI and HLOE) were positively and significantly inter-correlated with the direct measure of cognitive empathy (*UCT ToM Battery*). Therefore, higher SES appeared to be associated with increased perspective-taking skills, although the SES range included here was limited. This is consistent with literature which has proposed that children from low-income households and deprived family backgrounds may have lower levels of emotion understanding and ToM (Cutting & Dunn, 1999; Garner, Jones, Gaddy, & Rennie, 1997).

Notably, SES as indicated by maternal HLOE, was significantly but inversely inter-correlated with the indirect measure of cognitive empathy (*QCAE* cognitive subscale). Although there is no evidence to support this, it may be speculated that educated parents have more insight regarding their children's difficulties with cognitive empathy. However, this was unexpected as SES is thought to be positively related with empathy (Joliffe & Farrington, 2004). Additionally, it is in direct contradiction of the positive association between empathy the direct measure of cognitive empathy (*UCT ToM Battery*) which is more trustworthy. Therefore, once again, the reliability of the *QCAE* is questionable.

SES was also not significantly correlated with sharing, nor was it a significant predictor. This is inconsistent with the research from cross-cultural studies indicating that SES does predict generosity in most countries (Cowell et al., in press).

Nevertheless, this result can be explained in that, SES may impact generosity by moderating the relationship between empathy and sharing (Joliffe & Farrington, 2004; Warden & Mackinnon, 2003). For example, when SES is controlled for, the relationship between both cognitive and affective empathy and offending disappears (Joliffe & Farrington, 2004). Considering that it is a well-established moderator of antisocial behaviour, it was reasonable to assume that similar effects would be associated with prosocial behaviour.

However, in South Africa, empathy does not appear to be a predictor of sharing (Cowell et al., in press). Therefore, any indirect effect of SES on the relationship between

empathy and sharing was moot. However, this study may be limited in that it only included lower-middle SES participants. Because South Africa is a country characterised by a diverse SES range, it is suggested that future research include broader SES bands in order to fully examine its direct role as a predictor of sharing as well as its role as a potential moderator of the relationship between empathy and sharing.

Age as a Predictor of Sharing

In this study, age was significantly associated with ToM which is consistent with international literature. For example, although affective empathy generally remains stable over time, cognitive empathy has been found to increase with age (Eisenberg et al., 2005; Hoffman, 1977). Despite this finding, age was not significantly correlated with sharing nor was it a significant predictor. However, this was expected as the age range was limited to tap into middle childhood (9-12), a stable phase in terms of empathic and prosocial development (Eisenberg et al., 2005).

In future research, it may be useful to compare age categories such as foundation (6-8), middle childhood (9-12) and adolescence (13+) in order to fully assess the relationship between age, empathy and sharing in South Africa. This is because, according to previous research, a positive relationship between age, cognitive ability and prosocial behaviour such as sharing, has been well-established across cultures (Cowell et al., in press; Eisenberg, 1986; Eisenberg et al., 2005; Eisenberg & Fabes, 1998). The inclusion of older children is particularly warranted considering evidence that ToM development may be delayed in this country (Malcolm-Smith, Ward, & Woolley, 2015).

Limitations and Considerations for Future Research

Although some limitations and suggestions for future research have already been discussed, there are additional issues associated with this particular study requiring consideration. These include problems related to standardisation, confounding variables and task sensitivity.

Standardisation. This study was part of a broader project and, therefore, was conducted by a team of researchers. As a result, child assessments were not always administered and scored by the same person and each researcher had their own hypotheses. Therefore, experimenter bias may have played a varying role. Although everyone involved in data collection attended compulsory workshops to establish and confirm standardisation guidelines, it was not ensured that these were followed accurately. Future research should improve standardising administration by conducting site checks for quality control.

Confounding variables. This study was also limited as it did not account for the participant's higher-order abilities such as general intellectual functioning, attention and working memory. These are gateway functions and, therefore, deficiencies in any of them may have affected performance across measures (Banich & Compton, 2011). For example, executive functioning is significantly and positively associated with ToM (Wellman et al., 2001). Additionally, the inability to inhibit one's own desires for rewards is predictive of decreased generosity while greater working memory, cognitive flexibility and inhibitory control are associated with higher levels of sharing (Cowell et al., in press). In this manner, higher-order abilities could act as confounds as they may be correlated with both predictor and outcome variables of this study. Future research should incorporate measures for such functions in analyses to control for their effects and ensure the internal validity of the research.

