

RELATIONS BETWEEN POSITIVE AFFECT AND
SHARING BEHAVIOUR IN EARLY CHILDHOOD

by

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ABSTRACT

Research with adults suggests there may be complex bidirectional relations between positive affect and sharing behaviour, in which self-oriented positive affect increases prosocial behaviour, and other-oriented positive empathy decreases prosocial behaviour. Additionally, research with adults suggests engaging in sharing increases positive affect. However, such relations in children remain unclear. This dissertation investigated how other-oriented positive empathy and self-oriented positive affect impact sharing, and how sharing impacts affect in 5- and 6-year-olds. Study 1 examined how positive empathy impacts children's sharing. We found no differences in sharing between children who watched videos of another child in neutral versus positive situations, although these manipulations successfully impacted children's ratings of the other child's affect. Study 2 investigated how children's own positive affect impacted their sharing. We found no differences in sharing between children who received their most or least favourite toys, although these manipulations successfully impacted children's perceived and expressed affective reactions. Study 3 examined if sharing impacted children's self-reported and facial displays of affect, after negative affect was first induced with a sad video about another child. We compared three groups of children who (1) made active choices about sharing stickers with another child (i.e., active sharing), (2) watched the experimenter allocate stickers between themselves and another child (i.e., passive sharing), and (3) simply received stickers themselves (i.e., passive receiving). We found a positive increase in children's self-reported affect from before to after the sharing task across conditions. However, there was no difference in self-reported affect after the sharing task between the three conditions. Facial affect coding revealed that children in the active sharing condition displayed more positive facial affect than those in the passive sharing condition, and those in the passive sharing condition showed more positive affect than those in the passive receiving condition. Further trial-by-trial analysis revealed no differences in children's facial expressions based on whether each trial resulted in a prosocial outcome, so differences in facial expressions across the three conditions may be due to active choice as opposed to active sharing per se. This dissertation offers insights into potential interrelations between positive affect and sharing in early childhood.

Keywords: children, positive affect, positive empathy, sharing, prosocial behaviour

LIST OF ABBREVIATIONS AND SYMBOLS USED

α	Alpha
ASD	Autism Spectrum Disorders
ANOVA	Analysis of Variance
d	Cohen's d effect size
df	Degrees of freedom
F	F -value
FAS	Facial Affect Scale
M	Mean
N	Sample size
p	p -value
η_p^2	Partial eta-squared
r	Correlation coefficient
RAT	Resource-Allocation Task
SD	Standard deviation
t	t -value

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CHAPTER 1: INTRODUCTION

Sharing is a form of prosocial behaviour, like helping or comforting, that individuals may choose to engage in to benefit others (Eisenberg, Fabes, & Spinrad, 2006). Sharing can involve sacrificing valuable resources or it may only incur a nominal personal cost. Whether sharing behaviour involves a personal loss or not, theorists have wondered what motivates individuals to share material resources with others. Insights from various fields such as philosophy, economics, sociology, and psychology have informed our perspectives on human motivations to engage in prosocial behaviour; however, it still remains unclear *why* individuals share their resources with others.

Individuals might choose to share with others for extrinsic reasons, such as social recognition or potential future reciprocity, or for intrinsic reasons, such as increased positive affect (see Bekkers & Wiepking, 2011; Martin & Olson, 2015 for reviews). Although multiple variables may promote and reinforce prosocial decisions, the current program of research focused on positive affect. Bekkers and Wiepking (2011) suggest sharing might increase positive affect by reinforcing our view of ourselves as benevolent, conscientious, or important, or it might decrease negative affect by reducing feelings of guilt or unfairness. Such affective outcomes could provide a powerful means of promoting and reinforcing prosocial behaviours like sharing.

Interactions between sharing and positive affect do not likely boil down to a simple unidirectional relation in which sharing results in greater positive affect as a means of reinforcement. Instead, it has been postulated that there may be a bidirectional positive feedback loop, in which sharing can increase our positive affect, and self-oriented positive affect can increase our sharing behaviour (Aknin et al., 2012a).

Although there is accumulating research evidence for interrelations between self-oriented positive affect and sharing in adulthood (see Aknin, Van de Vondervoort, & Hamlin, 2018 for a review), there is limited evidence for such relations in childhood.

There is currently great interest in understanding the driving forces that underlie sharing behaviour in childhood. Prosocial behaviour is often studied in children because this developmental approach to research provides an opportunity to study how early social abilities may change over time, which provides insight into the development of more complex social skills (Moore, 2006). For example, research can investigate if positive affect and sharing behaviour are associated with one another early in life, to see if children behave similarly to adults. If children do not show the same associations between positive affect and sharing as adults, this may suggest that such relations develop at later developmental stages. The aim of this dissertation was to investigate potential relations between positive affect and sharing behaviour in early childhood from multiple perspectives, by isolating and examining different relations between these variables. However, before exploring these relations further, the concepts ‘sharing’ and ‘positive affect’ are each discussed briefly below.

Sharing

Early sharing behaviours can be observed during the first two years of life, when children begin to share objects such as toys and food with others (Brownell, Svetlova, & Nichols, 2009; Brownell, Svetlova, Anderson, Nichols, & Drummond, 2013; Dunfield, Kuhlmeier, O’Connell, & Kelley, 2011; Rheingold, Hay, & West, 1976; Warneken & Tomasello, 2006; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Early sharing can be conceptualized as a form of triadic interaction, whereby children use an

object to engage with another person (Moore, 2013). Sharing behaviour develops over childhood, as children move from more selfish distributions around 3 to 4 years of age, toward more equal distributions by 7 to 8 years of age (Fehr, Bernhard, & Rockenbach, 2008). From early in life, children may be socialized to engage in sharing using extrinsic rewards and praise, or they may be biologically predisposed to gain affective benefits from engaging in such prosocial behaviour (Aknin, Dunn, & Norton, 2012a; Pfaff & Sherman, 2015).

Sharing can take many forms; however, for the purposes of this dissertation, sharing is defined as giving material resources to another person. In real-world contexts, this may involve nominal everyday actions like sharing a small treat with another person, or more exceptional deeds like making a significant monetary donation to charity or engaging in living organ donation. There is a sizeable body of literature on children's sharing behaviour, and we know a variety of factors can impact their allocation of resources, such as their relationship with or feelings of empathic concern toward the recipient (Moore, 2009; Sparks, Schinkel, & Moore, 2017; Williams, O'Driscoll, & Moore, 2014). Various experimental methods have been used to study sharing behaviour in children, such as ultimatum games (Güth, Schmittberger, & Schwarze, 1982), dictator games (Kahneman, Knetsch, & Thaler, 1986), and resource-allocation tasks (RATs; Thompson, Barresi, & Moore, 1997). These experimental tasks require children to make decisions about how to allocate resources (such as tokens, candies, small toys, or stickers) between themselves and a sharing partner, with variations in the number of trials and whether the recipient can respond to the offer (as in the ultimatum game in which recipients can reject an unfair offer).

In the current program of research, variations of a RAT developed by Thompson et al. (1997) were used as the experimental measures of sharing behaviour. The RATs used in this dissertation required children to make a series of choices about how they wished to distribute stickers between themselves and a fictitious sharing partner, who was not physically present and who provided no feedback about the allocations. Similar RATs with multiple cost and no-cost trials have been used successfully in previous research, as a measure of sharing behaviour in children (e.g., Fehr et al., 2008; Moore, 2009; Sparks et al., 2017; Thompson et al., 1997; Williams et al., 2014).

The studies included in this dissertation involved both sharing with and without a personal cost. Both types of sharing are of interest because they can each provide insight into prosocial behaviour in children. Moore (2009) conceptualized instances of costly sharing as ‘sharing’ behaviour, and instances of non-costly sharing as ‘prosocial’ behaviour. Both sharing with and without a personal cost can be viewed as prosocial behaviour because they both benefit others (Eisenberg et al., 2006); however, only cost sharing involves a personal sacrifice. Based on our previous definition of sharing as ‘giving material resources to another person’, in the current program of research, the terms ‘cost sharing’ and ‘no-cost’ sharing are used.

In the series of studies included in this research program, cost sharing trials required children to make a choice between keeping two stickers for themselves and sharing no stickers with their partner, versus keeping one sticker for themselves and sharing one sticker with their partner. In these cost trials, children had to give up half of their own potential resources to share with their partner. Conversely, no-cost sharing trials required children to make a choice between keeping one sticker for themselves and

sharing no stickers with their partner, versus keeping one sticker for themselves and sharing one sticker with their partner. Therefore, children received one sticker whether they chose to share or not, so they incurred no personal cost if they decided to share. The prosocial and non-prosocial sharing options for both cost and no-cost sharing are summarized in Table 1 below.

Table 1

Summary of Sharing Choices

	Cost Sharing	No-Cost Sharing
Prosocial Choice	1 for self, 1 for partner	1 for self, 1 for partner
Non-Prosocial Choice	2 for self, 0 for partner	1 for self, 0 for partner

Sharing typically has connotations of fairness and much research has examined this in children (e.g., Blake, McAuliffe, & Warneken, 2014; Schmidt & Sommerville, 2011; Shaw et al., 2014; Smith, Blake, & Harris, 2013). One motivation for sharing behaviour may be related to fairness or an aversion to inequity, if children wish to distribute resources evenly between themselves and their sharing partner. However, another potential motivation for sharing may be related to generosity, if children wish to act prosocially in order to provide a benefit to another person. If children are only motivated by inequity aversion, then we would expect to see no difference between their sharing behaviour on cost and no-cost trials. However, they are likely motivated by both inequity aversion and prosocial interests. Such motivations for fairness and generosity may not be mutually exclusive and likely work in tandem to encourage sharing behaviour.

On the other hand, selfishness may motivate children *not* to share with others, and to keep more resources for themselves. Like generous behaviour, selfish behaviour could also lead to a difference between cost and no-cost trials, but children would be less likely to share in cost trials (in which they would lose a sticker for themselves) than in no-cost trials (in which there is no personal loss associated with sharing). It is possible that positive affect could impact differentially both generosity and selfishness in children; however, the purpose of this dissertation is not to tease these motivations apart. Instead, this program of research examined various relations between positive affect and sharing behaviour in children. The following subsection provides a brief overview of positive affect before examining relations between positive affect and sharing further.

Positive Affect

Psychology and related disciplines have used various methods to define and measure positive affect. Numerous emotions may fall under the umbrella term ‘positive affect’ beyond happiness, including but not limited to enjoyment, enthusiasm, awe, hopefulness, pride, admiration, satisfaction, gratitude, peacefulness, and contentment. Feelings of positive affect that result from engaging in prosocial behaviour have been described as a ‘warm glow’ (Andreoni, 1989; 1990). For the purposes of this dissertation, we narrowed our focus to ‘positive affect’ and ‘happiness’, which are used synonymously, although we acknowledge this view provides a limited starting point from which to investigate these phenomena in children. We included an examination of both self-oriented and other-oriented positive affect. The term ‘positive empathy’ is used synonymously with other-oriented positive affect, to refer to children’s ability to share another person’s positive affect.

Emotional states are difficult to measure, as they can involve various physiological, behavioural, and psychological elements (see Mauss & Robinson, 2009 for a review). Mauss and Robinson outline numerous procedures to measure affect, including physiological measures (e.g., autonomic or central nervous system measures like electrodermal or cardiovascular responses or neuroimaging), behavioural measures (e.g., observer or computer ratings of facial, body, or vocal behaviour), and psychological measures (e.g., self-report descriptions, questionnaires, or affect scales).

Psychological measures allow participants to provide a self-assessment of their own internal affective states. Ryan and Deci (2001) provide an overview of previous research on ‘wellbeing’ in adults, which has typically focused on either happiness or self-actualization. Wellbeing as it relates to happiness has been measured in adults using various self-report scales such as the *Satisfaction with Life Scale* (Diener, Emmons, Larson, & Griffin, 1985; Pavot & Diener, 1993), the *Quality of Life Inventory* (Frisch Cornell, Villanueva, & Retzlaff, 1992), and the *Subjective Happiness Scale* (Lyubomirsky & Lepper, 1999). Such complex self-report scales are not frequently used with young children. Therefore, for the purposes of this dissertation, we asked children to rate their own or other children’s affect using a simple facial affect scale (FAS) developed by McGrath, de Veber, and Hearn (1985). This nine-point scale includes a spectrum of facial expressions from positive to negative, with a neutral face in the middle. This pictorial self-report measure has been used successfully in previous research with 5- and 6-year-old children (e.g., Paulus & Moore, 2017; Williams et al., 2014).

In addition to reporting how they feel, children can also show how they feel with their facial expressions. There is a plethora of research on facial displays of affect, including earlier work by Ekman, Friesen, and Hager (1978), who developed a *Facial Action Coding System* to measure facial expressions of basic emotions including happiness in adults. This coding scheme was later modified for use with infants and children (Oster, 2006). For the purposes of this dissertation, we primarily utilized a facial affect coding scheme developed by Aknin, Hamlin, and Dunn (2012b) to examine the impact of sharing on children's facial displays of affect. Adult coders can use this seven-point scale to make gestalt ratings of children's expressions of facial affect, from highly negative to highly positive expressions, with a neutral expression in the middle. This coding scheme has been used successfully in other research examining the affective benefit of sharing in young children (Aknin, Broesch, Hamlin, & Van de Vondervoort, 2015a; Aknin et al., 2012b). In the subsequent sections, we discuss the general relations between sharing and positive affect, then review research in these areas with adult and child populations.

Relations between Sharing and Positive Affect

Individuals regularly engage in different behaviours to change their affective state, often with the general goals of increasing positive affect or decreasing negative affect. Although there are individual differences (see Larsen & Augustine, 2008 for a review), people tend to pursue actions that result in positive affect and avoid those that result in negative affect (Kämpfe & Mitte, 2009; Larsen, 2000). Given the feelings of positive affect that can reportedly be gained from sharing with others, it is not surprising that individuals might make material sacrifices to experience such intrinsic rewards.

There are numerous psychological theories which attempt to explain the complex relations between affect and sharing behaviour. The *negative state relief theory* proposed by Cialdini, Darby, and Vincent (1973) suggests people with either self-oriented negative affect (as a result of causing an accident) or other-oriented negative affect (as a result of witnessing an accident) are more likely to engage in prosocial behaviour to gain a positive affective benefit if they are given no other relief from their negative affective state. However, individuals who experience self-oriented positive affect (due to positive feedback or a monetary reward) after the negative event, are less likely to volunteer to help. Therefore, the negative state relief theory suggests that individuals may engage in prosocial behaviour as a means to ameliorate their negative affective state.

In contrast, the *hedonic contingency theory* put forward by Wegener and Petty (1994) postulated that people are more likely to modify their behaviours to increase positive affect than to decrease negative affect. In line with this model, the *mood maintenance theory* postulates that when individuals are already experiencing positive affect, they tend to engage in prosocial behaviour to continue experiencing further positive affect, but only if they perceive it as pleasant (Isen & Simmonds, 1978). Regardless of their differences, all these theories generally suggest that people are motivated to engage in prosocial behaviour if they expect it will result in an affective benefit, either to decrease negative affect or further increase positive affect. If engaging in prosocial behaviour can positively impact our affective state, this may provide intrinsic motivation for people to engage in prosocial behaviours such as sharing.

There are multiple theories about *how* positive affect might motivate increased prosocial behaviour (see Carlson, Charlin, & Miller, 1988 for a review). Carlson et al.

identify the mood maintenance, *focus of attention*, *social outlook*, and *separate processes* theories as those with more empirical support. The focus of attention theory postulates that self-oriented positive affect (as opposed to other-oriented positive affect) increases prosocial behaviour because downward social comparison leads to a sense of privilege which begets greater generosity (Rosenhan, Salovey, & Hargis, 1981). The social outlook theory suggests that positive affect, which highlights the prosocial aspects of society, may increase cooperative behaviour with others (Hornstein, LaKind, Frankel, & Manne, 1975). Finally, the separate processes theory suggests that positive affect leads to increased sharing under conditions when the positive consequences of giving are emphasized, whereas negative affect such as guilt leads to increased sharing when a sense of obligation is emphasized (Cunningham, Steinberg, & Grev, 1980).

Interestingly, these theories postulate that not all forms of positive affect will lead to increased sharing behaviour. Notably, the focus of attention theory indicates that self-oriented positive affect will increase prosocial behaviour, whereas other-oriented positive affect will decrease prosocial behaviour (Rosenhan et al., 1981). This theory suggests that focusing on our own positive affect creates a downward social comparison, which leads to a sense of advantage, whereas focusing on another person's positive affect can create an upward social comparison, which leads to a sense of disadvantage. On the other hand, focusing on our own negative affect leads to a sense of disadvantage that can result in more stinginess, whereas focusing on another person's negative affect leads to a sense of advantage that can result in more generosity (see Barnett, King, and Howard, 1979 for experimental support).

Another competing theory by Andreychik and Lewis (2017) suggests that *both* other-oriented positive and negative empathy can increase prosocial behaviour. However, Andreychik and Lewis’ *empathic approach/avoidance theory* suggests the increased prosocial behaviour that can result from these two types of empathy may be due to different underlying motivations. Specifically, they suggest negative empathy will encourage people to assist others in avoiding further negative outcomes, whereas positive empathy will encourage them to assist others in continuing to approach more positive outcomes. Table 2 below outlines how these various theories predict different types of self-oriented and other-oriented positive and negative affect will impact sharing.

Table 2

Summary of how different theories predict affect will impact sharing

Theory	Self-Oriented Positive Affect	Self-Oriented Negative Affect	Other-Oriented Positive Affect	Other-Oriented Negative Affect
Negative State Relief	Decrease <i>(if follows negative)</i>	Increase		Increase
Hedonic Contingency	Increase		Increase	
Mood Maintenance	Increase <i>(if perceived as pleasant)</i>		Increase <i>(if perceived as pleasant)</i>	
Focus of Attention	Increase	Decrease	Decrease	Increase
Social Outlook			Increase <i>(if prosociality emphasized)</i>	
Separate Processes	Increase <i>(if positives emphasized)</i>			Increase <i>(if obligation emphasized)</i>
Empathic Approach/Avoidance			Increase <i>(approach positive)</i>	Increase <i>(avoid negative)</i>

Table 2 provides a concise summary of the ways that self-oriented and other-oriented positive and negative affect might impact sharing behaviour, based on the various theoretical frameworks outlined above. Although several of these theories are compatible with one another, there are some notable conflicts in their predictions. Specifically, there are inconsistent predictions about how self-oriented positive affect, self-oriented negative affect, and other-oriented positive affect might impact sharing behaviour. The impact of these three affective states on sharing behaviour was investigated in the first two studies in the current program of research. The impact of other-oriented negative affect, which has consistent predictions from the negative state relief (Cialdini et al., 1973), focus of attention (Rosenhan et al., 1981), separate processes (Cunningham et al., 1980), and empathic approach/avoidance (Andreychik and Lewis, 2017) theories, was not addressed in this research program. A recent study by Williams et al. (2014) provides empirical evidence supporting the predictions that other-oriented negative affect increases sharing behaviour in children using the RAT.

Additionally, the current program of research did not include prosocial or antisocial elements when examining other-oriented positive affect, so the social outlook theory (Hornstein et al., 1975) could not be investigated. Similarly, this research program did not examine different consequences of engaging in prosocial behaviour, so the separate processes theory (Cunningham et al., 1980) could not be examined.

In summary, the complex relations between different types of affect and sharing are likely multidirectional. Under certain circumstances, it is possible that multiple theories could work in tandem to help support a positive feedback loop. For example, the focus of attention theory (Rosenhan et al., 1981) could be at play if self-oriented (versus

other-oriented) positive affect increases prosocial behaviour due to a downward social comparison. Then the mood maintenance theory (Isen & Simmonds, 1978) could propagate prosocial behaviour, if the individual who experienced the initial feelings of positive affect chose to engage in more sharing behaviour to further increase their feelings of positive affect. This could create a positive feedback loop, in which self-oriented positive affect increases sharing behaviour, and sharing increases feelings of positive affect, and so on (Aknin et al., 2012a). However, according to the focus of attention theory (Rosenhan et al., 1981), other-oriented positive empathy could interfere with this cycle by decreasing the propensity to engage in prosocial behaviour. Further research is required to understand these relations more fully, especially in children.

Next we provide a summary of relevant literature on the known relations between sharing and positive affect. Most of this work has been conducted with adults, so the adult research is summarized first, before we examine the existing literature in children.

Research on Sharing and Positive Affect in Adults

There is a growing body of research suggesting positive affect may lead to more sharing behaviour in adults, but perhaps only in certain contexts. In support of the focus of attention theory, earlier research by Rosenhan et al. (1981) suggests that young adults exposed to a positive story about themselves spent significantly more time helping with a voluntary tedious task than those in a neutral control condition. However, when they were exposed to the same story about their best friend, they helped even less than those in the control condition. This research provides evidence that self-oriented positive affect may increase prosocial behaviour, whereas other-oriented positive affect may decrease prosocial behaviour.

Further research by Thompson, Cowan, and Rosenhan (1980) found negative affect had the opposite effect, so when it was self-oriented it decreased prosocial behaviour and when it was other-oriented it increased prosocial behaviour. These varied findings may be explained by different underlying motivations for prosocial behaviours across different contexts. Gebauer, Riketta, Broemer, and Maio (2008) suggest negative affect may be related to ‘pressure’-based motives (i.e., pressure to fulfill a sense of duty), whereas positive affect may be linked to ‘pleasure’-based motives for prosocial behaviour (i.e., increased affective benefit). Therefore, when someone experiences self-oriented positive affect, they may engage in more prosocial behaviour to maintain or increase their positive feelings. However, when someone experiences other-oriented negative affect, they may engage in more prosocial behaviour to alleviate a sense of guilt or responsibility. Interestingly, both self-oriented positive affect and other-oriented negative affect could involve downward social comparisons, which might make people feel that they have an affective advantage. This perceived advantage may make people more likely to engage in prosocial behaviours to benefit others. On the other hand, other-oriented positive affect and self-oriented negative affect could have the opposite impact.

Other research by Cunningham et al. (1980) suggests that both self-oriented positive and negative affect can increase prosocial behaviour in adults, but perhaps due to different underlying motivations. They found both self-oriented happiness and guilt increased helping behaviour; however, adults experiencing positive affect responded more to requests focusing on positive aspects of giving to charity (e.g., affective benefits), while those experiencing negative affect responded more to requests focusing on social responsibility. Related work by Cunningham, Shaffer, Barbee, Wolff, and

Kelley (1990) found that adults who experienced a positive affect induction helped more than those who experienced a neutral or negative affect induction, but especially with tasks that had a greater social component than those that did not. On the other hand, Cunningham et al. (1990) found that adults who experienced a negative affect induction helped more on tasks that were more interesting. Overall, these findings suggest adults experiencing negative affect are more likely to help with interesting or pleasurable tasks; whereas, those experiencing positive affect are more likely to help with social tasks.

Notably, Benson and Catt (1978) found that informing adults that sharing would increase their positive affect resulted in greater increases in donations compared to suggesting it was their social responsibility, especially when the charitable cause involved a negative condition beyond the recipient's control (e.g., environmental disaster or hereditary illness). Such pleasure-based motivations are linked to the mood maintenance theory, which suggests positive affect will encourage increased prosocial behaviour with the goal of experiencing even more positive affect (Isen & Simmonds, 1978). Further behavioural and neural evidence suggests that adults' donations to orphaned children were mediated by positive as opposed to negative affect (Genevsky, Västfjäll, Slovic, & Knutson, 2013). It is particularly compelling that such prosocial behaviour was driven by positive affect, since the recipients of the charitable donations were vulnerable children experiencing misfortune, which might typically evoke negative feelings such as sadness or guilt in an observer.

Novel field research by Hauser, Preston, and Stansfield (2014) found adults were more likely to help confederates in both university and hospital settings by holding the door for them if they were expressing positive as opposed to neutral or negative affect.

Conversely, they also found that in a hospital setting, people were equally likely to hold the door for confederates expressing positive, neutral, or negative affect if they were in greater physical need (signaled with a facial bandage). This research suggests that adults prefer to direct prosocial behaviours toward strangers expressing positive affect or those who are in higher need of assistance regardless of their affective state.

Not just the *valence* of the affect, but also the specific *type* of positive emotion may impact adults' proclivity to engage in prosocial behaviour. Previous research with adults suggests certain types of positive affect related to elation and awe predict increased prosocial behaviour, whereas general amusement or happiness may not (Piff, Dietze, Feinberg, Stancato, & Keltner, 2015; Schnall, Roper, & Fessler, 2010). Aknin et al. (2018) suggest certain positive feelings like awe, elevation, and gratitude might lead to a 'broader mindset', which could direct individuals' attention from their personal needs toward other people's needs. Aknin et al. highlight how feelings such as awe may broaden people's worldview and encourage greater prosocial behaviour than amusement alone. Previous research also suggests gratitude (defined as positive affect resulting from an intentional, valuable gift; McCullough, Kilpatrick, Emmons, & Larson, 2001) can increase costly prosocial behaviour, even more than general positive affect (Bartlett & DeSteno, 2006; DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010).