Task sensitivity. The final limitation of this study is related to the sensitivity of the sharing task (*Dictator Game*). In evaluating the range, some children evidently shared none of their stickers while others shared them all. Therefore, according to these results, as well previous research (Cowell et al., in press), this task may not be sensitive enough to detect a demonstrable pattern of sharing in South Africa. This is in contrast to other countries and, although the reasons are unclear, future studies including broader age and SES bands may be able to provide insight. It is also suggested that such studies categorise their sample according to the proportion of demonstrated sharing. For example, these categories may including hoarders (share none or very little), ultra-egalitarians (share equally) and ultra-generous individuals (share most or all). This may improve the sharing measure's sensitivity, although it still may be inappropriate for use in South Africa which requires further investigation.

Summary and Conclusions

This study has contributed to the literature by investigating cognitive and affective empathy instead of only examining empathy broadly. Additionally, the unique and combined effects of both components were examined within the context of prosocial, rather than antisocial behaviour. Therefore, this study which used sharing as a proxy for prosocial behaviour, serves as the basis for future research which may provide insight into the factors that predict this construct. This is important as prosocial behaviour is associated with benefits which are relevant to South Africa, a country characterised by high levels of antisocial behaviour.

This study found that neither cognitive nor affective empathy predicted sharing in typically-developing, South African children. Explanations for this may be linked to restrictions regarding the definition and measurement of empathy as well as narrow SES and age ranges. Additionally, this study had several limitations including problems with standardisation, confounding variables and task sensitivity. However, this finding most likely indicates that the relationship between empathy and prosocial behaviour seen in other countries was not present in this sample of South African children. This was apparent regardless of what type of measure was used and, essentially, comparing direct and indirect measures was deemed irrelevant. Additionally, other variables such as age, gender and SES were not significant predictors of sharing which, again, was inconsistent with international literature. Therefore, more research within the South African context is recommended and it is suggested that gender is further investigated as a predictor of sharing as it was the only variable significantly correlated with this behaviour.

Although it is crucial to identify the factors that predict prosocial behaviour such as sharing, it is also useful to identify those that do not. Therefore, it may not be worthwhile to incorporate empathy into intervention strategies aimed at fostering prosocial behaviour in this country. However, South Africa evidently has a very unique situation and further exploratory research within this context is recommended.

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Appendix A: Demographic Questionnaire

DEMOGRAPHIC QUESTIONNAIRE

International research guidelines suggest that researchers report some attributes of all research participants (e.g., children's gender, parents' educational background, etc.). To help us collect this information, we are asking you to complete this brief questionnaire. All your answers are kept private, and won't be used in a way that identifies you or your child. If you are uncomfortable answering any of the items, feel free to ignore them.

Today's Date: _____

Who is completing this questionnaire? (Please √)

☐ Biological parent   ☐ Grandparent   ☐ Nanny

☐ Foster parent   ☐ Aunt/Uncle   ☐ Friend

☐ Stepparent   ☐ Sibling   ☐ Other: _____

Are you the child's primary caregiver? (Circle one)   Y / N

Your gender: M / F

Child's Information

Child's date of birth (including the year): _____

Child's gender: M / F

Child birth order: Child number _____ out of _____ children.

Ages of siblings: Boy / Girl Age: _____

                          Boy / Girl Age: _____

                          Boy / Girl Age: _____

Child's height (in cm):_____ Child's weight (in kg): _____

Child's home language: _____

Child's race (Please √):

☐ Black South African   ☐ Coloured   ☐ Indian

☐ Black African (Other)   ☐ White/Caucasian   ☐ Other: _____

(Please specify)

Please list any serious health problems this child has had:

_____

_____

_____

Was this child born more than two weeks early?   Y / N

Please list any medications this child is taking for behavior issues, attention difficulties, or issues related to moods and feelings:

_____

_____

_____

Does this child currently attend (Please √):

☐ Daycare/Crèche   ☐ Grade R

☐ Preschool   ☐ Primary school (Grade: _____)

Household Information

Who does this child currently live with? (Please √ **all** that apply)

☐ Biological parent   ☐ Grandparent   ☐ Nanny

☐ Foster parent   ☐ Aunt/Uncle   ☐ Friend

☐ Stepparent   ☐ Sibling   ☐ Other: _____

Who is this child's primary caregiver?

☐ Biological parent   ☐ Grandparent   ☐ Nanny

☐ Foster parent   ☐ Aunt/Uncle   ☐ Friend

☐ Stepparent   ☐ Sibling   ☐ Other: _____

Languages currently spoken at home:

      Home language:_____

      Other: _____

Religion(s) practiced in the home: _____

Primary Caregiver Information

Current age: _____

Marital Status:

☐ Married   ☐ Divorced   ☐ Widow/Widower

☐ Single   ☐ Remarried   ☐ Separated

Current job title:

      Mother: _____

      Father: _____

      Primary caregiver: _____

Total family/household income last year:

☐ Less than R35 000   ☐ R176 000-R225 000   ☐ R376 000-R425 000

☐ R36 000-R75 000   ☐ R226 000-R275 000   ☐ R426 000-R475 000

☐ R76 000-R125 000   ☐ R276 000-R325 000   ☐ R476 000-R525 000

☐ R126 000-R175 000   ☐ R326 000-R375 000   ☐ More than R525 000

Highest level of education reached for mother, father, and/or guardian (please circle appropriate number):

	Biological mother	Biological father	Guardian
1) 0 years (No Grades / Standards) = Never went to school	1.	1.	1.
2) 1-6 years (Grades 1-6 / Sub A-Std 4) = Didn't complete primary school	2.	2.	2.
3) 7 years (Grade 7 / Std 5) = Completed primary school	3.	3.	3.
4) 8-11 years (Grades 8-11 / Stds 6-9) = Some secondary education (didn't complete high school)	4.	4.	4.
5. 12 years (Grade 12 / Std 10) = Completed high school	5.	5.	5.
6. 13+ years = Tertiary education Completed university / technikon / college	6.	6.	6.
7. Don't know	7.	7.	7.

Parental employment (please circle appropriate number):

	Biological mother	Biological father	Guardian
1. Higher executives, major professionals, owners of large businesses	1.	1.	1.
2. Business managers of medium sized businesses, lesser professions (e.g. nurses, opticians, pharmacists, social workers, teachers)	2.	2.	2.
3. Administrative personnel, managers, minor professionals, owners / proprietors of small businesses (e.g. bakery, car dealership, engraving business, plumbing business, florist, decorator, actor, reporter, travel agent)	3.	3.	3.
4. Clerical and sales, technicians, small businesses (e.g. bank teller, bookkeeper, clerk, draftsperson, timekeeper, secretary)	4.	4.	4.
5. Skilled manual – usually having had training (e.g. baker, barber, chef, electrician, fireman, machinist, mechanic, painter, welder, police, plumber, electrician)	5.	5.	5.
6. Semi-skilled (e.g. hospital aide, painter, bartender, bus	6.	6.	6.

driver, cook, garage guard, checker, waiter, machine operator)			
7. Unskilled (e.g. attendant, janitor, construction helper, unspecified labour, porter, unemployed)	7.	7.	7.
8. Homemaker	8.	8.	8.
9. Student, disabled, no occupation	9.	9.	9.

Material and financial resources (please circle appropriate number):

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

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

Which of the following do you have in your home?

Items	Yes	No
1. Running water	1.	1.
2. A domestic servant	2.	2.
3. At least one car	3.	3.
4. A flush toilet	4.	4.
5. A built-in kitchen sink	5.	5.
6. An electric stove or hotplate	6.	6.
7. A working telephone	7.	7.

Do you personally do any of the following?

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

Appendix B: *Questionnaire of Cognitive and Affective Empathy (QCAE)*

People differ in the way they feel in different situations. Below you are presented with a number of characteristics that *may or may not apply to your child*. Read each characteristic and indicate how much you agree or disagree with the item by selecting the appropriate box. Answer quickly and honestly.	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
1. My child sometimes finds it difficult to see things from another's point of view.				
2. My child is usually objective when he/she watches a film or play, and doesn't often get completely caught up in it.				
3. My child tries to look at everybody's side of a disagreement before he/she makes a decision.				
4. My child sometimes tries to understand his/her friends better by imagining how things look from their perspective.				
5. When my child is upset at someone, he/she will usually try to "put him/herself in the person's shoes" for a while.				
6. Before criticizing somebody, my child tries to imagine how he/she would feel in their place.				
7. My child often gets emotionally involved in his/her friends' problems.				
8. My child is inclined to get nervous when others around him/her seem nervous.				
9. People my child is with have a strong influence on his/her mood.				
10. It affects my child very much when one of his/her friends seems upset.				
11. My child often gets deeply involved with the feelings of a character in a film, play, or novel.				
12. My child gets very upset when he/she sees someone cry.				
13. My child is happy when he/she is with a cheerful group and sad when others are glum.				
14. It worries my child when others are worrying and panicky.				
15. My child can easily tell if someone else wants to enter into a conversation.				
16. My child can quickly pick up if someone says one thing but means another.				
17. It is hard for my child to see why some things upset people so much.				
18. My child finds it easy to put him/herself in somebody else's shoes.				
19. My child is good at predicting how someone will feel.				
20. My child is quick to spot when someone in a group is feeling awkward or uncomfortable.				