At first glance, these findings seem to be inconsistent with previous research by Rosenhan et al. (1981), who found prosocial behaviour increased after self-oriented positive affect was induced and decreased after other-oriented positive affect was induced. However, it is possible that Rosenhan et al.'s other-oriented positive affect could have inspired jealousy through an upward social comparison, which could have led

to decreased generosity. On the other hand, the other-oriented positive emotions of elation, awe, and especially gratitude may not have involved such a negative social comparison. Therefore, Rosenhan et al.'s (1981) focus of attention theory, which suggests that self-oriented positive affect increases prosocial behaviour and other-oriented positive affect decreases prosocial behaviour, could be expanded. It seems that not just the valence and orientation of the affect, but also the specific positive emotion can differentially impact individuals' subsequent prosocial behaviour.

Although the majority of adult research has focused on investigating if both self-oriented and other-oriented positive affect impact sharing behaviour, there is emerging evidence for a positive feedback loop in which self-oriented positive affect leads to more sharing behaviour and sharing leads to increased positive affect (Aknin et al., 2012a). For example, Konow and Earley (2008) found correlations between greater sharing behaviour in a dictator game and different measures of positive affect. They provided evidence that greater psychological wellbeing may underlie both greater generosity and happiness.

There is a growing body of research which suggests engaging in prosocial behaviour is associated with increases in positive affect in adults (e.g., Aknin et al., 2013a; Aknin et al., 2015a; Aknin & Dunn, 2013; Aknin et al., 2012a; Aknin, Dunn, Whillans, Grant, & Norton, 2013; Aknin, Fleerackers, & Hamlin, 2014; Aknin, Sandstrom, Dunn, & Norton, 2011; Dunn, Aknin, & Norton, 2008; Dunn, Aknin, & Norton, 2014; Geenen, Hohelüchter, Langholf, & Walther, 2014; Martela & Ryan, 2016; Ren & Ye, 2016; Williamson & Clark, 1989; Wiwad & Aknin, 2017; Yinon & Landau, 1987). For example, Dunn et al. (2008) examined the affective benefit of spending money on others versus on oneself from several approaches, including cross-sectional and

longitudinal designs. They found adults who either elected to or were assigned to spend money on others experienced greater positive affect. This research has been replicated cross-culturally, using correlational research across 136 countries and experimental research in Uganda, India, South Africa, and isolated, rural villages in the South Pacific (Aknin et al., 2013a; Aknin et al., 2015a).

In sum, although research findings with adults show some inconsistencies, they generally lend support for a positive feedback loop in which self-oriented positive affect and sharing promote one another in an ongoing cycle (Aknin et al., 2012a). However, other-oriented positive empathy may interfere with this cycle by decreasing subsequent prosocial behaviour (Rosenhan et al., 1981). It is possible that experiencing an affective benefit from engaging in prosocial behaviour may act as an underlying motivation for sharing, and that self-oriented positive affect might encourage greater generosity. Neuroscience research supports behavioural data, as imaging studies have found increases in neural activity in brain areas related to reward-processing when adults make charitable donations (Harbaugh, Mayr, & Burghart, 2007; Hare, Camerer, Knoepfle, & Rangel, 2010).

Research on Sharing and Positive Affect in Children

A great deal of research has investigated children's sharing behaviour and has established that a range of recipient variables can lead to increased sharing, such as identification as a friend, shared interests, or in-group status (Moore, 2009; Sparks et al., 2017). Additionally, recent cross-cultural research with a large sample of 5- to 12-year-olds also found that children's age, cultural background, socioeconomic status, and their socio-cognitive development (including theory of mind and executive functioning skills)

help to explain a significant proportion of their sharing behaviour (Cowell et al., 2017). However, children's gender and different affective processes (such as negative empathy, affective sharing, and components of moral judgment) were *not* related to their sharing behaviour. Cowell and Decety's (2015) research with 3- to 5-year-olds suggests that children's cognitive processes tend to be more predictive of their subsequent prosocial behaviour than their affective processes.

On the other hand, other research suggests that children's affective states can impact their sharing behaviour. Research by Moore, Underwood, and Rosenhan (1973) and Underwood, Froming, and Moore (1977) found children aged 7 to 8 years and 6 to 12 years donated more money to other children after reflecting on their own positive experiences and shared less after reflecting on their own negative experiences. Similarly, research by Rosenhan, Underwood, and Moore (1974) found children in Grades 2 and 3 (approximately 7 to 9 years of age) who thought about positive and negative experiences took more candies for themselves than those in a neutral control condition. However, only those who reflected on positive experiences shared more money with other children. This research suggests both positive and negative self-oriented affective states can increase self-indulgence but only positive self-oriented affect increases generosity.

To address the impact of both self-oriented and other-oriented positive and negative affect on sharing behaviour in children, a key study by Barnett et al. (1979) had children between 7 and 12 years of age think about either their own or another child's positive, neutral, and negative experiences. They found that both the valence of the affect (i.e., positive, neutral, or negative) and the orientation of the affect (i.e., self-oriented or other-oriented) impacted children's allocation of resources. Specifically, children who

discussed another child's negative experience shared more than children who discussed their own negative experience, but there were no differences in sharing for children who discussed either their own or another child's positive or neutral experiences. Barnett et al. postulated that children's differential response to negative affect that is either other-oriented or self-oriented may be related to feelings of either empathic concern for others versus self-compassion. Although not all Barnett et al.'s comparisons were statistically significant, these findings are generally consistent with adult research which suggests self-oriented positive affect and other-oriented negative affect increase prosocial behaviour, whereas self-oriented negative affect and other-oriented positive affect decrease prosocial behaviour (Rosenhan et al., 1981; Thompson et al., 1980). In general, these findings are also consistent with the focus of attention theory, which suggests that positive affect oriented toward oneself might increase sharing, whereas positive empathy oriented toward another person might decrease sharing, through differential social comparisons (Rosenhan et al., 1981).

Much of the previous research with children has focused on the impact of positive affect on sharing behaviour. However, a recent child study investigated the impact of sharing on positive affect. Specifically, Aknin et al. (2012b) found 2-year-olds showed higher rates of positive facial affect, as rated by adult coders, when sharing resources with others than when receiving resources for themselves. Additionally, children exhibited increased positive affect when they shared with a personal cost, as opposed to sharing with no cost to themselves. This finding was replicated with 2- to 5-year-old children from small, isolated, rural villages in the South Pacific (Aknin et al., 2015a).

Although there is a growing body of literature examining the complex relations between positive affect and sharing in early childhood, there is a paucity of research on how both self-oriented positive affect and other-oriented positive empathy might impact children's sharing behaviour, and if children experience the same affective benefits of sharing as adults.

Current Research Program

The current program of research explored multiple relations between positive affect and sharing. We investigated how both other-oriented positive empathy and self-oriented positive affect might impact children's subsequent sharing behaviour, and if there is an affective benefit associated with sharing in childhood. The objective of this dissertation was to conduct a series of three experimental studies to explore the interrelations between positive affect and sharing behaviour in typically-developing early school-aged children.

This program of research focused on 5- and 6-year-old children in order to first examine relations between positive affect and sharing in this circumscribed age range before extending this research to a broader developmental sample. We decided to start our investigations with 5- and 6-year-olds because by 4 years of age, most children develop 'theory of mind' (e.g., Wimmer & Perner, 1983), and can demonstrate the capacity to reason about another individual's thoughts and feelings. We thought this ability could impact children's ability to reliably rate their own and other children's emotions. This assumption was based on previous work by Williams et al. (2014), who found that 5- and 6-year-olds could rate their own and another child's neutral or negative affect, and that children's self-affect ratings were correlated with their other-affect

ratings. On the other hand, 3-year-olds' self-affect ratings were not significantly related to their other-affect ratings, suggesting their own affect may not be impacted by the affect induction like the older children. Previous research also suggests younger 3- and 4-year-old children tend to behave more selfishly, whereas older 7- and 8-year-old children tend to behave more rigidly according to norms of fairness (Fehr et al., 2008). We expected that this middle 5- and 6-year-old age-group would show more flexibility in their sharing behaviour and their resource allocations might be more sensitive to experimental manipulations.

Figure 1 below provides a visual depiction of the relations between positive affect and sharing behaviour that were explored in the current program of research. We wanted to examine how both other-oriented and self-oriented positive affect impacted children's sharing behaviour, and how engaging in sharing impacted children's affect. We included an examination of the impact of both other-oriented positive empathy and self-oriented positive affect on children's sharing behaviour, because previous research with both children and adults suggests self-oriented and other-oriented positive affect may differentially impact subsequent prosocial behaviour (Barnett et al., 1979; Rosenhan et al., 1981; Thompson et al., 1980).

We investigated the relations between positive affect and sharing from multiple perspectives, in order to address the following three primary research questions: (1) How does other-oriented positive empathy impact sharing behaviour?; (2) How does self-oriented positive affect impact sharing behaviour?; and (3) How does sharing impact children's positive affect? See Figure 1 below for a visual model of the potential relations between these variables.

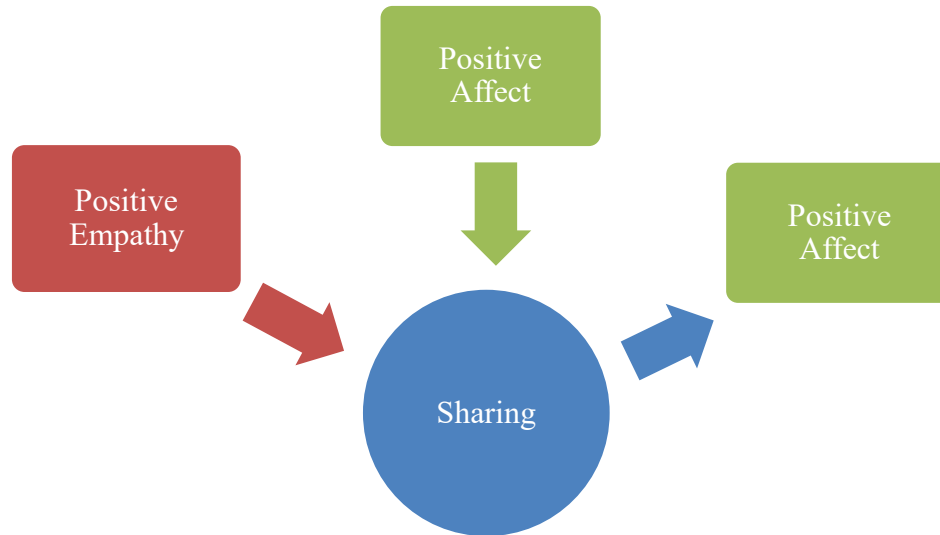


Figure 1. Model of potential relations between positive affect and sharing behaviour.

Each of these three research questions was addressed, in turn, in the three studies that are outlined below. We thought an examination of these three different relations would allow for a comprehensive view of how children’s experiences of positive affect and sharing behaviour might be linked. To gain a broader view of these relations, Study 1 first examined how observing feelings of positive affect in another child might impact children’s sharing behaviour. Recent empirical evidence suggests ‘negative empathy’, or the sharing of negative affect with another person, can increase children’s sharing behaviour (Williams et al., 2014). However, it remains unclear how other-oriented positive empathy, or the sharing of positive affect with another person, impacts children’s sharing behaviour. Interestingly, Telle and Pfister (2016) refer to the relation between positive empathy and prosocial behaviour as a ‘neglected link’ because so much of the literature has focused on negative empathy, although most definitions of empathy include all emotions. Therefore, Study 1 sought to examine the poorly understood relation between positive empathy and sharing in early childhood.

Recall that the focus of attention theory suggests not all forms of positive affect will lead to increased sharing behaviour (Rosenhan et al., 1981). As outlined above, previous research with both children and adults suggests other-oriented positive affect can decrease prosocial behaviour, whereas self-oriented positive affect can increase prosocial behaviour (Barnett et al., 1979; Moore et al., 1973; Rosenhan et al., 1981; Rosenhan et al., 1974; Thompson et al., 1980; Underwood et al., 1977). Based on these findings, it was thought that positive empathy oriented toward another person might decrease sharing, whereas positive affect oriented toward oneself might increase sharing in children. The aim of Study 2 was to extend our line of inquiry by investigating how self-oriented positive affect, as a result of obtaining a desired resource, might impact children's sharing behaviour.

Finally, Study 3 examined how engaging in sharing behaviour might impact children's own affective state. Although there is accumulating evidence that mandatory sharing may lead to increased positive affect in children (Aknin et al., 2015a; Aknin et al., 2012b), no research to date has examined how free choices about sharing might impact children's affect. This seems particularly important because the voluntary nature of sharing is central to the definition of prosocial behaviour (Eisenberg et al., 2006). Study 3 examined if there was an affective benefit to sharing by comparing children's self-reported and facial displays of affect when they engaged in active sharing, versus control conditions in which they observed sharing, or simply received rewards for themselves.

Together, these three studies provide a comprehensive investigation into the primary relations between positive affect and sharing behaviour in children. This research was conducted to provide insight into the potential motivations underlying the important prosocial behaviour of sharing in childhood. The overarching objective of this research program was to examine potential relations between positive affect and sharing, because it is believed that positive affect may help to motivate and reinforce sharing behaviour in childhood (Aknin et al., 2012a; Pfaff & Sherman, 2015).

CHAPTER 2: STUDY 1: DOES OTHER-ORIENTED POSITIVE EMPATHY IMPACT CHILDREN'S SHARING BEHAVIOUR?

Positive affect may provide intrinsic motivation to engage in prosocial behaviour (Aknin et al., 2012a); however, not just the valence but also the orientation of the affect might impact sharing behaviour. The focus of attention theory postulates that self-oriented positive affect increases prosocial behaviour, whereas other-oriented positive affect decreases prosocial behaviour (Rosenhan et al., 1981). However, the hedonic contingency (Wegener & Petty, 1994), mood maintenance (Isen & Simmonds, 1978), and empathic approach/avoidance (Andreychik & Lewis, 2017) theories predict that other-oriented positive affect will increase sharing behaviour (see Table 2 for a summary). Study 1 explored how other-oriented positive affect might impact children's sharing behaviour. To examine the relation between other-oriented positive affect and prosocial behaviour, in Study 1, we focused on 'positive empathy', or the sharing of positive emotion with another person.

Telle and Pfister (2016) provide a review of empathy since that term was first coined over 100 years ago, and highlight how there has been no clear consensus in the literature about the definition of empathy. A recent four-part definition of empathy by de Vignemont and Singer (2006) suggests individuals may experience empathy if (1) they have an affective reaction, (2) that reaction is generated by reflecting on someone else's affect, (3) their affect corresponds with the other person's affect, and (4) they are aware their affect is caused by that other person. This definition of empathy is quite broad and could comprise any type of affective response, including emotions with positive or negative valence.

Although definitions of empathy may be open to any affective state, the overwhelming majority of research has focused on the sharing of negative emotion, or ‘negative empathy’. For example, much research has examined the sharing of sadness, fear, or anger (e.g., Eisenberg, McCreath, & Ahn, 1988; Malti, Gummerum, Keller, & Buchmann, 2009; Strayer & Roberts, 2004; Vaish, Carpenter, & Tomasello, 2009). Previous research has generally found a positive relation between negative empathy and prosocial behaviour (e.g., Batson et al., 1997; Eisenberg et al., 1989; Miller, Nuselovici, & Hastings, 2016; Stocks, Lishner, & Decker, 2009; Stürmer, Snyder, Kropp, & Siem, 2006; Williams et al., 2014). Specifically, research with children indicates that 4- to 6-year-olds show certain physiological markers (i.e., a flexible pattern of respiratory sinus arrhythmia) in response to negative empathy-inducing videos, and these markers were associated with their self-affect ratings and with greater prosocial behaviour at the time and two years later (Miller et al., 2016).

Other experimental research conducted by Williams et al. (2014) provided preliminary evidence that negative empathy increases children’s sharing behaviour. Children aged 5 and 6 years were randomly assigned to watch an empathy-inducing video of a girl named Jenny expressing sadness as she made signs to find her lost dog, or a neutral video of Jenny expressing little emotion as she made signs for a yard sale. Children who watched the empathy-inducing video rated their own affective state and Jenny’s affective state more negatively than those who watched the neutral video, which indicates the video successfully evoked negative empathy. Children who watched the negative empathy-inducing video also shared more stickers with Jenny than those who watched the neutral video. Interestingly, correlational analyses conducted by Williams et

al. suggested children's sharing behaviour was driven by other-affect ratings as opposed to self-affect ratings. Similarly, using trait as opposed to state measures in adults, FeldmanHall, Dalgleish, Evans, and Mobbs (2015) found prosocial behaviour is likely driven by empathic concern for another person, as opposed to personal distress. Like Williams et al., their results suggest that cognitive as opposed to affective components of negative empathy may lead to increased prosocial behaviour. However, little is known about how the sharing of positive emotion may impact children's sharing behaviour.

Telle and Pfister (2016) refer to the relation between positive empathy and prosocial behaviour as a 'neglected link' because the vast majority of the literature has focused on negative empathy, although most definitions of empathy include all emotions. This neglect is particularly surprising since adults tend to show more empathy for another person's positive than negative emotions. Specifically, Duan (2000) found adults showed more empathy for happiness, relief, pride, and also sadness versus other negative emotions such as anger or shame. Similarly, previous experimental research with 4-, 6-, and 7-year-old children suggests they experience positive empathy for happiness even more frequently than negative empathy for sadness, anger, and fear (e.g., Feshbach & Roe, 1968; Levine & Hoffman, 1975). Additionally, naturalistic observations of preschool children indicate they tend to exhibit more positive affect and show greater empathy for happiness than other emotions such as sadness, anger, or pain (Strayer, 1980). Positive empathy is an important social emotion that may provide a means of increasing well-being and strengthening social relationships (Morelli, Lieberman, & Zaki, 2015; Rameson & Lieberman, 2009).

A previous meta-analysis, including research with both children and adults, did *not* find a significant relation between different forms of empathy and prosocial behaviour; however, they suggested that these relations are more reliable in adults than in children (Underwood & Moore, 1982). More recent reviews have demonstrated clearer positive relations between different forms of empathy and prosocial behaviours such as sharing across the lifespan (Eisenberg, 2000; Eisenberg & Miller, 1987). Decety and Cowell (2014) highlight that relations between empathy and prosocial behaviour are complex and that researchers should indicate the specific type of empathy they are referring to when making claims about relations between empathy and prosocial behaviour.

Although some research suggests that *both* positive and negative empathy may lead to increased prosocial behaviour, it is possible that this may be due to unique underlying motivations. Telle and Pfister (2016) suggest that if altruism contributes to the link between negative empathy and prosocial behaviour, then egoism likely contributes to the relation between positive empathy and prosocial behaviour, since the recipient might have less need so the behaviour is likely driven by benefits for the donor. Similarly, Andreychik and Lewis (2017) suggest negative empathy may push people to ‘avoid negativity’, whereas positive empathy may encourage them to ‘approach positivity’. It is thought that positive empathy may increase individuals’ tendencies to engage in prosocial behaviour because they want to prolong their experience of positive affect, and experience greater internally-driven positive affect, versus vicarious positive empathy alone (see Telle & Pfister, 2016 for a review).

Telle and Pfister argue that positive empathy induces feelings of positive affect that are similar to positive feelings due to other causes; however, the individual is aware that their positive affect stems from an external versus internal source. Telle and Pfister cite research by Prinz (2011) suggesting externally generated positive empathy is likely less intense than internally generated positive affect. Based on this model, it is possible that an awareness that this lower-intensity positive affect is other-oriented and externally derived might encourage even more prosocial behaviour than other forms of self-oriented positive affect, in order to increase a sense of internally-driven positive affect.

There is some emerging research with adults suggesting positive empathy may lead to increased prosocial behaviour. Correlational research suggests adults who show greater responses to positive empathy through neural activity, are more likely to engage in prosocial behaviour in their daily lives (Morelli, Rameson, & Lieberman, 2014), perhaps because they find such behaviour more intrinsically rewarding. Recent experimental research suggests adults will engage in prosocial behaviour and help others experiencing positive affect (Telle & Pfister, 2012; Vrugt & Vet, 2009). Additionally, adults who simply observe positive affect in one person show increased helping behaviour toward a different person (Guéguen & de Gail, 2003). Similarly, Andreychik and Migliaccio (2015) found that in adults, both positive and negative empathy resulted in greater helping of people in need; however, only positive empathy led to more helping of strangers and partners. It is possible that this is due to a desire to affiliate with others who show positive affect, as they may be perceived as more socially desirable.

Field research by Hauser et al. (2014) found adults were more likely to help confederates expressing positive as opposed to neutral or negative affect, but they were equally likely to help confederates expressing positive, neutral, or negative affect if they were in greater physical need. This research also suggests adults may direct more prosocial behaviour toward strangers expressing positive affect, who they may view as more socially beneficial, but they will also help strangers who are in higher need of assistance regardless of their affective state. In other research, adults viewed photographs of young women and predicted that it would be more rewarding to interact with those who displayed more positive affect (Harker & Keltner, 2001). This research helps to reinforce the notion that adults may engage in more prosocial behaviour with those expressing positive affect if they view such individuals as more socially desirable and believe it will be more rewarding to interact with them.

Much of these previous research findings are inconsistent with the focus of attention theory and with empirical research by Rosenhan et al. (1981), who found that self-oriented positive affect increased prosocial behaviour, whereas other-oriented positive affect decreased prosocial behaviour, compared to a neutral control. Adults in both the self- and other-oriented positive affect conditions rated their self-affect more positively than those in the neutral control condition. Additionally, the stories that they wrote continuing the positive narrative they had heard (from either their own or the other person's perspective), were also rated more positively by an external rater than those in the neutral control condition. These findings suggest that although adults in the self-oriented and other-oriented conditions rated their self-affect just as positively and their subsequent narratives about themselves or the other person were just as positive, they still

engaged in far greater helping behaviour when their positive affect was self-oriented, and less when it was other-oriented. More recent research by Telle and Pfister (2012) found that although adults felt empathy for both characters in positive and negative situations when they displayed congruent affect that matched the situation, overall they shared less resources with those in positive versus negative situations. Based on these research findings, which are inconsistent with other evidence suggesting positive empathy can lead to increased prosocial behaviour in adults, it is unclear how positive empathy might impact children's sharing behaviour.

There is little research in children to shed light on these mixed research findings; therefore, relations between positive empathy and prosocial behaviour in childhood remain unclear. Recall that previous experimental research by Barnett et al. (1979) found children shared more when thinking about another child's negative experience, as opposed to another child's neutral or positive experiences. It is important to note that Barnett et al. did *not* find a significant difference in self-reported affect between the positive and neutral conditions, although children rated their affect significantly more negatively in the negative condition. This may explain why they did not find a significant difference in sharing behaviour between the neutral and positive conditions for either the self-oriented or other-oriented conditions. Additionally, Barnett et al. had children imagine another child in positive, neutral, or negative scenarios, so the other child's experiences and expressed emotions could not be controlled or standardized across participants. To address this limitation, we thought it was important for all participants to be exposed to the same stimuli to evoke positive empathy.

Sallquist, Eisenberg, Spinrad, Egguma, and Gaertner (2009) conceptualize positive empathy as an experience of positive affect that results from observing another person's positive affect. In Study 1, our simple definition of positive empathy included both the understanding and sharing of another person's positive emotions. Empirically, we assessed children's cognitive understanding of the other person's affect, as well as their own affective state, using both other-ratings and self-ratings of affect. This operational definition of positive empathy allowed us to measure both the cognitive and affective elements of children's empathic experience, as these are central to most definitions of empathy (see Decety & Jackson, 2004 for a review).

In Study 1, in order to investigate how positive empathy might impact children's sharing behaviour, we had children first watch a video of another child experiencing either positive or neutral affect. These methods were modeled after the work of Williams et al. (2014), but instead of focusing on the impact of negative empathy on children's subsequent sharing behaviour, we examined how positive empathy impacted children's sharing. Use of this video procedure provided a standardized positive empathy induction for all participants. We then measured children's affect ratings for themselves and the character, and examined their facial expressions of affect. We examined children's facial expressions of affect because Light et al. (2015) found adults' facial expressions of both positive and negative empathy (i.e., smiling and frowning) in response to videos were associated with increased sharing behaviour. Children then engaged in a RAT to examine if observing another child's positive versus neutral affect impacted their sharing behaviour with that child. We then also used correlational analyses to examine if children's affect ratings and their sharing behaviour were related to one another.

Study 1 used a mixed between- and within-subjects design, so that all children experienced both positive and neutral conditions. The order of the conditions was counterbalanced for methodological reasons so that we could double our sample size and examine the impact of sharing within as opposed to only between participants. However, we were aware that the order in which the conditions were presented might impact children's sharing behaviour, and we expected that the manipulation might be less effective the second time around. Therefore, we examined children's performance on the sharing task by condition (positive vs. neutral), order (positive then neutral vs. neutral then positive), and sharing type (cost vs. no-cost sharing trials).

Study 1 Objective and Hypotheses

The objective of Study 1 was to investigate how positive empathy might impact sharing behaviour in early school-aged children. We compared self-reported ratings of affect and sharing behaviour between children who viewed videos of a child character in positive and neutral situations. We measured differences in children's affect ratings for themselves and the character, along with their subsequent sharing behaviour with the character.

Although there are mixed findings in the literature, our primary hypothesis was based on the focus of attention theory (Rosenhan et al., 1981) and on research with both children and adults, which suggests self-oriented positive affect and other-oriented negative affect can increase prosocial behaviour, whereas self-oriented negative affect and other-oriented positive affect can decrease prosocial behaviour (Barnett et al., 1979; Rosenhan et al., 1981; Thompson et al., 1980). Therefore, we hypothesized that children's self- and other-affect ratings would be more positive after watching a video

about a happy versus neutral child, but that other-oriented positive affect would decrease their sharing behaviour in comparison to a neutral control.

Additionally, based on previous research (e.g., Moore, 2009; Sparks et al., 2017), we also expected children to share more in the no-cost versus the cost sharing trials. Finally, based on the adult literature (Rosenhan et al., 1981), we expected that children's other-oriented FAS ratings and their sharing behaviour would be negatively related, but we had no clear predictions about how their self-oriented FAS ratings and their sharing behaviour might be related.

Method

Participants

Children were recruited from public elementary schools in rural Nova Scotia, and they were predominantly Caucasian and most spoke English as their first language. All participants were fluent in English. A total of 80 typically-developing 5- and 6-year-old children took part in this study, with 40 children (19 boys and 21 girls), aged 5 years, 1 month to 6 years, 11 months ($M = 6$ years, 2 months, $SD = 6$ months) who first watched the positive video, and 40 children (18 boys and 22 girls), aged 5 years, 2 months to 6 years, 11 months ($M = 6$ years, 1 month, $SD = 7$ months) who first watched the neutral video.

Based on the criteria by Cohen (1988), a statistical power analysis was performed for sample size estimation for Study 1, using *G*Power 3.1* software (Faul, Erdfelder, Lang, & Buchner, 2007). This power analysis was based on data from the study by Williams et al. (2014), which compared the sharing behaviour of 25 children who watched a neutral video of another child to 25 children who watched a negative video of

another child. The effect size for the sharing data in this study was $d = .57$, which is considered to be a large effect using Cohen's criteria. With an alpha = .05 and power = 0.80, the projected sample size needed with this effect size is approximately $N = 39$ per group for simple comparisons between groups. Thus, our sample size of $N = 40$ per group should have been adequate for the main objective of this study.

Procedure

Children were seen individually in a school setting. After parental signed consent was obtained, children were invited to participate in the study. Children who assented to participate were seen individually in a quiet space in their school.

(1) Positive or Neutral Video. Modeled after previous research on negative empathy by Williams et al. (2014), two videos were created to induce either positive or neutral affect. Each video began with an introduction to the protagonist, 'Meghan', and her teddy bear. In the positive video, Meghan then had a birthday party for her teddy bear. She exhibited positive affect and narrated the video in a positive tone. In the neutral video, Meghan then walked around the backyard with her teddy bear. She exhibited neutral affect and narrated the video in a neutral tone. Both videos were 1:40 minutes in length, with similar scripts and scene sequences. Participants were randomly assigned to one of two video orders, which were counterbalanced so that half of the children saw the positive video first and half saw the neutral video first.

(2) Other- and Self-Affect Ratings (FAS). Children were asked to make separate other- and self-affect ratings of both the character's affect in the positive and neutral videos, and of their own affect after watching the videos. Children made these other- and self-affect ratings using a facial affect scale (FAS), adapted from McGrath et al. (1985).

The FAS is a nine-point scale, which includes a spectrum of facial expressions from positive to negative, with a neutral face in the middle (see Figure 2 below). The most negative face on the right was assigned a score of 0 and the most positive face on the left was assigned a score of 8, with the neutral face in the middle assigned a score of 4.

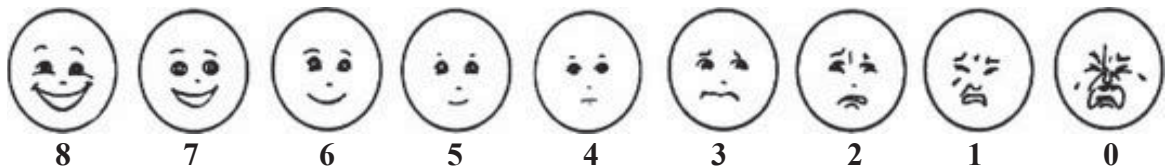


Figure 2. Facial Affect Scale (FAS; modified from McGrath et al., 1985).

(3) Resource-Allocation Task (RAT). Children were presented with prepared line drawings representing themselves and the child from the video, with their names written above. The experimenter showed each drawing and asked the child to identify the person. If children misidentified any of the drawings, the experimenter told them who it was. The drawings were used to provide a representation of the two sharing partners and act as a memory aid (Bloom & Markson, 1998; Gross & Hayne, 1999).

Children then participated in a RAT, in which they could decide how they wanted to distribute stickers between themselves and their sharing partner. Children were first presented with a practice trial to ensure they understood the choice task. In the practice trial, children decided between one sticker for themselves versus two stickers for themselves¹. Children were encouraged to make a single choice to practice for the RAT, but there was no consequence to selecting either one or two stickers. Children then completed the RAT, which consisted of a series of choices, including trials in which they

¹ Note. 65/80 children (81%) chose 2 stickers.

could share *with* a personal cost (i.e., the child needed to give up a sticker for themselves in order to share), and trials in which they could share *without* a personal cost (i.e., the child did not need to give up a sticker for themselves in order to share).

Cost trials involved a choice between 2 stickers for themselves and no stickers for their partner, versus 1 sticker for themselves and 1 sticker for their partner. No-cost trials involved a choice between 1 sticker for themselves and no sticker for their partner, versus 1 sticker for themselves and 1 sticker for their partner. Participants were presented with a total of 16 trials per condition, with 8 cost trials and 8 no-cost trials, randomly counterbalanced for order of presentation (i.e., with the prosocial or non-prosocial option first). Figure 3 provides an illustration of the cost and no-cost RAT trials used in Study 1.

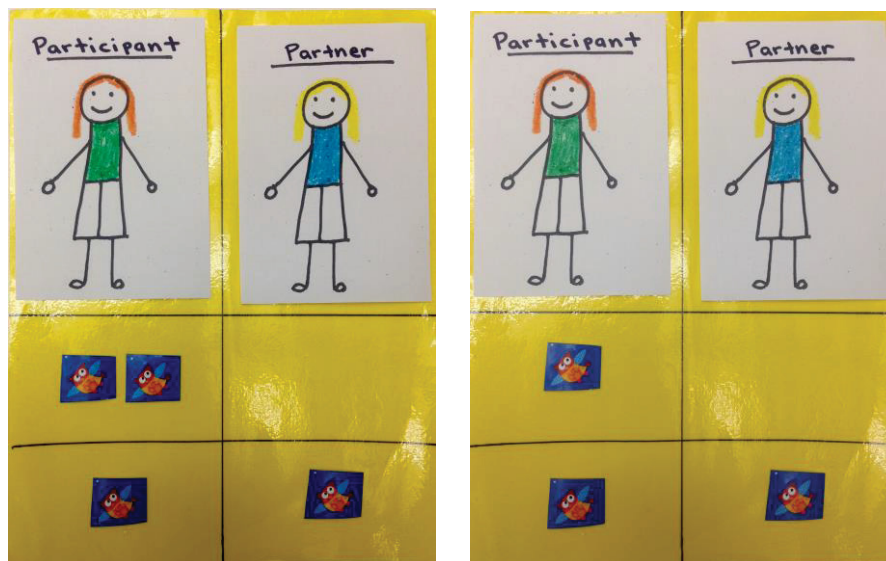


Figure 3. Example of RAT used in Study 1. The image on the left is an example of a cost trial, in which participants chose between 2 stickers for themselves and 0 for their partner versus 1 sticker for themselves and 1 for their partner. The image on the right is an example of a no-cost trial, in which participants chose between 1 sticker for themselves and 0 for the partner versus 1 sticker for themselves and 1 for their partner.

(4) Repetition with Other Condition. Children were given a break and coloured a picture as a distractor task. The length of the break for children in the positive first order ranged from 1 minute, 56 seconds to 5 minutes, 10 seconds ($M = 3$ minutes, 18 seconds; $SD = 53$ seconds). The length of the break for the neutral first order ranged from 1 minute, 23 seconds to 4 minutes, 59 seconds ($M = 3$ minutes, 7 seconds; $SD = 41$ seconds). After the break, the methods described above were repeated in a within-subjects fashion, so children saw the other positive or neutral video and did another RAT.

Analytic Plan

Data Scoring. Children made self-affect ratings and other-affect ratings for the character after each video. Each face on the FAS was assigned a numerical value between 0 and 8. Additionally, based on their performance on the 16 trials of the RAT, participants were given a score out of 16. Children received a score of ‘1’ each time they chose to share (i.e., selected 1 sticker for themselves and 1 for their partner), and they were given a score of ‘0’ each time they chose not to share (i.e., selected either 1 or 2 stickers for themselves and 0 for their partner). The primary measure of interest was the number of stickers children shared during the RAT.

Data Checking. The experimenter recorded all responses to the FAS and RAT during the study session. Study sessions were video recorded to allow for verification of children’s responses on the RAT (70/80 parents provided consent to videotape). To ensure reliability, a secondary coder blind to the study hypotheses, watched all video-recorded trials and scored the responses on the RAT. In the few cases in which the primary experimenter and secondary coder disagreed (6/2240 instances), a third coder blind to the study hypotheses re-scored the RAT trial to make the final decision.

Results

Assumptions Check

All assumptions of the Analysis of Variance (ANOVA) were checked for both the affect and sharing data for Study 1. As we expected based on the experimental manipulations, children's own and other affect ratings were positively skewed for both the positive and neutral conditions in both Orders 1 and 2 (all Kolmogorov-Smirnov test p 's < .05). We tried to transform the data using square and log transformations and data inversion, as suggested by Tabachnick and Fidell (2007) for moderate, substantial, and severe positive skewness, but this did not make the data normally distributed.² Levene's test based on the mean suggested the assumption of homogeneity of variance was satisfied for the self-affect ratings [$F(3, 156) = 1.463, p = .227$] but not for the other affect ratings [$F(3, 156) = 17.915, p < .001$]. It is also important to note that children's facial displays of affect were coded using an ordinal as opposed to an interval scale. Therefore, results of the ANOVA should be interpreted with caution; although nonparametric statistics reported below resulted in the same findings.

The sharing data were also not normally distributed, as indicated by a visual inspection of histograms and the Kolmogorov-Smirnov test when the data were broken down by order, condition, and sharing type (all p 's < .05). There were ceiling effects for the no-cost sharing data since children had no deterrent to share with their partner when there was no cost to do so. Interestingly, there were both ceiling and floor effects for cost

² It is important to note that most variables in psychological research are not truly continuous and they are often not normally distributed (Grayson, 2004). Grayson cautions that transforming data can sometimes have unintended empirical or scientific implications, since the transformed scores will lose their original empirical meaning.

sharing data. Some children showed ceiling effects in which they shared every time regardless of trial-type, whereas other children shared in the no-cost trials but did not share in the cost trials, which may have contributed to the floor effect. For these conceptual reasons, we did not expect the sharing data to be normally distributed. We tried to transform the data using square and log transformations and data inversion, as suggested by Tabachnick and Fidell (2007) for moderate, substantial, and severe positive skewness, but this did not make the data normally distributed. Levene's test based on the mean suggested the assumption of homogeneity of variance was satisfied for the sharing data [$F(1, 318) = 0.154, p = .695$]. In sum, results of the ANOVA should be interpreted with caution, although nonparametric statistics reported below resulted in similar findings.

Affect Ratings (FAS) for Other and Self³

To ensure the experimental manipulation was successful, a 2 x 2 x 2 mixed ANOVA was conducted to analyze the affect data based on three 2-level variables. The two within-subjects variables were condition (i.e., positive vs. neutral) and person (i.e., other vs. self). The between-subjects variable was order (i.e., the condition participants experienced first vs. second in the counterbalanced design). This analysis helped us ensure there were significant differences in affect between the FAS ratings for the positive and neutral conditions.

³ *Note.* No affect coding was conducted to verify if children's facial expressions differed between conditions, because pilot coding of 20 randomly selected videos revealed minimal variation in children's facial expressions over time, with most children holding a static neutral expression during the duration of the video watching. Such a rating does not allow for any meaningful analyses, but this pilot coding suggests children demonstrated minimal variability in their expressions of emotion and the neutral and positive videos were not successful in inducing positive facial displays (i.e., smiling or laughing).

As expected, the 2 x 2 x 2 mixed ANOVA revealed a significant main effect of condition [$F(1, 78) = 38.151, p < .001, \eta_p^2 = .328$], in which children made higher affect ratings in the positive as opposed to neutral condition. There was no main effect of person [$F(1, 78) = 0.281, p = .597, \eta_p^2 = .004$] or order [$F(1, 78) = 0.095, p = .759, \eta_p^2 = .001$]. There was no significant two-way interaction between condition and order [$F(1, 78) = 1.308, p = .256, \eta_p^2 = .016$], but there was a significant two-way interaction between condition and person [$F(1, 78) = 38.863, p < .001, \eta_p^2 = .333$], and a significant two-way interaction between person and order [$F(1, 78) = 16.132, p < .001, \eta_p^2 = .171$].

However, these two-way interactions were subsumed under a significant three-way interaction between condition, person, and order [$F(1, 78) = 11.995, p < .001, \eta_p^2 = .133$]. Therefore, the data were broken down by condition. In the positive condition there was a main effect of person [$F(1, 78) = 20.283, p < .001, \eta_p^2 = .206$] but no interaction between person and order [$F(1, 78) = 2.096, p = .152, \eta_p^2 = .026$]. Conversely, in the neutral condition there was a main effect of person [$F(1, 78) = 12.315, p < .001, \eta_p^2 = .136$] and an interaction between person and order [$F(1, 78) = 19.462, p < .001, \eta_p^2 = .200$]. A visual examination of the data in Figure 4 below suggests that in Order 1, when children experienced the neutral condition second, this created a clear divide between their self and other ratings, because they viewed the other child as having significantly more negative affect. See Figures 4 and 5 for a visual summary of the mean affect ratings by Order 1 and 2, respectively.

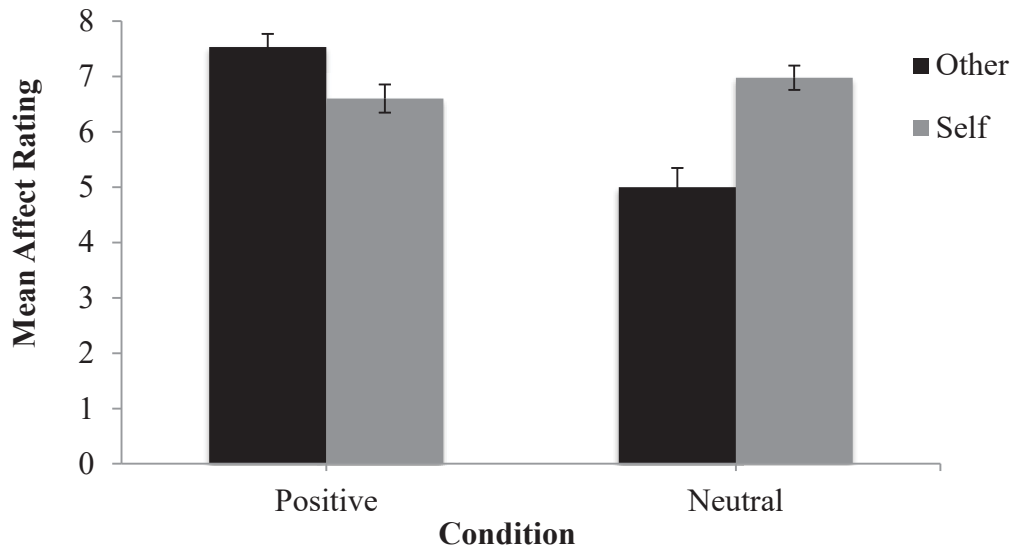


Figure 4. Mean affect ratings by condition and person for Order 1, in which children watched the positive then neutral video. Error bars represent standard error of the mean.

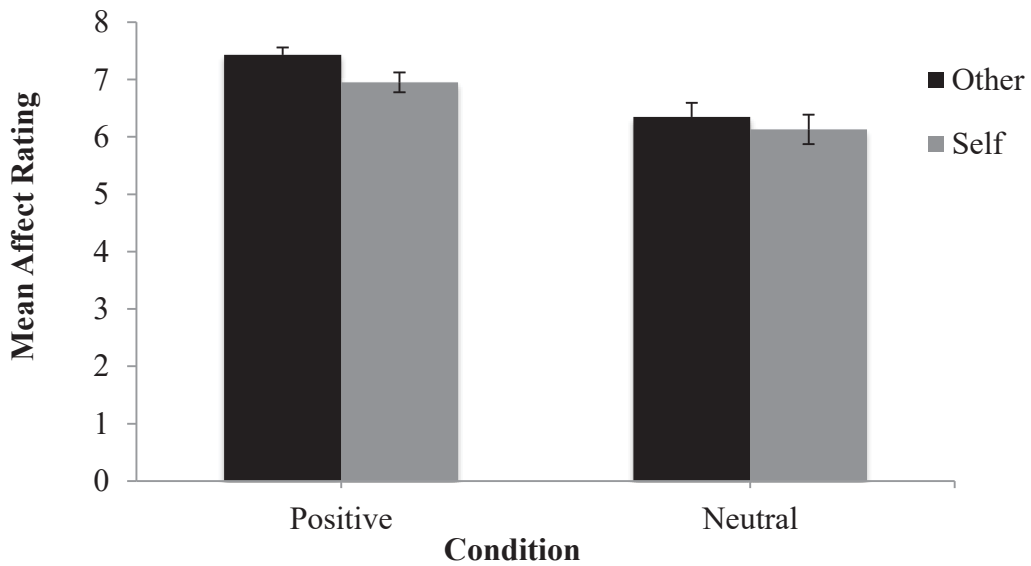


Figure 5. Mean affect ratings by condition and person for Order 2, in which children watched the neutral then positive video. Error bars represent standard error of the mean.

Sharing (RAT) Data

A 2 x 2 x 2 mixed ANOVA was conducted to analyze the RAT data based on three 2-level variables. The two within-subjects variables were condition (i.e., positive vs. neutral) and sharing type (i.e., cost vs. no-cost), and the between-subjects variable was order (i.e., positive then neutral vs. neutral then positive). Contrary to hypotheses, there was no significant main effect of condition [$F(1, 78) = 0.113, p = .738, \eta_p^2 = .001$]. As expected, there was a significant main effect of trial-type [$F(1, 78) = 137.213, p < .001, \eta_p^2 = .638$], in which children shared more when there was no cost to themselves. There was no significant main effect of order [$F(1, 78) = 0.002, p = .913, \eta_p^2 = .001$].

There was no significant two-way interaction between condition and order [$F(1, 78) = 1.572, p = .214, \eta_p^2 = .020$], suggesting children responded similarly to the positive and neutral conditions regardless of the order. There was no significant two-way interaction between condition and trial-type [$F(1, 78) = .012, p = .913, \eta_p^2 < .001$], suggesting children responded similarly to cost and no-cost trials regardless of condition. Similarly, there was no significant two-way interaction between trial-type and order [$F(1, 78) = .001, p = .976, \eta_p^2 < .001$], suggesting children responded similarly to cost and no-cost trials regardless of the order.

Finally, there was an unexpected significant three-way interaction between condition, trial-type, and order [$F(1, 78) = 7.846, p = .006, \eta_p^2 = .091$]⁴. To examine this

⁴ *Note.* For Study 1, given the significant interactions involving order for children's affect ratings plus the significant three-way interaction involving condition, trial-type, and order for the sharing data, a mixed 2 x 2 ANOVA (examining condition and sharing type) using only the RAT data for the first condition was conducted. This analysis compared only children who experienced the positive condition first to children who experienced the neutral condition first. The results continued to reveal no main effect of condition [$F(1, 78) = 1.209, p = .275, \eta_p^2 = .015$], no interaction between condition and trial-type [$F(1,$

complex interaction, the data were divided by the between-subjects variable of order and two 2 x 2 within-subjects ANOVAs were conducted. In Order 1 (i.e., positive condition first), there was a significant condition by trial-type two-way interaction [$F(1, 78) = 5.080, p = .030, \eta_p^2 = .115$]. However, in Order 2 (i.e., neutral condition first), there was not a significant condition by trial-type two-way interaction [$F(1, 78) = 3.291, p = .077, \eta_p^2 = .078$]. Paired samples t -tests revealed that in both Orders 1 and 2, there were significant differences between cost and no-cost trials in both the positive and neutral conditions (all p 's < .001). Additionally, in both Orders 1 and 2, there were *not* significant differences between the positive and neutral conditions across either cost or no-cost sharing trials. Specifically, there were no significant differences between positive and neutral conditions across the no-cost sharing trials in Order 1 [$t(39) = .243, p = .809$] or Order 2 [$t(39) = .344, p = .733$]. However, the interaction may have been driven by the fact that in Order 1 the difference between positive and neutral conditions across the cost sharing trials was approaching statistical significance [$t(39) = 1.794, p = .080$]; whereas, in Order 2 it was not [$t(39) = -1.185, p = .234$]. See Figures 6 and 7 below for illustrations of the mean sharing results by Order 1 and 2, respectively⁵.

78) = 3.416, $p = .068, \eta_p^2 = .042$], and the main effect of trial-type remained significant [$F(1, 78) = 96.830, p < .001, \eta_p^2 = .554$]. Although the results did not formally change, the effect size for the interaction between condition and sharing type for the first condition only ($\eta_p^2 = .042$) was substantially larger than for the full dataset ($\eta_p^2 < .001$).

⁵ Exact sign tests were conducted to examine differences in children's sharing behaviour between the positive and neutral conditions. There were no statistically significant differences in children's sharing in cost ($p = .625$) or no-cost ($p = 1.00$) sharing trials. Specifically, for cost sharing trials, 36 children shared more in the positive condition, 31 shared more in the neutral condition, and 13 showed no difference in their cost sharing. For no-cost sharing trials, 32 children shared more in the positive condition, 33 shared more in the neutral condition, and 15 showed no difference in their no-cost sharing.

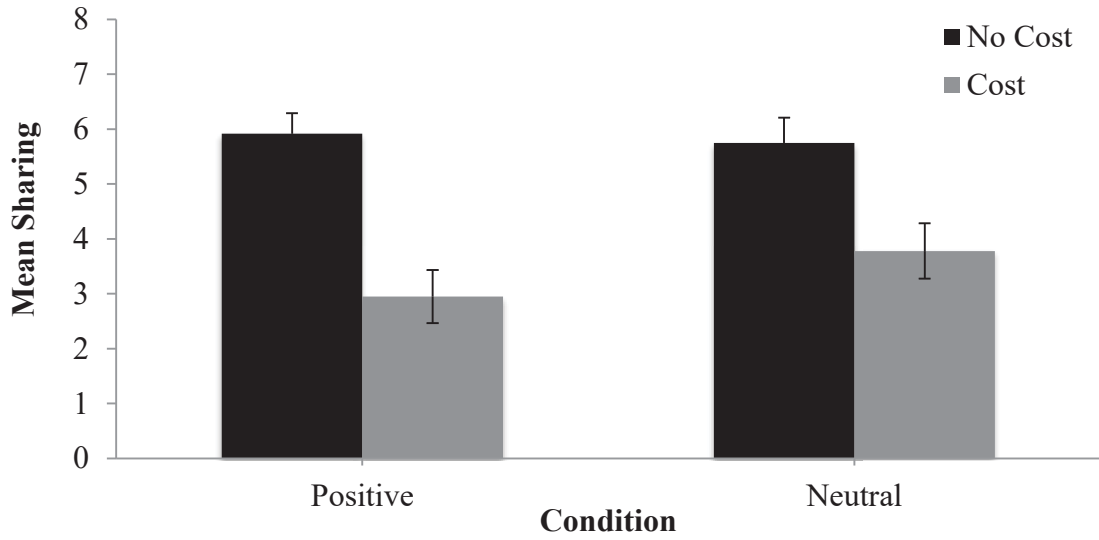


Figure 6. Mean number of stickers shared by condition and trial-type in Order 1, in which children watched the positive then neutral video. Error bars represent standard error of the mean.

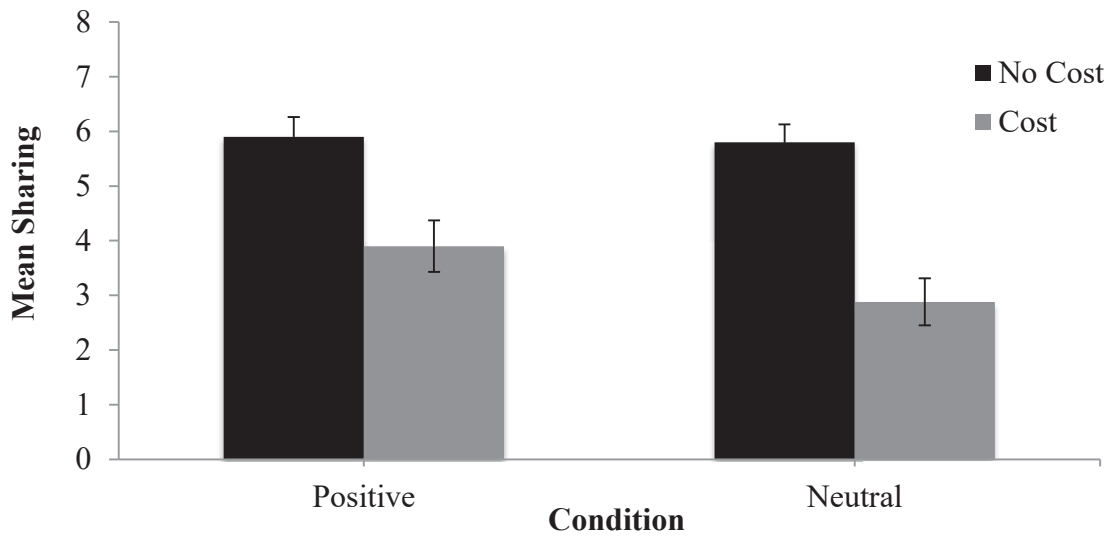


Figure 7. Mean number of stickers shared by condition and trial-type in Order 2, in which children watched the neutral then positive video. Error bars represent standard error of the mean.