21.	Other people tell my child he/she is good at understanding what others are feeling and what others are thinking.				
22.	My child can easily tell if someone else is interested or bored with what he/she is saying.				
23.	Friends talk to my child about their problems as they say that my child is very understanding.				
24.	My child can sense if he/she is intruding, even if the other person does not tell him/her.				
25.	My child can easily work out what another person might want to talk about.				
26.	My child can tell if someone is masking their true emotion.				
27.	My child is good at predicting what someone will do.				
28.	My child can usually appreciate the other person's viewpoint, even if he/she does not agree with it.				
29.	My child usually stays emotionally detached when watching a film.				
30.	My child always tries to consider the other person's feelings before he/she does something.				
31.	Before my child does something, he/she tries to consider how his/her friends will react to it.				

Appendix C: UCT Ethics Approval (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,

Johann Louw PhD
Professor
Chair: Ethics Review Committee

Appendix D: Ethical Approval (Western Cape Department of Education)

Western Cape Government

Education

Directorate: Research

Audrey.wyngaard@westerncape.gov.za

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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 **21 January 2015 till 30 September 2015**
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:

<p align="center">**The Director: Research Services**</p>

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: 08 October 2014

Appendix E: Information and Consent Form (Parents and Legal Guardians)

UNIVERSITY OF CAPE TOWN
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The Development of Empathy and Moral Reasoning

Dear Parent/Legal guardian,

You and your child are invited to participate in a research study investigating the development of empathy and moral reasoning in children. This study focuses on how children of different ages share what other people are feeling and understand what others feel and think, and how children of different ages feel about good and bad behaviour.

Principal Researchers:

Dr Susan Malcolm-Smith	Dr Jean Decety	Lea-Ann Pileggi	Jessica Ringshaw
Senior Lecturer	Professor	Doctoral candidate	Honours student
Department of Psychology	Department of Psychology	Department of Psychology	Department of Psychology
University of Cape Town	University of Chicago	University of Cape Town	University of Cape Town

What is involved in this study?

Approximately 400 children aged 3-13 years will participate in this study. If your child participates, a researcher will guide her/him through several tasks. For example, 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). After viewing these pictures, children will

be asked how sorry they feel for the person, and how much pain they think that person might be feeling. 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 of cards and will be asked how they felt during that game when they won and when they lost. Altogether this study will take about 90 minutes of your child's time. Two sessions (45 minutes each) will take place during the school day. 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 (aside from the Demographic questionnaire) that will ask you questions about your own views and questions about your child's views. Your completion of these documents is completely voluntary. Should you agree to completing these additional questionnaires, we will contact you to arrange a time to meet at your child's school, for you to complete them.

Are there any benefits to taking part in the study?

Your child will receive some sweets for her/his participation, as well as some stickers of her/his choice, and you will receive R100 if you complete all questionnaires. More importantly, should we identify any behavioural or learning difficulties that are likely to affect your child's capacity to learn, we will provide you with written feedback, and referrals to appropriate service providers where necessary. Furthermore, the results of this research could provide essential information about how children process emotional 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.

Thank you for your participation.

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: _____

Date: _____   Signature of parent/guardian: _____

Please provide a contact number below should you be willing to complete the additional questionnaires (for which you will be compensated with R150 upon completion), and indicate which time/s would be most convenient to receive a phonecall to arrange a time for you to meet with the researcher to complete the questionnaires.

Phone: _____   Time/s: _____

Appendix F: Assent Form (Child Participants)

UNIVERSITY OF CAPE TOWN

DEPARTMENT OF PSYCHOLOGY

The Development of Moral Reasoning and Empathy

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, and how they understand what other people are feeling and thinking.

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: Table 6

Table 6.
Collinearity Statistics

Predictor Variables	VIF	Tolerance
TFI (Rands per Year)	0.67	1.45
HLOE (No. Years)	0.67	1.48
Gender	0.82	1.21
Age (months)	0.68	1.47
Indirect Measure of Affective Empathy *(QCAE)*	0.8	1.26
Direct Measure of Affective Empathy *(Chicago Empathy for Pain Task)*	0.95	1.05
Indirect Measure of Cognitive Empathy *(QCAE)*	0.86	1.17
Direct Measure of Cognitive Empathy *(UCT ToM Battery)*	0.55	1.84

Note. TFI = Total Family Income. HLOE = Highest Level of Education. *QCAE = Questionnaire of Cognitive and Affective Empathy. ToM = Theory of Mind*