Relations between Affect (FAS) and Sharing (RAT)

Pearson product-moment correlations were conducted to see if children's affect ratings before the RAT were associated with their sharing behaviour. In the overall sample, children's cost and no-cost sharing were correlated with one another [$r(78) = .613, p < .001$]. However, no other correlations were significant. See Table 3 below for a summary of the correlations for the overall sample.

Table 3

Study 1 Correlations for Overall Sample

	FAS Self	Cost Sharing	No-Cost Sharing
FAS Other	.100	-.025	.041
FAS Self	-	.007	.003
Cost Sharing		-	.613**

Note. FAS = Facial Affect Scale. * $p < .01$, ** $p < .001$.

Pearson product-moment correlations were also conducted to examine relations between self and other FAS ratings and sharing behaviour for only the first video shown. There was a significant correlation between FAS Other and FAS Self [$r(78) = .311, p = .005$]. There was also another significant correlation between cost sharing and no-cost sharing [$r(78) = .627, p < .001$]. However, no other correlations between the FAS ratings and sharing behaviour were significant. See Table 4 below for a summary of the correlations for the first video only.

Table 4

Study 1 Correlations for First Video Only

	FAS Self	Cost Sharing	No-Cost Sharing
FAS Other	.311*	-.077	-.057
FAS Self	-	.007	-.042
Cost Sharing		-	.627**

Note. FAS = Facial Affect Scale. * $p < .01$, ** $p < .001$.

Discussion

Study 1 investigated how positive empathy for another child might impact children's sharing behaviour in comparison with a neutral control. The connection between positive empathy and prosocial behaviour has been referred to as a 'neglected link' because so much of the literature has focused on negative empathy (Telle & Pfister, 2016). Therefore, it was important to investigate if, like negative empathy, positive empathy might also lead to an increase in prosocial behaviour, or if it may have different impacts on children's subsequent sharing behaviour.

As outlined in Table 2, the hedonic contingency (Wegener & Petty, 1994), mood maintenance (Isen & Simmonds, 1978), and empathic approach/avoidance (Andreychik & Lewis, 2017) theories predict that other-oriented positive affect will increase sharing behaviour. However, the focus of attention theory (Rosenhan et al., 1981) predicts that other-oriented positive affect will decrease children's sharing behaviour. Although the literature in this area has some mixed findings, research with both children and adults suggests self-oriented positive affect and other-oriented negative affect can increase

prosocial behaviour, whereas self-oriented negative affect and other-oriented positive affect can decrease prosocial behaviour (Barnett et al., 1979; Rosenhan et al., 1981; Thompson et al., 1980). Therefore, we expected that a video induction of other-oriented positive affect would result in decreased sharing behaviour. However, in Study 1, we found no differences in sharing between children who viewed another child in neutral versus positive situations, although these manipulations successfully impacted children's ratings of the other child's affect. Therefore, our findings do not lend support to any of these theories.

The main findings of this study are discussed in turn below, focusing on the impact of positive empathy on sharing, the limited success of the experimental manipulation, and relations between children's affect and sharing.

The Impact of Positive Empathy on Sharing

Study 2 was conducted to examine the impact of positive empathy on children's sharing behaviour. Although there was a significant impact of the positive versus neutral conditions on children's affect ratings for the character, this did not seem to impact children's subsequent sharing behaviour. We hypothesized that there would be an effect of condition, in which children would share less in the positive versus neutral condition, but there was no difference in children's sharing behaviour between conditions.

Given the significant interactions involving order for affect ratings, a mixed 2 x 2 ANOVA (examining condition and sharing type) using only the RAT data for the first condition was conducted comparing children who experienced the positive condition first to children who experienced the neutral condition first. Although the results did not formally change (since they continued to indicate *no* main effect of condition), the effect

size increased. This suggests that a simple between-subjects design may have been more appropriate for Study 1, since the mixed between- and within-subjects design that was used may have washed out some effects of the experimental manipulation.

The null result for the primary analysis in Study 1 indicates that although children showed some sensitivity to the affect manipulation, it had no clear impact on their subsequent sharing behaviour. It is important to note that non-significant results do *not* indicate that there is *no* difference between groups, because there is usually some difference even if it is minor. Instead, null results suggest the effect may be too small to differentiate from a chance finding (Field, 2009). Recall that our original power calculation for this primary analysis was based on data from the study by Williams et al. (2014), who found a large effect of $d = .57$ using Cohen's (1988) criteria. On the other hand, when we compared all the sharing behaviour of children in the neutral versus positive conditions for both orders, our effect size for the total sharing was $d = .03$, which is a trivial effect size using Cohen's criteria. When looking only at data from Order 1, the effect size for the total sharing remained trivial at $d = .05$. The power for this primary analysis was only .05, which indicates that there was only a 5% chance of finding a statistically significant difference if there was one (Field, 2009).

Recall that Andreychik and Lewis (2017) suggest increased prosocial behaviour as a result of negative and positive empathy may be due to unique underlying motivations, since negative empathy drives people to 'avoid negativity', whereas positive empathy drives people to 'approach positivity'. Based on this empathic approach/avoidance theory, negative empathy may result in increased prosocial behaviour because sharing negative affect with another person may motivate someone to

engage in actions to help alleviate the other person's pain, which may decrease their own negative affect. The empathic approach/avoidance theory was supported by the work of Williams et al. (2014), since children shared more when they watched another child experiencing negative than neutral affect. However, Williams et al. found that children's sharing behaviour was driven by their ratings of another children's negative affect as opposed to their own negative affect.

Positive empathy may not encourage prosocial behaviours in the same way, because sharing positive affect with another person may not motivate someone to engage in actions to change the other person's affective state (since the other person is already happy). Instead, it is thought that the individual may enjoy the feelings of vicarious positive empathy and work to promote this positive feeling by engaging in prosocial behaviour (which may be both personally and socially rewarding). Further research is required to explore these relations more fully.

It is important to note that the results of Study 1 replicate the findings of the only other known experimental research with children which directly compared positive empathy to a neutral control condition. Specifically, Barnett et al. (1979) found children shared more when thinking about another child's negative experience, as opposed to another child's neutral or positive experience. Children seemed sensitive to manipulations that involved negative affect; however, there was no significant difference between their sharing behaviour when they thought of another child's positive or neutral experiences. These findings are consistent with the results of Study 1, in which we did not find any differences in sharing between children who watched videos of another child in neutral versus positive situations.

As expected, there was a significant main effect of cost versus no-cost trial-types, in which children shared more when there was no cost to themselves. Interestingly, this finding is inconsistent with Williams et al.'s (2014) results, as they did *not* find any difference in children's sharing on cost versus no-cost trials, even though the sharing partner used in their study was a character from a negative or neutral affect-inducing video (much like our video in Study 1). It is unclear why Williams et al. did not find a difference between cost and no-cost trials. However, previous research by Moore (2009) found that 4.5- to 6-year-old children shared more in no-cost versus cost trials of the RAT only when sharing with a stranger and not when sharing with a friend or non-friend. Therefore, it seems plausible that children in Study 1 conceptualized their sharing partner as a stranger, whereas children in Williams et al.'s study treated the child as a friend.

This difference between how children conceptualized their sharing partners in Williams et al.'s study and in Study 1 could be due to the fact that participants in Williams et al.'s study were told that the child in the video was supposed to come into the laboratory that day, but she was unable to because she either lost her dog (negative condition) or had a yard sale (neutral condition). On the other hand, children in Study 1 were introduced to the child in the video in a similar fashion, but they were not told that she was supposed to come into their school that day because it was thought that this could create confusion for some children. It is possible that this subtle difference in the methods could be enough to change children's conceptualization of the child in the video as a potential friend versus a stranger. The significant difference in children's sharing behaviour found in Study 1 makes sense conceptually, since the no-cost trials involved no personal sacrifice, so it is not surprising that children would be more generous in these

types of sharing situations. It is possible that their sharing behaviour between conditions may have differed if they had a different relationship with their sharing partner and viewed her as a potential friend.

The Limited Success of the Experimental Manipulation

The videos used in Study 1 were created for use in this research, so it was important to validate whether the positive and neutral affect-inductions were effective. Overall, children rated the character in the positive video as having significantly more positive affect than the character in the neutral video. However, children's self-affect ratings were not significantly different between the positive and neutral conditions. This provides evidence that the videos were effective in portraying the intended positive and neutral emotions, but children may not have experienced greater positive empathy for the character in the positive video. It is possible that this lack of difference in children's self-affect ratings may explain the absence of any differences in children's subsequent sharing between the positive and neutral conditions.

In a similar study examining the impact of negative empathy on sharing, Williams et al. (2014) found that sharing behaviour was positively correlated with children's ratings of the character's affect and not with their self-affect ratings. This suggests that increased sharing for the child in the sad versus neutral video was driven by negative empathy as opposed to children's own negative affect. Therefore, the fact that there was no significant difference between children's self-affect ratings is not necessarily of concern, since any differences in their sharing with the child in the happy versus neutral video might be driven by positive empathy for the character as opposed to children's own experience of positive affect. However, this is somewhat inconsistent with the hedonic

contingency (Wegener & Petty, 1994) and mood maintenance (Isen & Simmonds, 1978) theories, which suggest positive empathy may increase individuals' tendencies to engage in prosocial behaviour if they perceive it as pleasant, because they want to maintain or increase their own experience of positive affect. However, this would require that children first experience some vicarious positive empathy.

Interestingly, there was an important order effect in which children's other-affect ratings for the positive condition were the same; however, children who watched the positive video first rated the character in the neutral condition as less happy than those who watched the neutral video first. This finding highlights the inherent difficulties in making a neutral affect induction video, since children only perceived the neutral video as less positive after they first saw a highly positive video. When first given an ambiguous neutral situation to interpret, children tended to default to more highly positive ratings.

Finally, we thought it would be important to examine children's facial expressions of affect because Light et al. (2015) found adults' facial expressions in response to videos inducing both positive and negative empathy were associated with increased generosity. As noted in a footnote in the results section above, our pilot facial affect coding was not successful because children showed limited variability in their facial expressions while watching the videos. The fact that children's self-affect ratings and their facial expressions were not impacted by the videos provides converging evidence that these videos were not successful in inducing positive empathy in Study 1.

Zaki (2014) provides an overview of different factors that may increase or decrease empathy, and highlights that affiliation, social desirability, and positive affect all tend to increase empathy; whereas, competition, high costs, and suffering tend to decrease empathy. It is possible that children in Study 1 did not feel a sense of affiliation with the character from the video or that they may not have perceived this same-aged child as a socially desirable peer. No data were collected on these variables so it is not possible to comment further on why the stimulus videos may not have been successful in inducing positive empathy.

Relations between Affect and Sharing

Based on research with adults by Rosenhan et al. (1981), we expected that children's other-oriented FAS ratings and their sharing behaviour would be negatively related, but we had no clear predictions about how their self-oriented FAS ratings and their sharing behaviour might be related. Children's two FAS ratings for the other and self were significantly correlated for the first video only, indicating that children were either matching their own affect to that of the character in the video, or that children were inferring the affective state of the character in the video based on their own affect.

There was also a significant correlation between children's sharing behaviour across cost and no-cost trials, indicating that children tended to share similarly when presented with the two different trial types. This is not surprising since there seemed to be numerous children who engaged in response patterns in which they either never shared or they always shared. Contrary to our predictions, no other correlations between children's FAS ratings and their sharing behaviour were significant. This means that how children rated their own or their sharing partner's affect did not predict their sharing behaviour.

Limitations

There are some notable limitations to Study 1 which deserve mention, including difficulties inducing positive empathy, challenges creating a neutral condition, the use of the same character in both conditions, and potential sex differences.

The goal of Study 1 was to examine the impact of positive empathy on children's sharing behaviour; however as noted previously, the experimental manipulations did not successfully modify children's own positive affect. The videos may have been effective in portraying the intended positive emotion, as evidenced by children's affect ratings for the character, but children did not seem to match their own affect to the positive or neutral emotions portrayed in the videos. It is possible that children may be more sensitive to negative than positive emotions. For example, in previous parallel research, children showed more negative other-affect and self-affect ratings in response to a sad versus neutral video, and shared more with the child who experienced negative affect (Williams et al., 2014). Notably, children in Williams et al.'s study perceived the neutral video as slightly positive, which may have made the distinction between neutral and negative in their study more clear than the distinction between neutral and positive in our study.

In fact, one of the major limitations of this study is that it was difficult to create a truly 'neutral' condition. In Study 1, most children rated the character in the neutral videos as moderately positive, so this study essentially ended up comparing two positive conditions: one that was highly positive (i.e., the positive condition) and one that was moderately positive (i.e., the neutral condition), so perhaps it is not surprising that we were unable to find a difference in children's subsequent sharing between conditions.

Since it was difficult to create a neutral condition, this made it difficult to have a good control group. It is challenging to find stimuli with no emotional valence, especially since children in this age range tend to polarize emotions as either positive or negative and pick extreme values on the FAS.

As a solution to this problem, we considered examining differences in positive versus negative affect as opposed to positive versus neutral affect, but Williams et al. (2014) already addressed a comparison between negative and neutral affect in their study. We thought that a positive versus neutral comparison was more informative because we expected children would share less in the positive empathy condition and more in the negative empathy conditions in comparison to a neutral condition. However, it is interesting to note that Williams et al. also appeared to have some difficulty creating a neutral control video, since in their study children who watched the neutral video rated the other character's affect as quite positive (a mean of about 6.5/8), and they also rated their own affect as positive (a mean of about 6/8). Given the high affect ratings of the neutral video in Study 1, it is possible that we were simply comparing different degrees of positivity, which may account for the lack of significant differences in children's subsequent sharing behaviour.

The within-subjects component of this research was also limited by the fact that the character in both the positive and neutral videos was the same little girl. Although this increased the consistency between the positive and neutral conditions, the fact that the same child was used in both conditions may have limited the impact of the second video, since children already saw her in a different situation and had an opportunity to share resources with her. This may have led to the order effect in which children rated the child

in the neutral video more positively if they saw this first. However, this did not appear to impact children's sharing behaviour.

Finally, the videos used in Study 1 included only female characters. This may have led to different impacts on the male and female participants. However, the number of boys and girls was evenly distributed across the two orders and there were no apparent effects of sex on the analyses.

Directions for Future Research

Based on what we learned from Study 1, numerous potential directions for future research projects are suggested below, including different ways to manipulate positive empathy, consideration of the order in which emotions are experienced by the sharing partner, inclusion of other types of empathic emotion, assessment of children's interest in increasing social interaction, other motivations for sharing, and considerations to increase ecological validity.

There are a number of different experimental methods that could be used to manipulate children's empathic emotions. Future research could use more naturalistic approaches, such as the one used by Hauser et al. (2014) which looked at the impact of confederates' positive, neutral, and negative affect on adults' tendency to engage in a naturally occurring prosocial behaviour (e.g., holding the door for someone). Although there are some obvious ethical limitations to conducting this type of research with children, a similar paradigm could be used on a school ground if proper consent was obtained. Such research could look at turn-taking behaviour or door holding in children with child confederates expressing different emotions. It would be interesting to see if these adult findings are replicable in child populations.

Emotions are difficult to measure because they are often complex or mixed, and they fluctuate over time. Although we often tend to study emotions in isolation for scientific purposes, the emotional worlds of children are likely much more complex and chaotic. The order in which emotions are experienced may impact our positive empathy for someone else. For example, it is possible that we might observe an ‘underdog’ effect, in which children will share more with a child who expresses positive affect only after they first see them in a negative situation. It is possible that we might feel even happier when good things happen to less fortunate people, compared to when good things happen to neutral or more fortunate people. Therefore, examining the order in which emotions are portrayed may be an interesting avenue for future research on positive empathy.

Other empathic emotions beyond happiness could also be considered. Although previous research evidence suggests there is a relation between empathic concern and increased prosocial behaviour in adults (Barraza and Zak, 2009) and in children (Williams et al., 2014), it is not clear how different types of empathic experiences related to positive emotions might impact prosocial behaviour in children. Results from Study 1 suggest that although we could impact children’s ratings of other children’s positive feelings, this did not have a significant impact on their own feelings (which were likely already predominantly positive) and that this did not impact their sharing behaviour. Future research could examine if empathy for other positive and negative emotions aside from happiness and sadness, such as pride, hope, gratitude, jealousy, anger, or fear might differentially impact children’s subsequent sharing behaviour.

Additionally, in Study 1, we hypothesized that children would share more after watching the positive versus neutral video, as we thought they may be motivated to increase their positive affect (i.e., through the mood maintenance theory; Isen & Simmonds, 1978) or be more interested in stimulating social interactions with other children who expressed positive as opposed to neutral affect if they viewed these children as more socially beneficial (Hauser et al., 2014). To assess children's perception of the other child as a social partner, it would be interesting to ask children follow-up questions about their perceptions of the other child in terms of their social desirability. This might give us insight into whether this potential underlying factor may play a role in these relations.

Overall, there was a large degree of variability in children's sharing behaviour (from sharing every time to not sharing at all), which did not seem to be influenced by the condition they were in. It is possible that a myriad of other individual factors, such as previous sharing experiences, sticker preferences, or temperament may have impacted children's sharing decisions more than the experimental manipulations included in Study 1. Additional research is required to examine these different factors further.

Finally, it is important to note that the children's sharing partner was a stranger who they likely had no expectation of interacting with in the future. It is possible that our manipulations were not successful because children did not believe they would have an opportunity to interact with the child from the study. It is possible that children in Williams et al.'s (2014) study may have treated their sharing partner as a friend versus a stranger because they were told that Jenny was supposed to come into the laboratory that day, but she could not make it. Previous research with adults suggests they will engage in

more prosocial behaviour if they think they will get to observe how their actions help others (e.g., Smith, Keating, & Stotland, 1989). Although there is always a fine balance between internal and ecological validity, it would be interesting to consider modifying aspects of the design to increase children's sense of social connection to their sharing partner. It is possible that this may help to make the experimental manipulations more successful.

Conclusions

Study 1 examined the impact of positive empathy on children's sharing behaviour. Children rated the character in the positive video as having significantly more positive affect than the character in the neutral video; however, their self-affect ratings were not significantly different between the two conditions. This indicates that unfortunately the experimental manipulations did not result in differences in positive empathy between the positive and neutral conditions. Additionally, there was no significant difference in sharing behaviour between children who watched a video of another child experiencing either positive or neutral affect. Although our manipulation appeared to successfully manipulate children's affect ratings for the other child, this did not impact their self-affect ratings or their subsequent sharing behaviour toward the child from the video. Study 2 extended this line of research to investigate if children's own experiences of positive affect might impact their sharing behaviour.

CHAPTER 3: STUDY 2: DOES SELF-ORIENTED POSITIVE AFFECT IMPACT CHILDREN'S SHARING BEHAVIOUR?

Recall that the focus of attention theory suggests other-oriented positive affect will decrease prosocial behaviour, whereas self-oriented positive affect will increase prosocial behaviour (Rosenhan et al., 1981). Similarly, the hedonic contingency (Wegener & Petty, 1994) and mood maintenance (Isen & Simmonds, 1978) theories also predict that self-oriented positive affect will increase sharing. However, the negative state relief theory (Cialdini et al., 1973) predicts that if someone is already experiencing self-oriented positive affect then they would have no need to engage in prosocial behaviour to ameliorate their affective state, so this will lead to a decrease in subsequent sharing behaviour (see Table 2 for a summary). Therefore, in addition to investigating how other-oriented positive affect impacts children's sharing behaviour, in Study 2 we examined how self-oriented positive affect impacts children's sharing. To accomplish this goal, we tried to impact directly children's own feelings of positive affect to see if this would influence their subsequent sharing behaviour.

Accumulating evidence suggests adults who were assigned to engage in various tasks meant to increase self-oriented positive affect, such as thinking about positive events, receiving an unexpected reward, or experiencing success, engaged in more prosocial behaviour, such as helping complete an unpleasant task or donating money to charity (e.g., Aderman, 1972; Isen, 1970; Isen, Clark, & Schwartz, 1976; Isen & Levin, 1972; Manucia, Baumann, & Cialdini, 1984; O'Malley & Andrews, 1983; Veitch, de Wood, & Bosko, 1977). These findings are consistent with the hedonic contingency (Wegener & Petty, 1994) and mood maintenance (Isen & Simmonds, 1978) theories,

which suggest that positive affect can increase individuals' tendencies to engage in prosocial behaviour so they can prolong their experience of positive affect.

Interestingly, Manucia et al. (1984) found adults who experienced a positive affect-induction engaged in more helping behaviour, regardless of how stable or labile they thought their affect was, when compared to individuals who experienced a neutral affect-induction. Additionally, Manucia et al. found individuals who experienced negative affect-induction only engaged in more helping behaviour if they thought their affect could be changed. Even an individual's expectations of positive affect can impact their commitment to engage in prosocial behaviour. Specifically, Barraza (2011) found that new volunteers' expectations to experience positive affect because of their prosocial behaviour, predicted both their ongoing work as a volunteer 6 months later and their commitment to continue volunteering.

However, there is also research which suggests positive affect can lead to decreased prosocial behaviour in adults. In a series of studies, Tan and Forgas (2010) found positive affect (due to positive feedback on task performance or a funny video) led to less sharing behaviour, whereas negative affect (due to negative feedback or a sad video) led to more sharing behaviour. These findings were replicated with both a dictator game that involved a single allocation of resources between the participant and a sharing partner, as well as with a RAT that involved multiple trials. Additionally, Niesta Kayser, Greitemeyer, Fischer, and Frey (2010) found adults were more likely to engage in low-cost helping when they were experiencing either positive or negative affect, in comparison with neutral affect. However, there was no difference in their helping behaviour in high-cost situations based on their own affective state. Positive and negative

affect inductions may impact prosocial behaviour for different reasons. For example, Aderman (1972) found young men who read negative mood statements spent more time completing a tedious task when it was framed as a requirement; whereas, those who read positive mood statements spent more time completing the task when it was framed as a favour and also volunteered more for an unpleasant future task.

In children, there is some previous research which suggests self-oriented positive affect can lead to increased prosocial behaviour (Barnett & Bryan, 1974; Barnett et al., 1979; Isen, Horn, & Rosen, 1973; Moore et al., 1973; Rosenhan et al., 1974; Underwood et al., 1977). There are several different ways to manipulate children's affective state, including recalling emotional experiences from life, emotional stories or videos, positive or negative feedback on a task, verbal and nonverbal experimenter positive or negative reinforcement, or giving prizes (see Brenner, 2000 for a review).

Specifically, research by Moore et al. (1973) and Underwood et al. (1977) found children aged 7 to 8 years and 6 to 12 years, respectively, donated less money to other children after reflecting on their own negative experiences and shared more after reflecting on their own positive experiences compared to a control condition. Additional research by Rosenhan et al. (1974) found that 2nd and 3rd grade children (approximately 7 to 9 years of age) who thought about both positive and negative experiences took more candies for themselves than those in a neutral control condition. However, only those in the positive condition shared more money with other children. This research suggests both positive and negative self-oriented affective states can increase self-indulgence but only positive self-oriented affect increases generosity toward others.

Recall that other research by Barnett et al. (1979) found that when children aged 7 to 12 years reflected on either their own or someone else's positive, neutral, or negative experience, those who thought about their own positive or neutral experience shared more than those who thought about their own negative experience. However, there was no significant difference in children's sharing behaviour between the positive and neutral conditions. This lack of a finding may be related to the fact that there was no difference between children's ratings of their positive and neutral self-oriented affect after engaging in the reflection manipulation. As we found in Study 1, it can be difficult to create an affectively neutral condition, so it is possible that when children were given the freedom to reflect on their own positive and neutral experiences, they construed both these experiences positively.

Other research suggests giving children positive feedback on their task performance leads to more sharing behaviour than negative feedback. Specifically, Isen et al. (1973) compared the charitable donation behaviour of children in Grade 4 across conditions in which they either competed and won, lost, or were given no score, or took part in a control condition in which they did not play the game. They found that those who received positive feedback about their performance shared more than those in the other three conditions. However, in follow-up studies with children in Grades 3 and 4, they found that when children's poor performance was observed they shared more than when it was not, perhaps as a means to repair their reputation. Similarly, Barnett and Bryan (1974) compared the charitable donation behaviour of boys in Grades 2 and 5 across conditions in which they either competed and either won, tied, or lost, or took part in a no competition control. They found that boys in Grade 2 were not sensitive to these

manipulations; however, boys in Grade 5 shared more when they were in the no competition or winning competition conditions and less in the loss or tie competition conditions. This provides evidence that at least among older children, receiving negative or neutral feedback on a competitive task leads to less sharing behaviour than positive feedback or a lack of competition.

Much of the research on the impact of self-oriented positive affect has used manipulations that require children to reflect on their own positive experiences or receive positive feedback on their task performance, often under conditions involving competition. Having children recall personal positive experiences from their past introduces potential confounds because each child's experience may include diverse elements that could impact their experience of positive affect. Providing children with positive feedback on their performance is a more controlled way to induce positive affect; however, when this is done under competitive settings that involve upward or downward social comparisons, this introduces a more complex social component which could differentially impact children's later generosity toward others. Note that Barnett and Bryan (1974) found that boys in Grade 5 shared more when they were in the no competition or winning conditions and less in the loss or tie conditions. This suggests that introducing social comparison through neutral or negative comparative feedback (i.e., tying or losing) can decrease sharing behaviour, whereas providing positive comparative feedback (i.e., winning) leads to the same sharing behaviour as no comparative feedback.

On the other hand, providing children with a desired resource can impact their self-oriented positive affect in a standardized way while also avoiding social comparison. It is important to note that experiences of perceived success or failure could impact

children's affective state differently than receiving their most or least favoured toy, as it is possible that the first may be linked to their own perception of themselves and the second may be related to the experimenter's perception of themselves. Therefore, in Study 2 we thought it was important that children received their most or least favourite toy 'at random' so they did not link the behaviour to favouritism. No known research to date has examined how self-oriented positive affect, as a result of receiving a desired resource (such as a favourite toy), impacts children's self-oriented positive affect and subsequent sharing behaviour. However, such experimental manipulations that involve giving small gifts, have been used successfully with adults (e.g., Isen et al., 1976; Isen & Levn, 1972).

Therefore, Study 2 was conducted to further investigate the impact of positive affect on sharing behaviour in young children. Although there are several different ways to induce positive affect in children (see Brenner, 2000 for a review), we decided to use a gift paradigm so children would focus on their own positive affect. To induce positive affect in children, we gave them their most favourite toy and compared their performance to a control condition in which children received their least favourite toy. This method of affect-induction has been used successfully in previous research (e.g., Cole, 1986; Cole, Jenkins, & Shott, 1989).

In order to assess the effectiveness of our affect manipulations, we asked children how they thought *another* boy or girl their age would feel if they received the best toy and if they received the worst toy. We did not ask children directly how *they* would feel, because we did not expect to get an honest answer based on findings from the disappointing gift literature (Saarni, 1984). For example, previous research using a

disappointing gift paradigm with both sighted and blind children, generally resulted in positive affective reactions in children in this age range (Cole, 1986; Cole et al., 1989). This research suggests that when children receive a disappointing gift, they work to control their negative emotion and will often feign positive emotion. Therefore, in Study 2 we obtained a rating of how children thought *another* child might feel if they received their highest and lowest ranked toys to gain a more accurate assessment of children's genuine feelings about receiving the different toys. We also assessed children's actual affective reactions when they received the different toys using behavioural coding, outlined in the Procedure section below.

Study 2 used a mixed between- and within-subjects design, like Study 1, so that all children experienced both conditions, counterbalanced for order. The different orders were included for methodological reasons so that we could double our sample size and look at the impact of sharing within as opposed to only between participants. However, we were aware that the order might impact children's sharing behaviour, and we expected that the manipulation might be less effective the second time around, especially for children in the order in which they got the best toy before the worst toy. Therefore, we compared children's performance on the sharing task by sharing type (cost vs. no-cost), condition (best vs. worst), and order (best then worst vs. worst then best).

Study 2 Objective and Hypotheses

The objective of Study 2 was to examine how self-oriented positive affect may impact sharing behaviour in early school-aged children. We compared the perceived and expressed affective reactions and subsequent sharing behaviour of children who received their most or least favourite toy. We measured children's affect ratings of the best and

worst toy, as well as their videotaped affective responses after receiving the best and worst toy, based on the coding schemes used by Aknin et al. (2012b) and Hudson and Jacques (2014). We then examined how these self-oriented affect inductions impacted children's subsequent sharing behaviour. Finally, we examined correlations between children's affect and their sharing behaviour.

Although there is some controversy in the adult literature, based on previous research with children which suggests positive self-oriented affect can increase generosity (Moore et al., 1973; Rosenhan et al., 1974; Underwood et al., 1977), it was hypothesized that children who received their most favourite toy would demonstrate more positive affect and they would share more than children who received their least favourite toy. Based on previous research (e.g., Moore, 2009; Sparks et al., 2017) we also expected children to share more in the no-cost versus the cost sharing trials. Finally, we expected that children's affect ratings of how another child would feel if they received the best and worst toys would be associated with their own affective reactions, and that these would be positively related to their subsequent sharing behaviour.

Method

Participants

Children were recruited from public elementary schools in rural Nova Scotia. They were predominantly Caucasian and most spoke English as their first language. All participants were fluent in English. A total of 91 typically-developing 5- and 6-year-olds participated in Study 2. Three children were excluded because there was no difference between their FAS ratings for the best and worst toys (i.e., two children rated both toys as 8/8 and one child rated both toys as 7/8). Therefore, 88 children were included. The

condition in which children first received the best toy had a total of 44 children (24 boys and 20 girls), aged 5 years, 3 months to 6 years, 11 months ($M = 6$ years, 1 month, $SD = 6$ months). The condition in which children first received the worst toy had a total of 44 children (24 boys and 20 girls), aged 5 years, 3 months to 6 years, 11 months ($M = 6$ years, 1 month, $SD = 5$ months).

Based on the criteria by Cohen (1988), a statistical power analysis was performed for sample size estimation for Study 2, using *G*Power 3.1* software (Faul et al., 2007). Unfortunately, almost all the relevant child studies examining the impact of self-oriented positive affect on prosocial behaviour did not report the required statistics to calculate effect size (i.e., Barnett et al., 1979; Isen et al., 1973; Moore et al., 1973; Rosenhan et al., 1974; Underwood et al., 1977). Therefore, this power analysis was based on data from the study by Barnett and Bryan (1974), which compared the sharing behaviour of 80 children (20 per group) who either received feedback that they won, tied, lost, or were given no feedback after independently playing a game. The effect size for the sharing data comparing the overall sample of children who won versus those who tied was $d = .76$, which is considered to be a large effect using Cohen's (1988) criteria. With an alpha = .05 and power = 0.80, the projected sample size needed with this effect size is approximately $N = 29$ per group for a simple comparison between groups.

On the other hand, the effect size for the sharing data in Barnett and Bryan's study comparing the overall sample of children who won versus those who lost was $d = .40$, which is considered to be a moderate effect using Cohen's (1988) criteria. With an alpha = .05 and power = 0.80, the projected sample size needed with this effect size is approximately $N = 101$ per group for a simple comparison between groups. It is difficult

to determine how the conditions in Study 2 of children receiving their most or least desired toys might correspond to these conditions. Therefore, we aimed for a relatively conservative sample size of $N = 44$ per group, which should have been more than adequate to detect moderate to large effects.

Procedure

Children were seen individually in a school setting, as in Study 1.

(1) Toy Ranking and Affect Rating (FAS). Before any experimental manipulation, all children were asked to rank five toys from their most to least favourite. Children were then asked to rate how another boy or girl their age would feel if they saw all these toys and received the best and worst toy, using the FAS outlined above in Study 1. The order of this question was counterbalanced across participants.

(2) Presentation of Best or Worst Toy. Children were then randomly assigned to one of two orders, with conditions counterbalanced: (1) most favourite toy then least favourite toy, or (2) least favourite toy then most favourite toy. All five toys were hidden in identical bags and children were told that a toy would be selected at random. Depending on the condition, children were presented with either their most or least favourite toy to take home.

(3) Resource-Allocation Task (RAT). As in Study 1, children were introduced to their sharing partner, using a still photograph of a same-sex child their age. Participants were presented with prepared line drawings representing themselves and the other child, with their names written above.

Children completed a RAT, in which they could decide how they wanted to distribute stickers between themselves and their sharing partner. This was the same as the RAT used in Study 1. As before, there was a practice trial in which children could choose between 1 or 2 stickers for themselves⁶. Participants were presented with a total of 16 trials per condition, with 8 cost trials and 8 no-cost trials, counterbalanced for order.

(4) Repetition with Other Condition. The presentation of the other toy from step 2 and the RAT from step 3 were repeated with a new sharing partner, so that each participant experienced both conditions in a within-subjects fashion.

(5) Selection of Toys to Take Home. At the end of the study, children were asked if they wanted to take home both the toys, as a measure of how much they disliked the worst toy.

Affect Coding

Study sessions were video recorded so we could code children's affective reactions when they received their most and least favourite toys. This was used as a manipulation check to ensure the experimental manipulation was successful in inducing positive affect. We had permission to videotape 60 of the 88 participants, and 57 of these videos provided a clear view of children's facial expressions when they received the toys. We first used Aknin et al.'s (2012b) facial affect coding scheme to allow for internal consistency across the studies included in this dissertation. However, we also applied Hudson and Jacques' (2014) affect coding scheme that they used to score the disappointing gift paradigm (Saarni, 1984) to provide more in-depth behavioural coding of these intervals. The time between the gift presentation and the next activity was an

⁶ *Note.* 72/88 (82%) chose 2 stickers.

average of 25 seconds. During this interval, children’s affect was coded using two different coding schemes, which are described in greater detail below.

Aknin et al.’s (2012b) Affect Coding Scheme. Affect coding was conducted based on Aknin et al.’s seven-point affect rating scale, with ratings from 1 to 7. According to this scale, expressions of facial affect in children are coded based on a gestalt rating. On this scale, a code of 4 is assigned to a neutral facial expression, 7 is assigned to a positive expression, and 1 is assigned to a negative expression. The values 5, 6, and 7 are used to code positive affect and the values 3, 2, and 1 are used to code negative affect, with facial expressions becoming more extreme toward the endpoints. Aknin et al.’s facial affect coding scheme is summarized in Table 5 below.

Table 5

Summary of Affect Coding Scheme from Aknin et al. (2012b)

Value	1	2	3	4	5	6	7
Description	Crying, upset	Big frown	Small frown	Neutral	Small smile	Big smile	Laughing

An independent coder blind to the study hypotheses rated videos of children’s facial affect based on Aknin et al.’s (2012b) coding scheme. A second inter-rater coder who was not blind to the hypotheses also coded all the videos to provide an indication of inter-rater reliability. The two coders did consensus coding for instances in which they were off by more than 1 point and these data were added to the primary coder’s dataset for analyses.

Hudson and Jacques' (2014) Affect Coding Scheme. To gain another behavioural rating of children's affective reactions to receiving the two gifts, we also used Hudson and Jacques' (2014) coding scheme, which included coding children's facial, vocal, verbal, and behavioural responses on a five-point scale, with scores between -2 and +2. Children were given negative scores for instances of negative affect such as frowning (facial), sarcastic tone (vocal), saying they did not like the toy (verbal), and pushing the toy away (behavioural). Conversely, children were given positive scores for instances of positive affect such as smiling (facial), excited tone (vocal), saying they liked the toy (verbal), and playing with the toy (behavioural). Scores of 0 were given for neutral responses across the domains, and more extremely positive or negative responses were given a higher rating of 2 versus 1. The effort rating which measured children's effort to control their emotional response was excluded because this was not the focus of the study; instead, we were interested in getting a second more in-depth affect rating to measure the success of the experimental manipulation.

Analytic Plan

Data Scoring. The FAS and RAT were scored as in Study 1. Facial and behavioural affect coding were also conducted to ensure the experimental manipulations of receiving the most or least favoured toy impacted children's affect. There were 57 codeable videos of the two gift receiving phases of the experiment, including 25 videos from Order 1 (best condition first) and 32 videos from Order 2 (worst condition first).

Two coders blind to the study hypotheses coded all the videos using Aknin et al.'s (2012b) coding scheme. Their ratings were highly correlated ($\alpha = .91$) and they never disagreed by more than 1 point, so no consensus coding was conducted. Additionally, all

the videos were coded using Hudson and Jacques' (2014) coding scheme. For this coding, the primary coder was blind to study hypotheses, whereas the secondary coder was not. Their ratings were also highly correlated ($\alpha = .92$). On the three instances in which they disagreed by more than 1 point, consensus coding was completed. The consensus coding was then added to the primary coder's data for analyses.

Data Checking. To ensure reliability, a secondary coder blind to the study hypotheses, watched all video-recorded trials (57/88 participants' parents provided consent to videotape) and double-scored the child's responses on the RAT. In the few cases in which the primary experimenter and secondary coder were not in agreement (8/1824 instances), then a third coder blind to the study hypotheses re-scored the RAT trial to make the final decision.

Results

Assumptions Check

All assumptions of the ANOVA were checked for both the affect and sharing data for Study 2. As we expected based on the experimental manipulations, children's affect ratings for the best toy were positively skewed and their ratings for the worst toy were negatively skewed (both Kolmogorov-Smirnov test p 's $< .001$). We tried to transform the data using square and log transformations and data inversion, as suggested by Tabachnick and Fidell (2007) for moderate, substantial, and severe positive skewness, but this did not make the data normally distributed. Levene's test based on the mean suggested the assumption of homogeneity of variance was not satisfied [$F(1, 350) = 166.788, p < .001$]. Therefore, results of the ANOVA should be interpreted with caution; although nonparametric statistics reported below resulted in the same findings.

As in Study 1, the sharing data were not normally distributed, as indicated by a visual inspection of histograms and the Kolmogorov-Smirnov tests when the data were broken down by order, condition, and sharing type (all p 's < .05, except for no-cost sharing for the worst condition in Order 2, in which $p = .085$). As in Study 1, there were ceiling effects for the no-cost sharing data and there were both ceiling and floor effects for cost sharing data. We tried to transform the data using square and log transformations and data inversion, as suggested by Tabachnick and Fidell (2007) for moderate, substantial, and severe positive skewness, but this did not make the data normally distributed. Levene's test based on the mean suggested the assumption of homogeneity of variance was satisfied for the sharing data [$F(1, 350) = 0.334, p = .563$]. As in Study 1, nonparametric statistics reported below resulted in the same findings.

Affect Ratings (FAS) for Best and Worst Toys

To ensure the experimental manipulation was successful, a 2 x 2 mixed ANOVA was conducted to analyze the affect data based on two 2-level variables. The within-subjects variable was condition (i.e., best vs. worst) and the between-subjects variable was order of conditions (i.e., best then worst vs. worst then best). This analysis helped us ensure there were significant differences in affect between the FAS ratings for the best toys and the worst toys, but that these did not differ depending on order.

As predicted, the 2 x 2 mixed ANOVA revealed a significant main effect of FAS type [$F(1, 86) = 450.77, p < .001, \eta_p^2 = .840$], in which children rated the best toy more positively than the worst toy. There was no significant interaction between FAS type and order [$F(1, 86) = .338, p = .563, \eta_p^2 = .004$]. The FAS data are illustrated in Figure 8

below⁷. Since the assumption of normality was violated, an exact sign test was conducted to compare differences in children’s FAS ratings for the best and worst toys⁸.

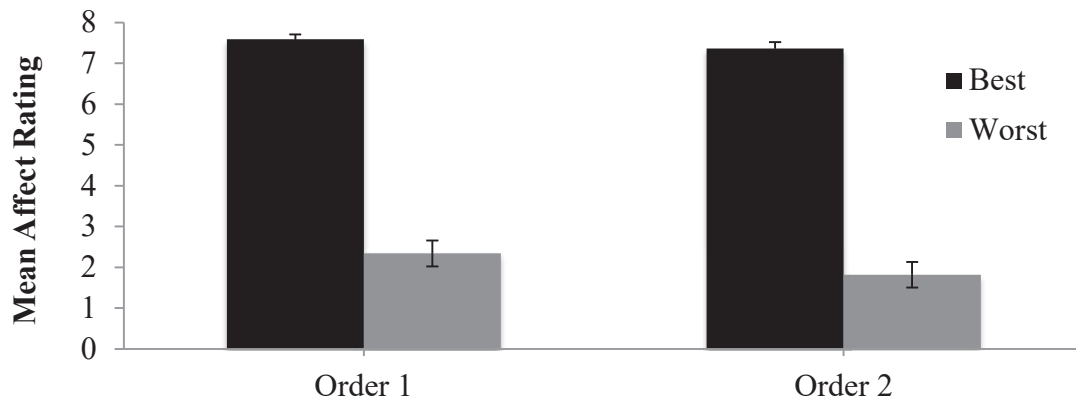


Figure 8. Study 2 mean affect ratings for the best and worst toys by order. In Order 1 children received the best then worst toy and in Order 2 children received the worst then best toy. Error bars represent standard error of the mean.

Sharing (RAT) Data

A 2 x 2 x 2 mixed ANOVA was conducted to analyze the RAT data based on three 2-level variables. The two within-subjects variables were condition (i.e., best vs. worst toy) and sharing type (i.e., cost vs. no-cost), and the between-subjects variable was order (i.e., best then worst vs. worst then best). There was no main effect of condition [$F(1, 86) = .212, p = .647, \eta_p^2 = .002$], or order [$F(1, 86) = 1.016, p = .316, \eta_p^2 = .012$]. However, as expected, there was a significant main effect of trial-type [$F(1, 86) = 74.935,$

⁷ Note. All children took their most favourite toy home with them, but 26 children did not take their least favourite toy home with them (13 of these children were in Order 1 (best condition first) and 13 were in Order 2 (worst condition first)).

⁸ An exact sign test was conducted to compare the differences in children’s FAS ratings for the best and worst toy. Children’s ratings for the best toy were significantly greater than the worst toy ($p < .001$). It is important to note that this result was expected, as no children rated the worst toy higher than the best toy, and the 3 children who rated the two toys as equivalent were excluded from further analysis due to no condition difference.

$p < .001$, $\eta^2 = .466$], in which children shared more in no-cost trials. There were no significant two-way interactions between condition and order [$F(1, 86) = .994$, $p = .322$, $\eta^2 = .011$], condition and trial-type [$F(1, 86) = .223$, $p = .638$, $\eta^2 = .003$], or order and trial-type [$F(1, 86) = 2.037$, $p = .157$, $\eta^2 = .023$]. There was no three-way interaction between condition, order, and trial-type [$F(1, 86) = 2.891$, $p = .093$, $\eta^2 = .033$]⁹.

The RAT data are illustrated by Orders 1 and 2, in Figures 9 and 10 below¹⁰.

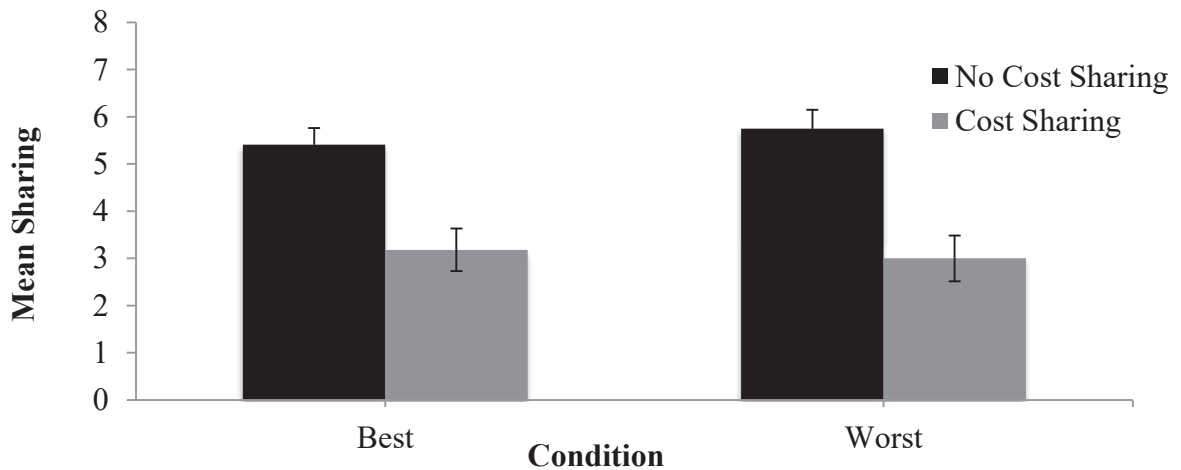


Figure 9. Mean number of stickers shared by condition and trial-type in Order 1, in which children received the best then worst toy. Error bars represent standard error of the mean.

⁹ Note. For Study 2, given the significant interactions involving order for the affect coding, a mixed 2 x 2 ANOVA (examining condition and sharing trial-type) using only the RAT data for the first condition was conducted to compare children who experienced the best condition first to children who experienced the worst condition first. The results continued to reveal no main effect of condition [$F(1, 86) = 1.264$, $p = .264$, $\eta^2 = .014$] and no interaction between condition and trial-type [$F(1, 86) = 1.418$, $p = .237$, $\eta^2 = .016$], and the main effect of trial-type remained [$F(1, 86) = 60.620$, $p < .001$, $\eta^2 = .413$].

¹⁰ Exact sign tests were conducted to test for differences in children's sharing behaviour between the best and worst conditions. There were no significant differences in children's sharing in cost ($p = .761$) or no-cost ($p = .590$) trials. Specifically, for the cost sharing trials, 20 children shared more in the best condition, 23 shared more in the worst condition, and 45 showed no difference in their cost sharing. For the no-cost sharing trials, 25 shared more in the best condition, 30 shared more in the worst condition, and 33 showed no difference in their no-cost sharing.

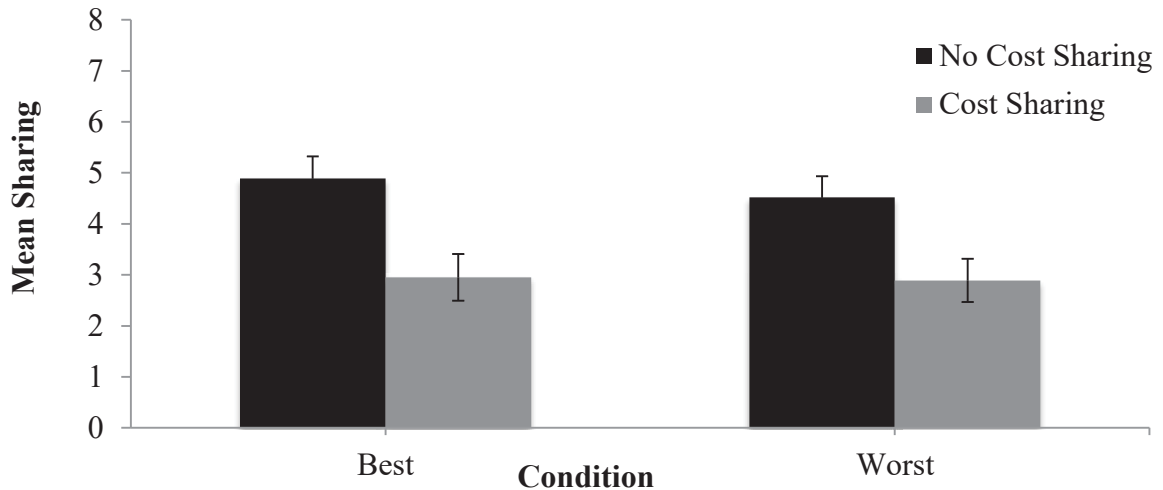


Figure 10. Mean number of stickers shared by condition and trial-type in Order 2, in which children received the worst then best toy. Error bars represent standard error of the mean.

Relations between Affect (FAS) and Sharing (RAT)

Pearson product-moment correlations were conducted to examine relations between children’s affect ratings for the best and worst toys along with their subsequent sharing behaviour on the cost and no-cost trials in the RAT. There were no significant correlations between children’s affect ratings for the best and worst toys and their subsequent sharing behaviour in the best or worst conditions. Correlations are summarized in Table 6 below. Interestingly, the relations between the FAS score for the best toy (i.e., FAS Best) and sharing were negative, whereas the relations between the FAS score for the worst toy (i.e., FAS Worst) and sharing were positive. As in Study 1, there was also a significant correlation between children’s cost and no-cost sharing behaviour in both the best [$r(86) = .572, p < .001$] and worst [$r(86) = .586, p < .001$] conditions.

Table 6

Study 2 Correlations

	Cost Sharing	No-Cost Sharing
FAS Best	-.173	-.090
FAS Worst	.197	.128

Note. FAS = Facial Affect Scale. * $p < .01$, ** $p < .001$.

Affect Coding

Aknin et al.'s Affect Coding. A 2 x 2 ANOVA was conducted by order and condition for the affect coding based on the scheme by Aknin et al. (2012b). This affect coding revealed no significant main effect of order [$F(1,56) = .990, p = .322, \eta_p^2 = .009$]. However, there was a significant main effect of condition [$F(1,56) = 15.277, p < .001, \eta_p^2 = .122$] and a significant interaction between order and condition [$F(1,56) = 6.422, p = .013, \eta_p^2 = .055$]. Follow-up paired-samples t -tests indicated that when broken down by order, there was no significant difference between the best and worst condition in Order 1 (best condition first), $t(24) = 1.030, p = .313, d = .206$. However, there was a significant difference between conditions in Order 2 (worst condition first), $t(31) = 5.638, p < .001, d = .996$. See Figures 11 and 12 for an illustration of the data for Order 1 and 2.

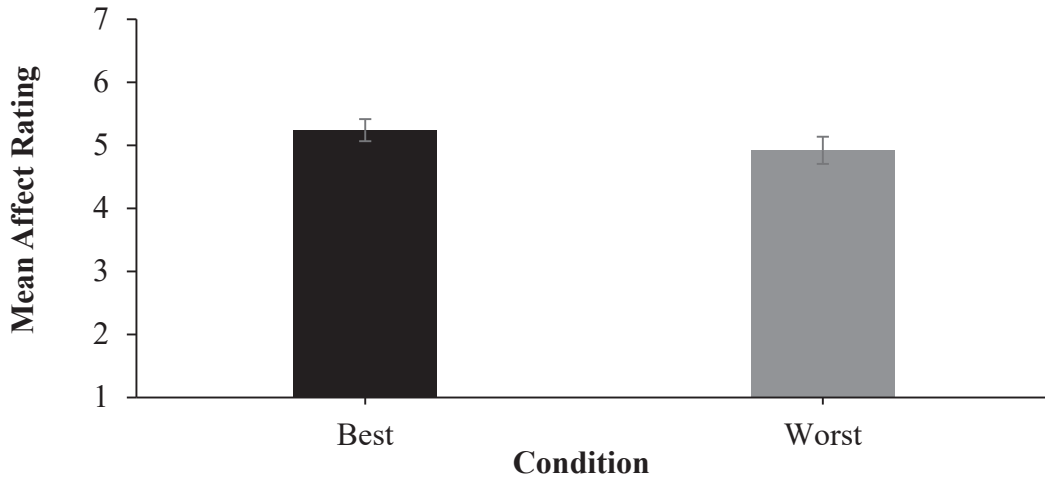


Figure 11. Affect coding for Order 1 (best condition first), based on the coding scheme by Aknin et al. (2012b). Error bars represent standard error of the mean.

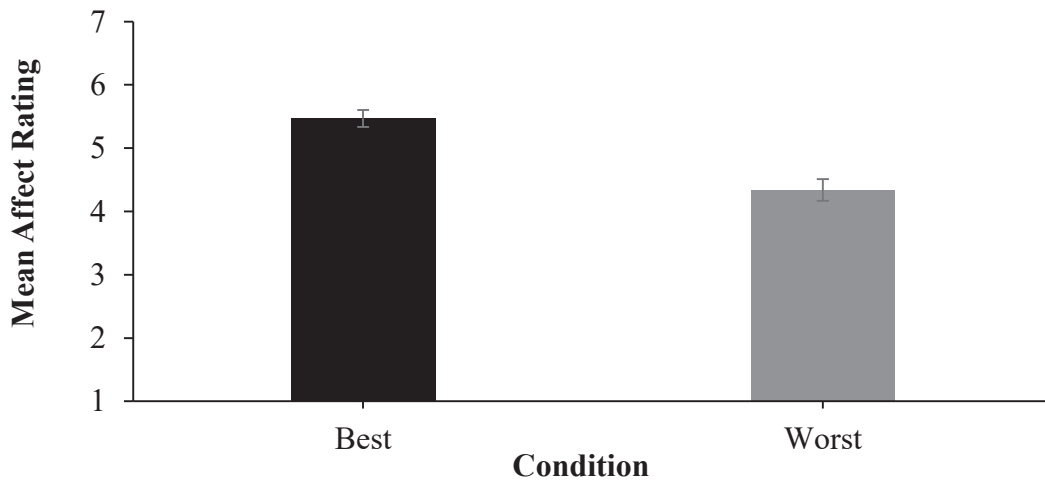


Figure 12. Affect coding for Order 2 (worst condition first), based on the coding scheme by Aknin et al. (2012b). Error bars represent standard error of the mean.

Hudson and Jacques' (2014) Affect Coding. A 2 x 2 ANOVA was conducted by order and condition based on the overall mean affect rating from the scheme by Hudson and Jacques. This affect coding revealed no main effect of order [$F(1, 56) = 2.201, p = .141, \eta_p^2 = .020$]. However, there was a main effect of condition, [$F(1, 56) =$

53.336, $p < .001$, $\eta_p^2 = .331$], and an order by condition interaction [$F(1, 56) = 14.492$, $p < .001$, $\eta_p^2 = .118$]. Follow-up paired samples t -tests were conducted to compare differences in children's affect between the best and worst conditions, based on the two orders. Children's affect ratings between the best and worst conditions were significantly different in Order 2 (worst then best condition), [$t(31) = 5.139$, $p < .001$, $d = .908$] but not in Order 1 (best then worst condition), [$t(24) = 1.226$, $p = .232$, $d = .245$]. See Figures 13 and 14 below for an illustration of the behavioural affect coding by Order 1 and 2, broken down by the facial, vocal, verbal, and behavioural ratings that were used to generate the overall mean rating.

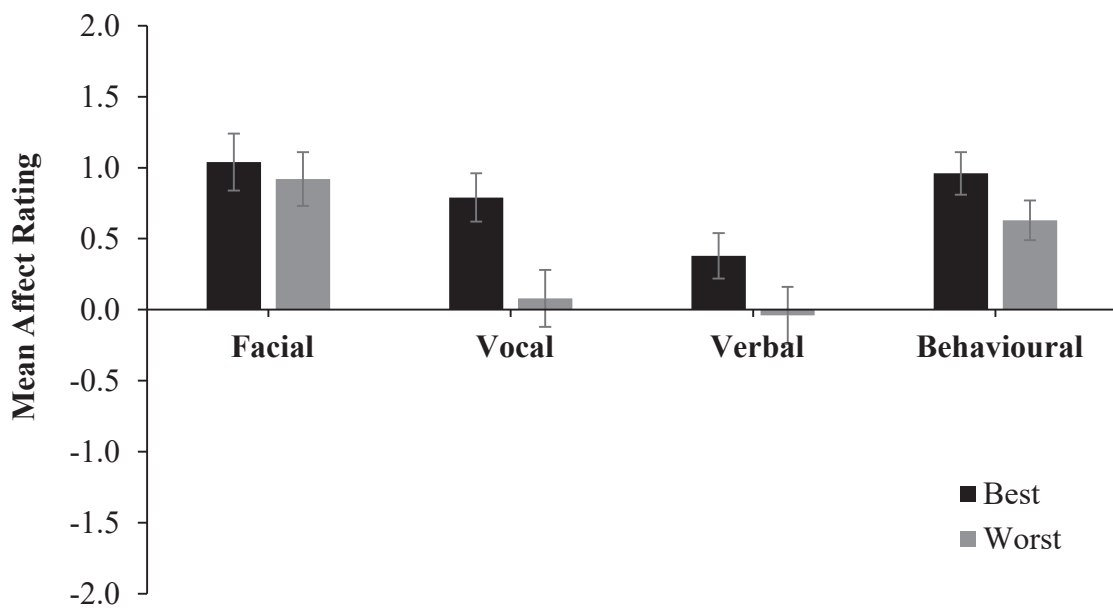


Figure 13. Behavioural affect coding for Order 1 (best condition first), based on coding scheme by Hudson and Jacques (2014). Error bars represent standard error of the mean.

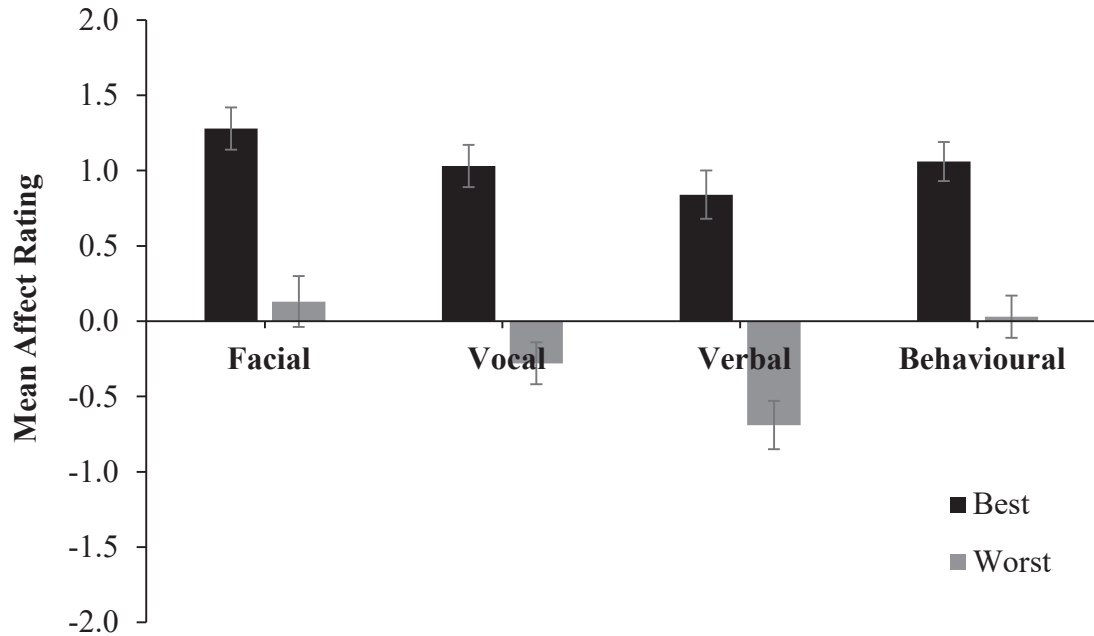


Figure 14. Behavioural affect coding for Order 2 (worst condition first), based on coding scheme by Hudson and Jacques (2014). Error bars represent standard error of the mean.

Relations between Coding Schemes. Pearson product-moment correlations were conducted to examine relations between the two affect rating scales used to code children’s affect when they received their most and least favoured toys. Specifically, correlations were conducted to examine relations between Aknin et al.’s (2012b) facial affect coding and Hudson and Jacques’ (2014) overall coding scheme (which included an average of the facial, vocal, verbal, and behavioural indices), as well as Aknin et al.’s coding scheme and Hudson and Jacques’ facial affect index. Pearson product-moment correlations revealed that Aknin et al.’s (2012b) facial affect coding was positively correlated with Hudson and Jacques’ (2014) overall coding scheme [$r(55) = .672, p < .001$]. Additionally, Aknin et al.’s coding scheme was positively correlated with Hudson and Jacques’ facial affect index [$r(55) = .835, p < .001$].

Discussion

Study 2 examined the impact of both self-oriented positive and negative affect on children's sharing behaviour. Recall that the hedonic contingency (Wegener & Petty, 1994) and mood maintenance (Isen & Simmonds, 1978) theories predict that self-oriented positive affect will increase sharing behaviour. However, the negative state relief theory (Cialdini et al., 1973) predicts that if someone is already experiencing self-oriented positive affect then they will not need to engage in prosocial behaviour to ameliorate their affective state. On the other hand, the focus of attention theory (Rosenhan et al., 1981) predicts that self-oriented positive affect will increase sharing behaviour, whereas self-oriented negative affect will decrease sharing. However, the negative state relief theory (Cialdini et al., 1973) predicts that self-oriented negative affect will increase children's sharing (see Table 2 for a summary). Unfortunately, we found no difference in cost and no-cost sharing between children who experienced positive or negative self-oriented affect. Therefore, our findings do not lend support to any of these theories.

Although there is some controversy in the adult literature, research to date with children suggests positive self-oriented affect can increase their subsequent sharing behaviour (Barnett & Bryan, 1974; Isen et al., 1973; Moore et al., 1973; Rosenhan et al., 1974; Underwood et al., 1977). However, this research has relied on manipulations that require children to reflect on their own previous positive experiences or receive comparative feedback on their task performance. Having children recall personal positive experiences from their past introduces potential confounds because each child's experience may include diverse elements that could impact their experience of positive affect in the present moment. In fact, Barnett et al. (1979) did not find a difference

between children's ratings of their positive and neutral self-oriented affect after a reflection manipulation. Providing children with positive feedback on their performance is a more controlled way to induce positive affect; however, when this is done under competitive settings that involve upward or downward social comparisons, this could introduce more complex social dynamics which could differentially impact children's generosity toward others (Barnett & Bryan, 1974; Zaki, 2014). Therefore, Study 2 was conducted to examine if self-oriented positive affect, as a result of receiving a valued resource, might increase children's sharing behaviour.

We expected that children who received their most favourite toy would demonstrate more positive affect and that they would share more than children who received their least favourite toy. However, Study 2 found no differences in sharing between children who received their most or least favourite toys, although these manipulations successfully impacted children's perceived and expressed affective reactions. These findings are inconsistent with much of the existing child and adult literature in this area. Each of our main findings from Study 2 are discussed in turn below, focusing on the impact of self-oriented positive affect on children's sharing behaviour, the success of the experimental manipulations, relations between children's affect and sharing, followed by a discussion of the behavioural coding.

The Impact of Self-Oriented Positive Affect on Sharing

Although the best and worst conditions had a significant impact on children's perceived affect, they did not impact children's subsequent sharing behaviour. We hypothesized that children would share more when they received their most versus least favourite toy; however, our results did not support this hypothesis. Children showed some

variability in their sharing behaviour but these inconsistencies were spread evenly between conditions, washing out any potential condition effect. It seems that receiving either their most or least favourite toy was not a powerful enough manipulation to impact children's sharing behaviour in the expected direction.

Recall that our original power calculation for this primary analysis was based on data from the study by Barnett and Bryan (1974), who found moderate to large effect sizes of $d = .40$ and $d = .76$ using Cohen's (1988) criteria. On the other hand, when we compared the sharing behaviour of children in the best versus worst conditions, our effect size for the total sharing was $d = .03$, which is a trivial effect size using Cohen's criteria. The power for this primary analysis was only .05, which indicates that there was only a 5% chance of finding a statistically significant difference if there was one (Field, 2009).

Previous research suggests that people experiencing self-oriented positive affect are more likely to engage in prosocial behaviour (e.g., Aderman, 1972; Isen, 1970; Isen et al., 1976; Isen & Levin, 1972; Manucia et al., 1984; O'Malley & Andrews, 1983; Veitch et al., 1977). However, this did not seem to be the case for the children in Study 2. It is possible that self-oriented positive affect may impact children's sharing behaviour, but we were not able to demonstrate this effect with our experimental manipulation. Alternatively, it is also possible that there is not a strong relation between these variables and that relations between positive affect and sharing are over-reported in the literature. Finally, it is also possible that such relations between self-oriented positive affect and sharing, which are relatively well-established in the adult literature, do not emerge until later in development.

Based on the negative state relief theory (Cialdini et al., 1973), we might expect that children who received their least favourite toy, and experienced negative affect, would be more likely to engage in higher rates of sharing to gain a positive affective benefit. Conversely, based on the hedonic contingency theory (Wegener & Petty, 1994), we might expect that children who received their most favourite toy, and experienced positive affect, would be more likely to engage in higher rates of cost sharing to maintain or even increase their positive affect. Since we found no significant differences in sharing behaviour between the two conditions, we have no evidence to lend support to either theory. It is possible that neither or both processes were at play, which might account for the lack of differences between groups.

In addition to a main effect of condition, we also hypothesized that there would be an effect of trial-type, in which children would share more in no-cost than cost trials. As in Study 1, there was a significant difference between cost and no-cost sharing trials, in which children were more generous when there was no cost of sharing to themselves.

The Success of the Experimental Manipulation

In order to assess if our experimental manipulations were successfully able to induce different affective reactions in children, we first had children rate how they thought another same-sex child their age would feel if they received their most or least favourite toys. Children's facial expressions of affect were also coded by external adult observers. Overall, children thought another child their age would feel happier if they received their favourite toy and sadder if they received their least favourite toy and their own affective responses to receiving either their most or least favourite toy corroborated this. We expected children who received their most favourite toy would express highly

positive affect. However, we were unsure how children who received their least favourite toy would react. Previous research using a similar gift paradigm with both sighted and blind children, generally resulted in positive affective reactions in children in this age range (Cole, 1986; Cole et al., 1989). This research suggests that when children receive a disappointing gift, they work to control their negative emotion and will often feign positive emotion. This is why in Study 2 it was important to obtain a rating of how children thought another child might feel if they received their most or least favourite toys, to gain a more accurate assessment of children's genuine feelings about receiving the different toys.

There was an interesting effect of order, in which children showed an especially negative response to receiving their least favourite toy when they got this first. It is possible that this could have washed out the sharing effect; however, a comparison of children in Order 1 only resulted in the same null findings.

Aknin et al.'s (2012b) affect coding scheme and the facial rating from Hudson and Jacques' (2014) coding scheme were highly positively correlated with one another, both when looking at Hudson and Jacques' overall coding scheme (including an average of the facial, vocal, verbal, and behavioural indices) and when examining their facial affect index alone. These findings indicate that the two coding schemes are likely tapping into similar constructs.

Although all children took their most favourite toy home with them, almost one-third of the children from each order did not take their least favourite toy home with them. This speaks to how much children did not like their least favourite toy, supporting the effectiveness of the experimental manipulation. This manipulation appeared to be a

successful way to induce positive and negative affect in children. However, as detailed above, this did not impact their subsequent sharing behaviour.

Relations between Affect and Sharing

Correlations between children's affect ratings for the best and worst toys and their subsequent sharing behaviour were not significant; however, there was an interesting pattern of findings in which the relations between children's affect ratings for the best toy and their sharing were negative, and relations between their affect ratings for the worst toy and their sharing were positive. This indicates that when children received their most favourite toy, the higher that children's positive affect ratings were then the less they shared. Conversely, when children received their least favourite toy, the higher their positive affect ratings were then the more they shared. Although they are not significant, this pattern of findings is interesting because they are somewhat inconsistent with our hypothesis that self-oriented positive affect would lead to increased sharing behaviour. It seems that this only held true for children when they received their least favourite toy, as those who ranked the worst toy more highly on the FAS shared more. Surprisingly, when children received their most favourite toy, those who ranked the best toy very highly on the FAS were less generous which is not what we expected.

As in Study 1, there was also a significant correlation between children's cost and no-cost sharing behaviour in both the best and worst conditions. This indicates that children who were generous in one trial-type tended to be generous when presented with the other trial-type as well. This finding likely reflects patterns in children's sharing in which they tended to be consistently more or less generous overall.

Limitations

There are some notable limitations to Study 2 which deserve mention, including variability in children's toy rankings, and the affect rating scales used to code children's responses to receiving the different toys.

All the children in Study 2 said that another boy or girl their age would feel happy to receive their most favourite toy; however, there was marked variability in how they thought another child would feel if they received their least favourite toy. Although the toys varied in terms of their quality, many children seemed happy to receive both their most and their least favourite toy. In fact, three children were excluded from further analysis because they did not show any difference between their affect ratings for the best and worst toy, as both were rated as highly positive. On the other hand, many children predicted another child would be quite dismayed to receive their least favourite toy, and behavioural observations confirmed that they did not like the toy. In fact, 26 children left the toy behind and did not take it with them. It is possible that this differential response to the less desired toy could have impacted our findings. Future research could include a wider range in the variable quality of the toys, so that the least desirable toy is perceived as worthless (e.g., a broken or non-functional item).

Independent adult coders, who were both blind to the study hypotheses, coded children's affective responses when they received both gifts, based on Aknin et al.'s (2012b) coding scheme and Hudson and Jacques' (2014) behavioural coding scheme. Although they were blind to the research questions and to the condition the child was experiencing, it was sometimes obvious from children's comments that they received a

toy that they either strongly liked or disliked. It is possible that this may have biased the coders' ratings of the child's behavioural responses.

Directions for Future Research

Based on what we learned from Study 2, some important directions for future research projects are also suggested, such as the addition of a neutral control condition or a known sharing partner. It may have been helpful to include a neutral control condition because Niesta Kayser et al. (2010) found adults were more likely to engage in low-cost helping when they experienced either positive or negative affect, in comparison with neutral affect. If children in the current study were motivated to share more if they experienced either positive or negative self-oriented affect then the addition of a neutral control condition may help to tease this apart.

An interesting direction for future research would be to link the subsequent sharing partner to the gift-giving, so that children are told that this child gave them either their most or least favourite toy. This might create a more explicit connection between the child's own affective state and their sharing partner, instead of simply inducing positive or negative affect through what children perceived to be a process of random selection. Although, Telle and Pfister's (2016) model underscores that the beneficiary of the prosocial behaviour does not need to be the person who elicited the positive empathy, and could be another external individual or group who may differ in terms of their own affective state or their need for help.

Conclusions

Study 2 examined if positive affect might impact children's sharing behaviour. Overall, children thought another child their age would feel happier if they received their favourite toy and sadder if they received their least favourite toy. Children's own affective responses to receiving either their most or least favourite toy corroborated this. However, this did not impact children's subsequent sharing behaviour. Together, Studies 1 and 2 provide accumulating data that manipulations such as these which try to increase children's other-oriented or self-oriented positive affect do not significantly impact their subsequent sharing behaviour. Since research with adults suggests there may be a positive feedback loop, in which self-oriented positive affect results in more sharing behaviour, and engaging in sharing behaviour increases positive affect (Aknin et al., 2012a), Study 3 explored the other side of these interrelations, to examine if engaging in sharing might lead to increased positive affect in children.

CHAPTER 4: STUDY 3:

DOES SHARING IMPACT CHILDREN'S AFFECT?

This program of research aimed to examine relations between positive affect and sharing from multiple perspectives. Therefore, in addition to examining if other-oriented and self-oriented positive affect impact children's subsequent sharing behaviour, Study 3 also examined if engaging in sharing behaviour might lead to increased positive affect in children.

There is a growing body of research demonstrating that engaging in prosocial behaviour increases positive affect in adults. Correlational and experimental research demonstrates that adults who were assigned to spend money on other people reported more positive affect than those who spent money on themselves (see Dunn et al., 2014 for a review). Such affective benefits of sharing are not only perceptible to the person involved in these actions, but also to adult observers who rated participants' facial expressions of positive affect on a five-point scale (Aknin et al., 2014). Adults also showed greater affective benefits of getting to make donations to charity through their performance on a computer game, in comparison to those who simply played for points (Martela & Ryan, 2016).

In more real-world settings, adults assigned to do kind acts for others over a 6-week period were happier than those who did kind acts for themselves (Lyubomirsky, Sheldon, & Schkade, 2005; Nelson, Layous, Cole, & Lyubomirsky, 2016). Similarly, longitudinal research from a large American dataset suggests adults who engage in volunteer work experience increased well-being and those with greater well-being spend more time volunteering (Thoits & Hewitt, 2001). Correlational research including 136

countries and experimental research outside North America, in places such as Uganda, India, South Africa, and small, isolated, rural villages in the South Pacific has replicated the positive relation between sharing and positive affect (Aknin et al., 2013a; Aknin et al., 2015a). A series of studies by Gray (2010) indicated that donating to charity increased adults' sense of agency (as measured by their ability to hold both an arm weight or hand grip for a longer period of time); however, it only impacted their self-reported affect on the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) if it was measured directly after the sharing task and not at the end of the study. This research suggests that potential affective benefits of small charitable donations may be short-lived.

Most previous adult research on the affective benefit of sharing examines differences in affect between groups of individuals after they either share resources with others versus receive resources for themselves (among other control groups). However, we found no research with adults that examined actual changes in affect before and after engaging in sharing behaviour. Such an analysis using a within-subjects design could provide compelling evidence that engaging in sharing behaviour actually increases positive affect, as opposed to simply providing evidence that individuals who share with others are generally happier than those who receive resources for themselves.

One exceptional study by Aknin et al. (2012b) examined 2-year-old children's facial affect over a series of prosocial and non-prosocial situations. Two external coders who were blind to study hypotheses coded children's facial affect as they underwent five different conditions. First, children were introduced to a puppet and told that the puppet liked treats. Second, the experimenter found eight treats and told the child that the treats

were for them, then placed them in the child's bowl. Third, the child observed as the experimenter gave the puppet a treat that was found. Fourth, the experimenter found another treat and asked the child to give it to the puppet. Lastly, the experimenter asked the child to take one of the child's treats and give it to the puppet. Aknin et al. found that 2-year-old children displayed greater positive affect when sharing resources with others than when receiving treats themselves. Further, they found that positive affect was highest when the children were asked to share their own resources, as opposed to the resources found by the experimenter. This striking finding that children exhibited increased positive affect when sharing with a personal cost, as opposed to sharing with no cost to themselves, suggests children differentiate between sharing with and without a personal cost and they show increased positive affect when engaging in sharing with a cost. This research was replicated with 2- to 5-year-old children from small, isolated, rural villages in the South Pacific (Aknin et al., 2015a). Aknin et al. postulated that the affective benefit of sharing with a cost may help to positively reinforce this prosocial behaviour, whereas sharing with no cost may not require the same affective benefit because it does not require the same personal sacrifice.

Although there is accumulating evidence that mandatory sharing may lead to increased positive affect in children, no known research to date has examined how free choices about sharing impact children's affect. This seems particularly important because the voluntary nature of sharing is central to the definition of prosocial behaviour (Eisenberg et al., 2006). As part of their *self-determination theory*, Ryan and Deci (2000) proposed that autonomy may be key to experience wellbeing from our behaviours. Previous research with children suggests providing them with opportunities for free as

opposed to forced choices about engaging in prosocial behaviour increased their subsequent helping and sharing behaviour (Chernyak & Kushnir, 2013; Rapp, Engelmann, Herrmann, & Tomasello, 2017). However, such research did not measure how engaging in this prosocial behaviour impacted children's affective state.

Similarly, previous work with adults by Harbaugh et al. (2007), suggests that neural activity shows greater increases in areas related to reward-processing when individuals made voluntary as opposed to mandatory charitable donations, indicating that choice may contribute to an affective benefit from sharing. Research using diary and experimental methods by Weinstein and Ryan (2010) found adults who actively chose to engage in prosocial behaviour displayed higher levels of positive affect than those who were asked to help. These findings suggest autonomous decision-making may increase the affective benefits of prosocial behaviour.

On the other hand, recent work by Hepach, Vaish, and Tomasello (2012) using changes in pupil size as an indicator of sympathetic arousal, suggests that 2-year-old children showed similar responses when they saw another person being helped as when they themselves actively helped. This suggests that children may not have to actively engage in prosocial behaviour in order to show the same changes in arousal. It remains unclear whether children must be active participants in the sharing, or if they might show the same affective benefits by simply observing sharing behaviour.

We were interested in exploring if sharing with a personal cost could increase children's self-reported and facial displays of affect, and if an anticipated affective benefit may serve as part of the motivation for prosocial behaviour. Therefore, Study 3 was conducted to further investigate if there is an affective benefit of sharing in 5- and 6-

year-old children. To address this research question, children's affect was compared across three different conditions, which involved (1) active sharing, (2) passive sharing, or (3) passive receiving. In the first condition, children made free choices about how to actively share with their sharing partner across a series of costly sharing trials. This active sharing condition allowed us to examine the impact of sharing with a cost on children's affect. In the second condition, children passively observed as the examiner allocated stickers based on these same costly sharing trials between themselves and their sharing partner. This passive sharing condition allowed us to control for the number of stickers that were allocated and received by the participants but it removed the active sharing component from the task, to see if this is important to the affective benefit of sharing. In the third condition, children passively observed as the examiner allocated stickers to them in a similar way, but their sharing partner did not receive any stickers. This passive receiving condition allowed us to control for the number of stickers that children received but it removed any sharing component from the task, to see if children show a comparable affective benefit when they simply receive stickers for themselves.

To control for the number of stickers that children received and shared, participants were matched one-to-one-to-one across the three conditions in a yoked design, based on their sex, age, and their reported facial affect before beginning the RAT. Unlike Studies 1 and 2, which included both cost and no-cost sharing trials, Study 3 only included cost trials because previous research by Aknin et al. (2012b) suggests that children showed the most positive affect when engaging in this type of sharing.

Before any experimental manipulation, all children were first invited to watch a brief negative affect-inducing video developed by Williams et al. (2014). This stimulus allowed us to prime children for negative affect, since research recently conducted in our laboratory found that most early school-aged children reported highly positive baseline affect before any experimental manipulations (Zhang, Longard, & Moore, 2016). Specifically, we found that among 30 children aged 4 to 6 years ($M = 4$ years, 10 months, $SD = 1$ month), baseline self-reported affect scores were highly positively skewed, with most children selecting one of the two happiest faces numbered 7 and 8 on the FAS ($M = 7.27/8$, $SD = 1.36$). Given these highly positive baseline scores, we attempted to induce negative affect in children to avoid ceiling ratings of baseline happiness, so we could have the opportunity to see if sharing increases children's self-reported affect.

Study 3 used a between-subjects yoked experimental design, which allowed us to compare self-reported changes in affect between three conditions: (1) children who were given an opportunity to make decisions about sharing stickers with another child (i.e., active sharing); (2) children who watched the experimenter allocate stickers between themselves and another child (i.e., passive sharing); and (3) children who simply watched the experimenter allocate stickers to themselves (i.e., passive receiving). Children were assigned to one of three conditions, which were yoked one-to-one-to-one so that all three children in each match were the same sex and had an initial self-reported affect within 1 point of each other. This yoking process allowed us to investigate the impact of active sharing with a personal cost on children's affect, compared to two yoked controls matched to receive the same number of stickers as participants in the experimental condition, in either passive sharing or no sharing contexts.

Study 3 Objective and Hypotheses

The primary objective of Study 3 was to examine the impact of sharing on self-reported and facially displayed affect in 5- and 6-year-olds. Study 3 allowed us to compare differences in affect across children who were given an opportunity to make decisions about sharing stickers with another child (i.e., active sharing), versus children who simply watched an adult allocate stickers between the participant and another child (i.e., passive sharing), and children who watched an adult give stickers only to the participant and not to another child (i.e., passive receiving). We measured children's self-reported affect before and after the RAT to see if children who were given an opportunity to share with a personal cost showed greater positive increases in their self-reported and facial affect.

Based on preliminary research by Aknin et al. (2012b), which suggested that young children displayed higher rates of positive affect, as rated by adult coders, when sharing resources with others than when receiving resources for themselves, especially when they shared with a personal cost, we hypothesized that children in the active and passive sharing conditions would show more positive affect than those in the passive receiving condition. In line with previous research by Harbaugh et al. (2007), which suggests that neural activity shows greater increases in areas related to reward-processing when individuals make voluntary as opposed to mandatory charitable donations, we hypothesized that children who were given the opportunity to make decisions to share in the active sharing condition would show a greater positive increase in their affect than children who were not given the opportunity to make such prosocial decisions in the passive sharing condition. Finally, in addition to examining differences in children's

affect before and after the RAT, we also planned to conduct further trial-by-trial analyses to examine whether children’s facial affect was more positive in trials that resulted in a prosocial outcome.

Method

Participants

A total of 132 children took part in this study in a laboratory setting. Children were predominantly Caucasian and most spoke English as their first language. All participants were fluent in English. From this sample, 63 children aged 5 years, 0 months to 6 years, 11 months were matched based on their sex and their initial self-reported affect (within 1 point). Children were assigned to one of the three conditions (active sharing, passive sharing, or passive receiving), so that there were 21 children (10 boys and 11 girls) in each group. Participants who met inclusion criteria were first assigned to the active sharing condition, then eligible matches were assigned to the passive sharing or passive receiving conditions and yoked in triads to the participant in the original active sharing condition. Participant statistics used for matching, including the mean and standard deviation for the first self-reported affect rating and the age of the children in each of the three conditions, are summarized in Table 7 below.

Table 7

Study 3 Participant Statistics

	Active Sharing	Passive Sharing	Passive Receiving
Age	<i>M</i> = 6 years, 1 month (<i>SD</i> = 6 months)	<i>M</i> = 5 years, 11 months (<i>SD</i> = 6 months)	<i>M</i> = 5 years, 11 months (<i>SD</i> = 7 months)
1st Self-Report	<i>M</i> = 4.52 (<i>SD</i> = 1.12)	<i>M</i> = 4.76 (<i>SD</i> = 1.34)	<i>M</i> = 4.67 (<i>SD</i> = 1.32)

Based on the criteria by Cohen (1988), a statistical power analysis was performed for sample size estimation for Study 3, using *G*Power 3.1* software (Faul et al., 2007). This power analysis was based on data from the study by Aknin et al. (2012b), which compared the facial affect of 20 toddlers over a series of prosocial and non-prosocial conditions. The effect size for the comparison between children's affect when they engaged in costly sharing (akin to our active sharing condition) versus when they received a treat for themselves (akin to our passive receiving condition) was $d = 1.35$. This effect size is considered to be large using Cohen's (1988) criteria. With an alpha = .05 and power = 0.80, the projected sample size needed with this effect size is approximately $N = 10$ per group for simple comparisons between groups. Thus, our sample size of $N = 21$ per group should have been adequate for the main objective of this study.

Additionally, 53 children (25 boys and 28 girls) were excluded from matching because their first self-report rating was too highly positive, but they took part in the active sharing condition. Their age ranged from 5 years, 0 months to 6 years, 11 months ($M = 5$ years, 7 months, $SD = 6$ months). Finally, sixteen children had unusable data for the following reasons. Five children remained unmatched because there were no participants who were the same sex as them and who also had an initial self-reported affect rating within 1 point of their rating. Six children were excluded because they were originally matched to a child whose initial self-reported affect was not within 1 point of their rating. Four children were excluded from the study due to experimenter error and one was excluded because they refused to finish watching the video.

Procedure

Children were seen individually in a laboratory setting. After parental signed consent was obtained, children were invited to participate in the study.

(1) Negative Affect-Induction. Children were first invited to watch a brief video about a little girl named Jenny, who narrated the video in a sad tone and was visibly upset as she made posters to find her lost dog. This stimulus allowed us to prime children for negative affect in order to avoid ceiling ratings of baseline happiness, so we could have the opportunity to see if sharing increases children's self-reported affect.

(2) First Affect Rating (FAS). After watching the video, children were asked to rate their affect using the FAS. See Figure 2 in Study 1 above for an example of the FAS used in this study. This first affect rating was used as part of our inclusion criteria for Study 3, in order to exclude children who were not impacted by the negative affect-induction. It was decided a priori that only children whose initial self-reported affect was in the bottom two-thirds of the FAS (ratings of 0 to 5) would be included in the matching procedure. It was also decided that this first affect rating would be used to create matched triads of children who were the same sex and who had an initial FAS rating within 1 point of each other.

(3) Resource-Allocation Task (RAT). Children were presented with prepared line drawings representing themselves and the child from the video, with their names written above. The experimenter showed each drawing one at a time and asked the child to identify the person in the drawing. If children misidentified any of the drawings, the experimenter told them who it was.

Children each completed 10 resource-allocation trials that involved sharing with a cost, as well as one practice trial. In the practice trial, children were asked if they wanted 1 or 2 stickers for themselves. This practice trial helped familiarize children with how the task worked, and provided a potential measure of children's interest in the stickers¹¹.

In each of the 10 cost sharing trials, children in the active sharing condition were given a choice between 1 sticker for themselves and 1 sticker for Jenny versus 2 stickers for themselves and 0 stickers for Jenny. Unlike Studies 1 and 2, which included both cost and no-cost trials, only cost sharing trials were included in Study 1 in order to maximize the affective benefit, since research suggests children show increased positive affect in response to cost versus no-cost sharing (Aknin et al., 2015a; Aknin et al., 2012b).

The order of each trial presentation was counterbalanced, so children were either presented with the sharing option first or second on the grid. Each participant only participated in one condition. Children in the active sharing condition always tested first, then children in the passive sharing and passive receiving conditions were yoked as triads to their counterpart in the active sharing condition. Children in the passive sharing condition were shown the same choices as the child in the active sharing condition who they were yoked to, but instead of getting to make active sharing decisions, the experimenter simply made the allocations for them, based on their match's previous decisions. Children in the passive receiving condition were only shown choices between 1 or 2 stickers for themselves, and there were no stickers given to their sharing partner. Children in the passive receiving condition were allocated 1 or 2 stickers by the experimenter, based on the choices of their match in the active sharing condition.

¹¹ *Note.* 104/130 children (80%) chose 2 stickers.

Figure 15 below provides an illustration of RAT trials in Study 3.

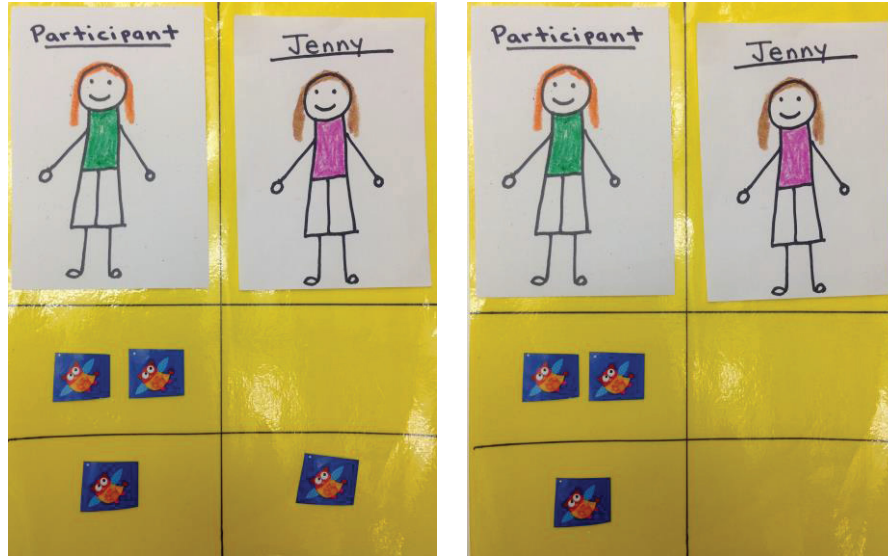


Figure 15. Example of the RAT used in Study 3. The image on the left is an example of a cost trial from the active sharing or passive sharing conditions, in which participants either chose between 2 stickers for themselves and none for their partner versus 1 sticker for themselves and 1 for their partner, or observed as the experimenter made the allocations. The image on the right is an example of a trial from the passive receiving condition, in which participants were given either 1 or 2 stickers for themselves and none were given to their partner (although their sharing partner's image was still displayed on the grid).

(4) Second Affect Rating (FAS). After completing the RAT, children were asked to rate their affect a second time using another FAS.

(5) Debriefing. At the end of the study, children were told that the little girl in the video found her dog, so no one left the study feeling badly for the character.

Affect Coding

The study sessions were also video recorded so we could code children's expressions of facial affect. Videos for only 57 of the 63 participants could be coded due to unclear video footage or unavailable videos (including 20 from active sharing, 17 from passive sharing, and 20 from passive receiving conditions). Affect coding was conducted based on Aknin et al.'s (2012b) seven-point affect rating scale, with ratings from 1 to 7. This facial affect coding scheme is summarized in Table 5 above as part of the Method section for Study 2.

Analytic Plan

Data Scoring. To be included in the study, children were required to have an initial affect rating of 5 or lower (in the bottom two-thirds of the scale). The number of stickers that children shared out of the possible 10 was calculated.

Data Checking. The experimenter coded all responses to the FAS and RAT live during the study session. Study sessions were video recorded to allow for verification of children's responses on the RAT (125/132 children completed the RAT and had useable videotapes). To ensure reliability, a secondary coder blind to the study hypotheses, watched all video-recorded trials and double-scored the child's responses on the RAT. In the few cases in which the primary experimenter and secondary coder were not in agreement (4/1250 trials), a third coder blind to the study hypotheses re-scored the RAT trial to make the final decision. There were no errors in the sharing numbers that interfered with the yoked design.

Results

Assumptions Check

All assumptions of the ANOVA were checked for both the FAS ratings and affect coding for Study 3. The self-reported affect data were not normally distributed, as a visual inspection of histograms suggests children's affect ratings tended to be more negatively skewed at the first time-point (FAS 1) and more positively skewed at the second time-point (FAS 2). All Kolmogorov-Smirnov tests broken down by time-point and condition were significant (p 's < .05) except for FAS 1 for the passive sharing condition ($p = .135$), providing further evidence that the assumption of normality was violated. We tried to transform the data using square and log transformations and data inversion, as suggested by Tabachnick and Fidell (2007) for moderate, substantial, and severe positive skewness, but this did not make the data normally distributed. The assumption of homogeneity of variance was satisfied, as indicated by Levene's test based on the mean for FAS 1 [$F(2, 54) = .110, p = .896$] and FAS 2 [$F(2, 54) = .425, p = .656$]. It is also important to note that self-reported affect was measured using an ordinal as opposed to an interval scale. Therefore, results of the ANOVA should be interpreted with caution.

The coded facial displays of affect were normally distributed for the active and passive sharing conditions, as indicated by a visual inspection of the histograms and the Kolmogorov-Smirnov test for active sharing [$D(16) = .117, p = .200$] and passive sharing [$D(16) = .108, p = .200$]. However, the facial affect data were not normally distributed for passive receiving [$D(16) = .293, p = .001$], as this group had less variability than the other two conditions. We tried to transform the data using square and log transformations

and data inversion, but this did not make the data normally distributed. The assumption of homogeneity of variance was not satisfied, as indicated by Levene’s test based on the mean [$F(2, 54) = 4.206, p = .020$]. It is also important to note that children’s facial displays of affect were coded using an ordinal as opposed to an interval scale. Therefore, results of the ANOVA should be interpreted with caution.

Affect Ratings (FAS)

A 2 x 3 within-subjects ANOVA was conducted to analyze whether changes in self-reported affect on the FAS before and after the RAT differed across the three experimental conditions. Given the matched design, both FAS ratings (before and after the RAT) and the three conditions (active sharing, passive sharing, and passive receiving) were entered as within-subjects variables.

There was a significant main effect of time on children’s self-reported affect [$F(1, 20) = 64.582, p < .001, \eta_p^2 = .764$]. Follow-up paired samples *t*-tests revealed a significant increase in children’s self-report ratings before and after the RAT for the active sharing [$t(20) = -6.781, p < .001, d = 1.480$, passive sharing [$t(20) = -5.050, p < .001, d = 1.102$], and passive receiving [$t(20) = -6.435, p < .001, d = 1.404$] conditions. See Table 8 below for a summary of the means and standard deviations for self-reported affect on the FAS for each of the three conditions.

Table 8

Affect Ratings (FAS) Means and Standard Deviations by Condition

	Active Sharing	Passive Sharing	Passive Receiving
Time 1	$M = 3.48 (SD = 1.12)$	$M = 3.24 (SD = 1.34)$	$M = 3.33 (SD = 1.32)$
Time 2	$M = 6.33 (SD = 1.32)$	$M = 6.05 (SD = 1.80)$	$M = 6.52 (SD = 1.47)$

There was no main effect of condition [$F(2, 19) = 1.403, p = .270, \eta_p^2 = .129$], indicating that whether children were in the active sharing, passive sharing, or passive receiving condition did not impact their self-reported affect. There was no interaction between time and condition [$F(2, 19) = 1.302, p = .295, \eta_p^2 = .121$]. These results suggest children in the active sharing, passive sharing, and passive receiving conditions experienced a significant increase in positive affect regardless of the condition they were in, but there was no additional affective benefit associated with active sharing, compared to passive sharing or passive receiving. The results are illustrated in Figure 16 below.

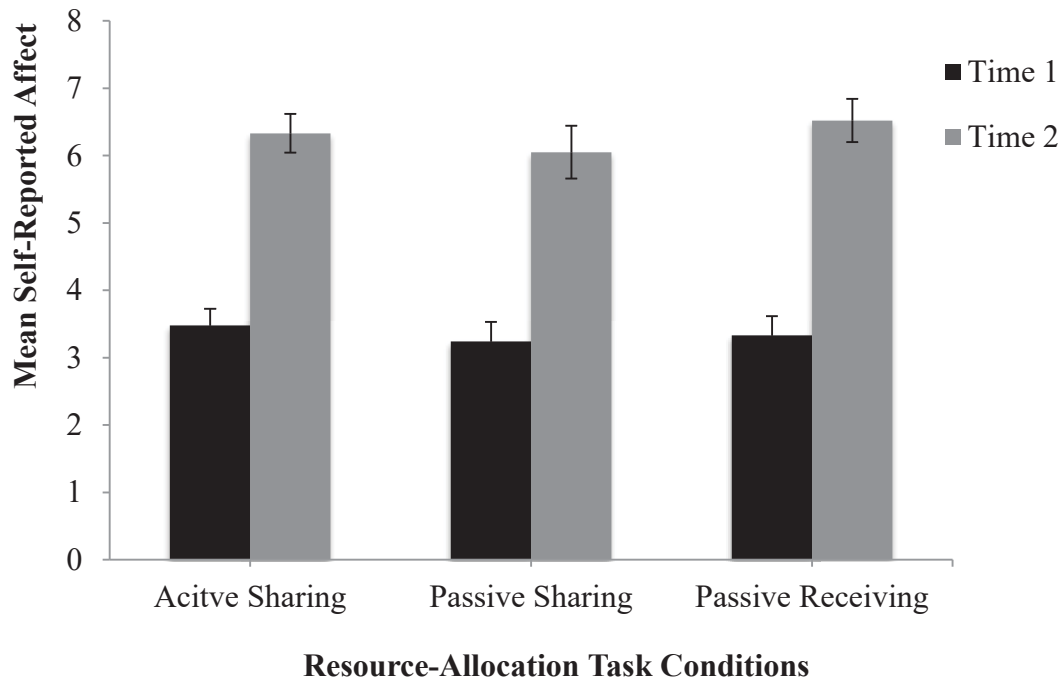


Figure 16. Study 3 mean affect ratings before and after the RAT by the three conditions.

Error bars represent standard error of the mean.

Affect Coding

Two independent coders coded children's facial displays of affect and their coding was highly related ($\alpha = 0.82$). Children's facial affect displays were coded for each of the 10 trials on the RAT, and a mean was calculated for each child. A one-way within-subjects ANOVA was conducted to analyze differences in children's mean displays of facial affect across each of the three experimental conditions. Analyses could only be conducted on the 16 matched triads with complete data for the affect coding. We found a significant main effect of condition, $F(2, 14) = 23.692, p < .001, \eta_p^2 = .772$.

To investigate the main effect further, two paired samples *t*-tests were conducted to investigate whether there were differences in mean affect ratings between the active sharing and passive sharing conditions and between the passive sharing and passive receiving conditions. Paired samples *t*-tests revealed that children's mean affect was significantly higher in the active sharing condition ($M = 4.98, SD = 0.526$) than the passive sharing condition ($M = 4.48, SD = 0.297$), $t(15) = 3.184, p = .006, d = .772$. Similarly, children's mean affect was significantly higher in the passive sharing condition than the passive receiving condition ($M = 4.13, SD = .153$), $t(15) = 4.259, p = .001, d = 1.065$.

See Figure 17 for mean affect ratings for the three conditions, broken down by prosocial trials (in which participants either actively or passively shared two stickers between themselves and their sharing partner or simply received one sticker for themselves) and non-prosocial trials (in which all participants received two stickers for themselves and their sharing partner received none).

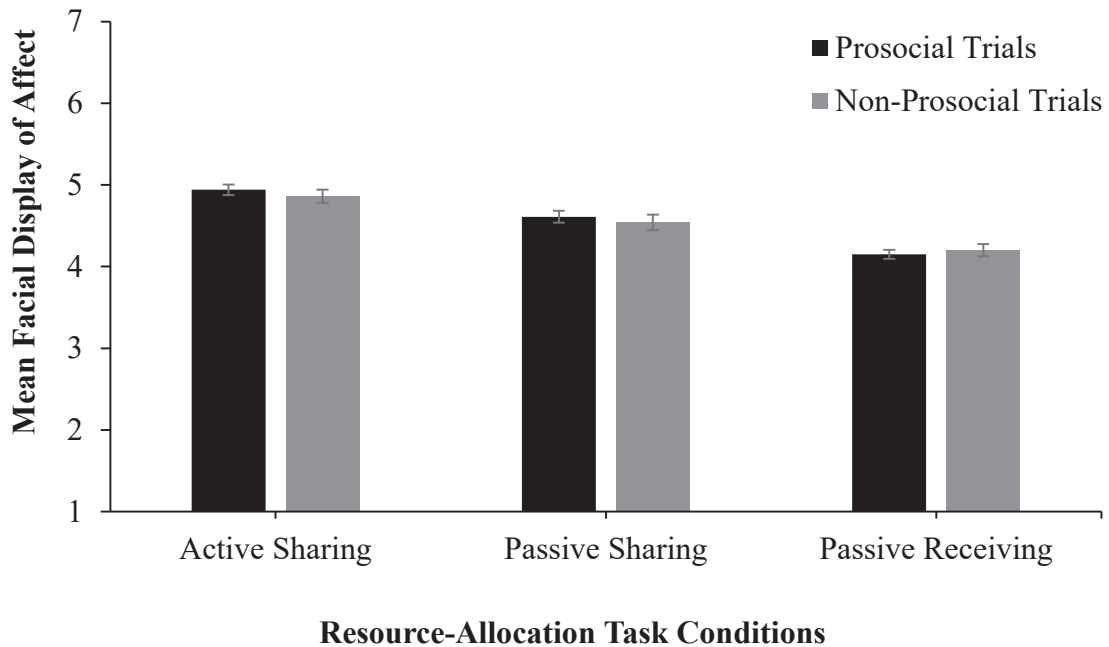


Figure 17. Mean facial affect coding data for matches by condition for prosocial and non-prosocial trials, based on data from primary coder and consensus data. Error bars represent standard error of the mean.

Affect Coding by Trial-Type

The coding of children’s facial affect for each of the 10 trials on the RAT was also broken down based on whether they shared in each trial, so we could compare children’s facial affect between instances in which they made prosocial or non-prosocial choices. It is important to note that some children shared 0/10 times, whereas others shared 10/10 times, with a mean of 6.6/10. A mixed ANOVA could not be used to analyze the data because the groups were not even (i.e., about two-thirds of the trials were prosocial and only about one-third were non-prosocial trials) and different participants contributed differentially to these two groups of data. Therefore, mixed modelling was used to examine differences in facial affect between groups for ‘prosocial’

trials in which children shared (or got one sticker for themselves) versus ‘non-prosocial’ trials in which they did not share (or got two stickers for themselves). This approach does not require independence of observations, nor does it require homogeneity of variances or sphericity. However, it does not supply an effect size.

Analysis for Matches Data. To examine the impact of condition and trial-type on the 63 participants included in the matches, we tested a series of models with random intercepts and random slopes, using different covariance structures including unstructured (UN) which is a general covariance matrix, diagonal (DIAG) which has heterogeneous variance, and compound symmetry (CS) which has constant variance and covariance. Model 5 was selected as the best fitting model, as it included both condition and trial-type variables and had the lowest AIC and BIC values other than Model 1. See Table 9 below for a summary of the models that were tested, including their primary components and Akaike’s Information Criterion (AIC) and Schwarz’s Bayesian Criterion (BIC) values.

Table 9

Study 3 Matches Mixed Modelling Results Summary

Model	Null	1	2	3	4	5
Variables	N/A	Condition	Trial-Type	Condition & Trial-Type	Condition & Trial-Type	Condition & Trial-Type
Covariance Structure	UN	UN	UN	UN	DIAG	CS
Critical Warnings	N/A	N/A	N/A	Hessian matrix not positive definite	Hessian matrix not positive definite	N/A
AIC	1203.084	1180.519	1206.605	1337.450	1197.643	1189.017
BIC	1211.772	1189.200	1215.289	1679.920	1253.999	1202.022

Model 5 replicated the results of the previous one-way ANOVA and revealed a main effect of condition [$F(2, 58) = 14.482, p < .001$]. However, contrary to hypotheses, there was no main effect of trial-type [$F(1, 58) = 0.001, p = .975$], and no interaction between condition and trial-type [$F(2, 58) = 0.290, p = .749$]¹².

Analysis for Active Sharing Data. To examine the impact of trial-type on the 66 participants who completed the active sharing condition, we tested a series of models with random intercept and random slope. Model 1 was selected as the best fitting model, as it included trial-type relatively low AIC and BIC values. There were no critical warnings given. See Table 10 below for a summary of the models that were tested, including their primary components and the AIC and BIC values.

Table 10

Study 3 Active Sharing Mixed Modelling Results Summary

Model	Null	1
Variable	N/A	Trial-Type
Covariance Structure	UN	UN
AIC	1281.451	1285.159
BIC	1290.432	1294.138

Model 1 was consistent with previous findings and found that contrary to hypotheses, there was no effect of trial-type [$F(1, 651) = 0.167, p = .683$] on children's facial displays of affect.

¹² The same pattern of results was found when the model was conducted with just the active sharing and passive sharing participants from the matches.

Analysis for Sharing Data from Studies 1 and 2. We also conducted post-hoc coding and analyses with a larger sample size from Studies 1 and 2 to confirm the null results from Study 3 in different circumstances with different manipulations. To examine the impact of prosocial versus non-prosocial trials on the 135 participants who had codeable videos from a similar RAT in Studies 1 and 2, we tested a series of models with random intercept and random slope, using different covariance structures. Model 5 was selected as the best fitting model, as it included both cost versus no-cost trial-type and prosocial versus non-prosocial trial-type variables and had the lowest AIC and BIC values. See Table 11 below for a summary of the models that were tested, including their primary components and the AIC and BIC values.

Table 11

Studies 1 and 2 Active Sharing Mixed Modelling Results Summary

Model	Null	1	2	3	4	5
Variables		Prosocial Trial-Type	Cost Trial-Type	Prosocial and Cost Trial-Type	Prosocial and Cost Trial-Type	Prosocial and Cost Trial-Type
Covariance Structure	UN	UN	UN	UN	DIAG	CS
Critical Warnings	N/A	N/A	N/A	Hessian matrix not positive definite	Hessian matrix not positive definite	N/A
AIC	6160.612	6133.875	6166.766	6446.923	6038.803	6071.637
BIC	6173.345	6146.608	6179.499	6739.755	6102.462	6090.735

Surprisingly, Model 5 revealed a significant main effect of prosocial versus non-prosocial trial-type [$F(1, 236) = 12.952, p < .001$], in which children displayed more positive affect when engaging in non-prosocial trials. There was no main effect of cost versus no-cost trial-type [$F(1, 198) = 0.898, p = .345$] and no interaction between prosocial and cost trial-types [$F(1, 518) = 0.011, p = .917$]. Results are illustrated in Figure 18 below.

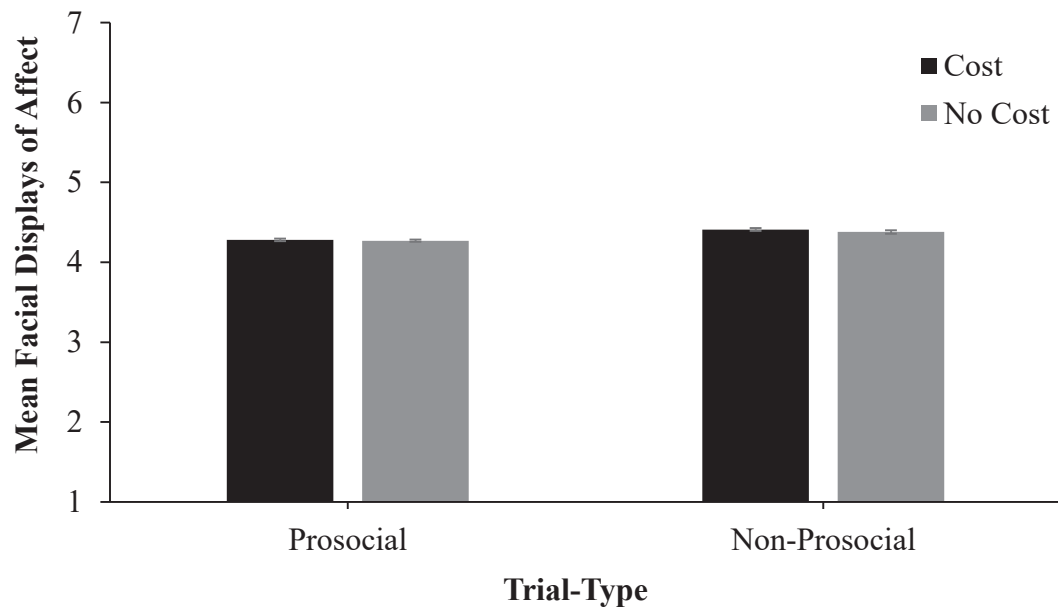


Figure 18. Mean facial displays of affect for prosocial and non-prosocial trials, by cost and no-cost trials for Studies 1 and 2. Error bars represent standard error of the mean.

Relations between Affect Ratings (FAS) and Affect Coding

To examine how highly related the two affect ratings were, Pearson product-moment correlations compared children's second self-reported affect (after the RAT) and their coded facial displays of affect across all trials (during the RAT). Results showed the two affect ratings were not highly correlated [$r(108) = .149, p = .247$].

Relations between Affect and Sharing

Affect Ratings (FAS) and Sharing. Pearson product-moment correlations between children's self-reported affect and their sharing behaviour were conducted. Since only children in the active sharing condition had control over the number of stickers they shared, correlations between the first self-reported affect rating (FAS) and sharing behaviour were only conducted for this experimental condition, which included 21 matched and 53 unmatched participants. The relation between children's initial affect and their subsequent sharing was negative and significant [$r(72) = -.231, p = .048$], indicating children with lower self-reported affect before the RAT shared more.

Correlations between the number of stickers that were shared in the RAT and children's subsequent affect ratings were also examined for all three conditions. For children in the active sharing group, this relation was positive although not significant [$r(72) = .161, p = .170$]. For children in the passive sharing group, this relation was negative although not significant [$r(19) = -.260, p = .138$]. For children in the passive receiving group, this relation was also negative although not significant [$r(19) = -.232, p = .299$]. The correlations are summarized in Table 12 below. Note that smaller correlations may be significant in the active sharing condition, while larger correlations are not significant in other conditions, because the active sharing condition comprised a much larger sample size, including both the matched and unmatched participants.

Table 12

Study 3 Correlations between Affect and Sharing

	Active Sharing	Passive Sharing	Passive Receiving
FAS 1 & Sharing	-.231*	N/A	N/A
Sharing & FAS 2	.161	-.260	-.232
Sharing & Facial Affect	-.205	-.352	.178

Note. FAS = Facial Affect Scale. * $p < .01$, ** $p < .001$.

Affect Coding and Sharing. Pearson product-moment correlations between children's facial displays of affect and the number of stickers they chose to share in the RAT were conducted. For children in the active sharing group (including matched and unmatched participants), this relation was negative although not significant [$r(72) = -.205, p = .101$]. For the 17 codeable matched participants in the passive sharing group, this relation was also negative although not significant [$r(15) = -.352, p = .108$]. For 20 codeable matched participants in the passive receiving group, this relation was positive although not significant [$r(18) = .178, p = .440$]. The correlations are summarized in Table 12 above.

Discussion

Study 3 sought to investigate if there is an affective benefit to sharing in children. Although there is accumulating evidence that mandatory sharing may lead to increased positive affect in children (Aknin et al. 2012b; Aknin et al., 2015a), no research to date examined how voluntary sharing impacts children's affect. Therefore, Study 3 was

conducted to examine how making active choices about sharing impacts children's self-reported and facial displays of affect. We measured children's self-reported affect after negative affect was first induced with a sad video about another child, and after they engaged in a RAT. We also coded children's facial expressions while they participated in multiple trials of a RAT. To examine if there was an affective benefit to sharing, we compared children's affect when they engaged in active sharing, to control conditions in which they observed sharing or simply received rewards for themselves. This allowed us to control for other possible factors that could impact children's positive affect, such as another child gaining resources or the child gaining resources.

We found a positive increase in children's self-reported affect from before to after the sharing task across all three conditions, indicating that children generally reported highly positive affect after the sharing task. However, there was no difference in children's highly positive self-reported affect after the sharing task between the three different conditions, indicating that children in the active sharing, passive sharing, and passive receiving conditions did not show significant differences in how positively they rated their affect. On the other hand, facial affect coding indicated that children in the active sharing condition displayed more positive facial affect than those in the passive sharing condition, and those in the passive sharing condition showed more positive affect than those in the passive receiving condition. Interestingly, further trial-by-trial analysis revealed no differences in children's facial expressions based on whether each trial resulted in a prosocial outcome, so differences in facial expressions across the three conditions may be due to active choice as opposed to active sharing per se.

Recall that our original power calculation for this primary analysis was based on data from the study by Aknin et al. (2012b), who found a large effect of $d = 1.35$ when comparing children's facial affect when they engaged in costly sharing versus when they received a treat for themselves. Similarly, when we compared the facial affect of children in the active sharing and passive receiving conditions, our effect size was $d = 1.12$, which is also a large effect. However, for the FAS ratings that were taken after the RAT for the active sharing and passive receiving conditions, the effect size was $d = .26$, which is a small effect according to Cohen's (1988) criteria. The power for this analysis was only .13, which indicates there was a 13% chance of finding a statistically significant difference if there was one (Field, 2009).

It is important to note that after Study 3 was completed, a study by Wu, Zhang, Guo, and Gros-Louis (2017) was published which examined the affective benefits of sharing in 3- and 5-year-olds. Like Study 3, this research by Wu et al. examined children's facial affect using Aknin et al.'s (2012b) coding scheme while they made free choices about how to allocate stickers between themselves and a partner. In Wu et al.'s study, children had opportunities to share in a dictator game with partners who either completed half of a puzzle that was required to earn the reward of 6 stickers, or who did *not* contribute to earning the reward. Wu et al. found that 5-year-olds considered merit in their resource allocations, and they were much more likely than 3-year-olds to share half of their stickers when their partner helped them earn the reward than when they did not. Interestingly, children also displayed more positive facial affect when they shared with the partner who did *not* help them earn the reward, but they did not show the same affective benefit when they shared with the partner who helped them earn the reward or

when they put stickers into their own envelope. Wu et al. posited that there was only an affective benefit to costly sharing when children did not feel obliged to share their resources due to merit-based considerations.

Study 3 did not include merit-based considerations, so the results should be comparable to Wu et al.'s condition in which children made resource-allocations to recipients who did *not* help them earn the reward. However, contrary to Wu et al.'s findings, we found that children actually displayed more positive facial affect when they chose stickers for themselves than when they chose to share stickers with another child, even though they were under no obligation to share with this child.

Interpretations of the main findings of Study 1 are discussed in turn below, focusing on the impact of sharing on children's self-reported affect ratings and their facial displays of affect, then looking at correlations between these two different affect measures, as well as correlations between children's affect and their sharing behaviour.

The Impact of Sharing on Children's Affect

In Study 3, we sought to investigate if there is an affective benefit to sharing in children, so affect was the primary measure of interest. Children's affect was measured using both facial affect coding and self-report measures on McGrath et al.'s (1985) FAS. We found a significant positive increase in children's self-reported affect from before to after the RAT for children in all conditions. This indicates that, regardless of whether they actively shared, passively shared, or passively received rewards, children showed an increase in positive affect. It appears that the negative affect-inducing video used in Study 3 was successful in decreasing children's self-reported affect, but perhaps only temporarily. It is possible that any affective benefits observed in Study 3 may be more

about counteracting a prevailing negative (induced by the negative video) as opposed to an actual affective benefit of sharing. The increase in self-reported positive affect observed across the three conditions, may reflect a return to children's highly positive baseline. Previous research in our laboratory indicates that children tend to self-report their baseline affect as highly positive (Zhang et al., 2016). Perhaps the negative affect-inducing video temporarily reduced their self-reported affect, then after time passed and they did another activity it returned to the default positive affect. Any affective benefits of sharing are challenging to measure given children's ceiling self-reported positive affect at baseline.

Although all children showed a significant positive increase in self-reported affect from before to after the RAT, there was no difference in their self-reported affect either before or after the RAT. Before the RAT, children were matched on their self-reported affect after watching the negative affect-inducing video, so we controlled for any differences in self-reported affect at this time-point. After the RAT, there was a significant increase in self-reported affect across all three conditions, but there were no significant differences between the three conditions. This suggests that all children experienced an increase in positive affect and any self-reported affective benefit does not seem to be due to the active sharing or even the passive sharing behaviour, and could simply be due to receiving stickers or time passing.

Children's affect was also measured using Aknin et al.'s (2012b) facial affect coding scheme. Unlike self-reported affect, facial affect coding demonstrated a significant effect of condition, in which children in the active sharing condition displayed more highly positive facial affect than those in the passive sharing condition, and those in

the passive sharing condition showed more positive facial affect than those in the passive receiving condition. This linear increase in facial displays of positive affect was consistent with our hypotheses, and with previous research in this area.

Specifically, the finding that children in the active and passive sharing conditions displayed more positive facial affect than those in the passive receiving condition is consistent with previous research with 2-year-olds by Aknin et al. (2012b). This research was also replicated cross-culturally with 2- to 5-year-olds by Aknin et al. (2015a). Aknin et al. (2012b) found that younger 2-year-old children displayed higher rates of positive affect when sharing resources with others than when receiving resources for themselves, especially when they shared with a personal cost. Aknin et al. theorized that as social animals, we may have evolved to experience affective benefits of sharing with a personal cost. They highlight that we tend to shape children's behaviour using extrinsic reinforcement or punishment to encourage prosocial behaviour; however, children also engage in sharing with a cost in contexts in which extrinsic rewards are unlikely (e.g., in experimental settings with new adults). As noted above, Aknin et al. postulated that the affective benefits of sharing with a cost may help to positively reinforce this prosocial behaviour which requires some personal sacrifice. Therefore, it is not surprising that children who either actively shared or passively observed sharing showed more positive facial affect than those who simply received stickers for themselves in Study 3.

The finding that children who were given the opportunity to make active sharing decisions showed more positive facial affect than those who simply watched an adult make such decisions is consistent with previous research by Harbaugh et al. (2007). Harbaugh et al. found greater increases in neural activity in brain areas related to reward-

processing when adults made voluntary as opposed to mandatory charitable donations. The passive receivers may have displayed less positive affect than the other two groups because they did *not* get to make active choices (as the active sharers did), plus their sharing partner did *not* receive any stickers (as both the active and passive sharers did). Additionally, the allocations made by the examiner may not have made as much sense to the passive receivers because they either got one or two stickers for themselves without any explanation, whereas children in the passive sharing group saw that when they only got one sticker then Jenny got one too. Together, these variables may have accounted for the lower rates of positive affect displayed by the passive receiving group.

The Impact of Selecting the Prosocial Option on Affect

Further trial-by-trial analysis of the facial affect coding was conducted to examine the impact of the trial-type on children's facial displays of affect, for participants included in the matches across the active sharing, passive sharing, and passive receiving conditions, and for the unmatched participants in the active sharing condition. We found no significant difference in children's facial expressions based on trial-type. So, for example, in the active sharing condition, children did not show more positive affect when they chose the prosocial option (selecting one sticker for themselves and one for their partner) as opposed to the non-prosocial option (selecting two stickers for themselves and no stickers for their partner). Similarly, in the passive sharing condition, children did not show more positive affect when they observed as the examiner made prosocial or non-prosocial selections. Finally, in the passive receiving condition, children did not show any difference in their facial affect whether they observed as the examiner gave them either one or two stickers. Although, children showed a linear increase in their positive

facial affect if they were in the passive receiving, passive sharing, or active sharing conditions, they did not smile more on individual trials when they shared (or received one sticker) versus when they did not share (or received two stickers). This provides some preliminary evidence that perhaps it was not sharing itself but simply having a choice that made children happier in the active sharing condition.

Children in the active sharing condition made autonomous choices about how to allocate resources between themselves and their sharing partner. The fact that their choices were free might be an important aspect in the affective benefit of sharing with a cost. As part of their self-determination theory, Ryan and Deci (2000) propose that autonomy may be key to experience wellbeing from our behaviours. The impact of active choice versus passive observation seemed to have a greater impact on children's displays of positive facial affect than whether they were engaging in prosocial choices. We anticipated that differences between conditions would be driven by engagement in prosocial behaviour, so we were surprised that we did not find a difference in the trial-by-trial analyses of the sharing versus non-prosocial trials. Instead of (1) 'active sharing', (2) 'passive sharing', and (3) 'passive receiving', perhaps the conditions could be re-conceptualized as (1) 'active child choices', (2) 'justified adult behaviour', and (3) 'unjustified adult behaviour'.

Additionally, further trial-by-trial analysis of children's facial affect coding during the RATs in Studies 1 and 2 was conducted to examine the impact of prosocial versus non-prosocial trial-types on children's facial displays of affect with a larger sample size. The RATs included in Studies 1 and 2 also included both cost and no-cost trial-types, so this was also examined in the multilevel modelling. We found a significant

main effect of prosocial versus non-prosocial trial-type; however, it was not in the expected direction. Instead, contrary to hypotheses, children displayed more positive affect when engaging in non-prosocial trials than when engaging in prosocial trials. These findings are inconsistent with the null findings of Study 3, in which there was no significant difference between children's facial expressions when they engaged in prosocial or non-prosocial trials. The trial-by-trial analyses for Studies 1 and 2 were likely statistically significant because they were more highly powered than the analysis with the smaller subsection of participants from Study 3.

Aknin et al. (2012b) postulated that the affective benefits of sharing with a cost may help to positively reinforce this prosocial behaviour, whereas sharing with no cost may not require the same affective benefits because it does not require the same personal sacrifice. Therefore, we thought children might show more positive affect in cost versus no-cost prosocial choices, but there was no main effect of cost versus no-cost trial-types and no interaction between prosocial and cost trial-types in the analyses for Studies 1 and 2. This provides the first known evidence that children actually show more positive affect when selecting resources for themselves than when sharing resources with another unknown child, across both costly and non-costly sharing trial-types.

Relations between Self-Reported and Facial Displays of Affect

The self-reported affect rating after the RAT and the facial displays of affect coded during the RAT were not highly correlated with one another and they did not result in the same overall findings between conditions. Therefore, it seems these two measurement scales may be tapping into different aspects of positive affect. Self-reported affect was taken at two time-points, after the negative affect-inducing video and after the

RAT. Conversely, facial displays of affect were coded over ten short time-intervals while children engaged in each of the RAT trials. Children's self-reported affect after the RAT was more highly positive than their facial expressions during the RAT. Ultimately, how children said they felt after the RAT was more positive than how they showed they felt with facial affect during the RAT. Previous research by Ekman, Friesen, and Ancoli (1980) found adults' subjective ratings of their own positive affect on a nine-point scale, were associated with the frequency, duration, and intensity of their facial displays of positive affect. However, in children these relations may be more tenuous, as children may tend to over-report their own positive affect (Zhang et al., 2016).

We used Aknin et al.'s (2012b) facial affect coding scheme to measure children's facial expressions of affect. This allowed us to draw comparisons with Aknin et al.'s work, which is the only known child study in this area. Much like Aknin's team, we found that adult ratings of children's facial expressions differed according to the condition they were taking part in. Facial affect coding may provide a more sensitive measure of positive affect in children of this age range than self-reported affect using the FAS. Although McGrath et al.'s (1985) affect scale was used successfully by Williams et al. (2014) as a measure of negative affect, this may not be the most sensitive measure of self-reported positive affect in 5- and 6-year-olds.

Relations between Affect and Sharing

Most of the correlations between children's self-reported affect and facial displays of affect and their sharing behaviour were not significant. However, one significant correlation indicated that children with lower self-reported affect before taking part in the RAT shared more. This is consistent with the negative state relief theory (Cialdini et al.,

1973), which suggests that individuals may engage in prosocial behaviour as a means to ameliorate their negative affective state. However, this finding is somewhat inconsistent with the focus of attention theory (Rosenhan et al., 1981), which suggests that self-oriented negative affect should decrease sharing behaviour. This finding is also inconsistent with the findings of Williams et al. (2014) who found that children's sharing behaviour was not significantly correlated with their self-affect ratings, although it was significantly correlated with other-affect ratings for their sharing partner.

Limitations

There are some notable limitations to Study 3 which deserve mention, including how we measured positive affect, the other-oriented negative affect-induction, children's lack of privacy while making their resource-allocations, potential sex differences, and our inclusion criteria.

Although McGrath et al.'s (1985) affect scale was used successfully by Williams et al. (2014) as a measure of negative affect, there are some concerns about the reliability and validity of this scale for use as a measure of positive affect, since it was appropriated from the pain literature. We also used Aknin et al.'s (2012b) facial affect coding scheme to draw comparisons with their work, because this study and the one conducted by Aknin et al. (2015a) are the only known child studies in this area. Although this affect coding scale is intuitive, easy to use, and had relatively good inter-rater reliability, it is also a relatively coarse measure since the gestalt rating requires somewhat subjective judgments about children's facial expressions.

It would be preferable if we did not first induce negative affect in Study 3, but we know from previous research in our laboratory (Zhang et al., 2016) that children tend to self-report their baseline affect as highly positive. To avoid ceiling effects, we attempted to decrease children's self-reported positive affect before they completed the RAT. These initial negative feelings may differ from children's normal baseline, so conclusions about increases in positive affect may be limited to situations in which children first experience empathic concern for someone else, then they have an opportunity to engage in sharing behaviour.

We relied on a single other-oriented sad video to reduce children's baseline affect, but it is important to note that there would be a vast variety of ways to lower children's baseline affect, including manipulations that focus on the self as opposed to focusing on someone else. The video used in Study 3 was the same stimuli that was used in previous research by Williams et al. (2014). The video included a girl who had lost her dog, which tended to evoke feelings of empathic concern in many children. Barnett et al. (1979) found that whether the emotion is self-oriented or other-oriented impacts children's sharing behaviour. Importantly, they found that children were more generous when focusing on another child's negative emotion but less generous when focusing on their own negative emotion. Therefore, engaging in prosocial behaviour may have a different impact on their affect ratings depending on the emotional prime that is used beforehand.

In Study 1, children did not have privacy to make their allocations during the RAT because they had to indicate their choices to the experimenter. On the other hand, experimenters often cover their eyes while children make their allocation during the dictator game (Kahneman, Knetsch, & Thaler, 1986). Wu et al. (2017) used a dictator

paradigm and found that children displayed more positive facial affect when they privately put stickers in the envelope of the child who did not help them obtain the rewards. Conversely, our analyses including data from Studies 1 and 2 indicated that children displayed more positive facial affect on trials in which they chose stickers for themselves, than when they chose to share stickers with another child, even though they were also under no obligation to share with this child. It is possible that the presence of an observer during these allocations impacted children's facial displays of affect.

It is also important to note that the video used in Study 3 had a female character who also acted as the sharing partner in the RAT. This may have led to different impacts on the male and female participants, since previous research suggests moral judgments may be different in certain in- and out-group contexts (Sparks et al., 2017). However, given the matching procedure that was used, the number of boys and girls was evenly distributed across the three conditions and co-varying out sex did not significantly change the analyses. Nonetheless, in the future, it may be helpful to match the sex of the sharing partner to the participant, as previous research (e.g., Moore, 2009) indicates that this can potentially alter children's sharing behaviour.

Finally, to avoid ceiling effects in self-reported affect, it was decided a priori that participants with a highly positive self-reported affect (i.e., an FAS rating of 6 to 8, in the top third of the nine-point scale) would be excluded from matching. This meant a large proportion of the sample was excluded from matching and took part in the active sharing condition instead. This may limit the generalizability of our findings, since only about half of the children in our sample were included in the final matching process. As a consequence, the current findings only apply to a very specific subset of children: those

who show negative affect in response to watching a brief video about a sad event. Thus, the conclusions that can be drawn from this work are limited.

Directions for Future Research

Based on the findings from Study 3, a number of potential directions for future research are suggested below, including the addition of an active receiving condition, active distribution (in addition to active choice), alternatives to negative affect-inducing manipulations, and considerations of how positive affect is measured in children.

Study 3 examined differences in children’s self-reported and facial affect across active sharing, passive sharing, and passive receiving conditions. However, there was no active receiving condition in which children experienced autonomy without generosity. The addition of a condition such as this might help to further parse out the importance of autonomy independent of generosity. The different levels of autonomy and generosity in the three conditions included in Study 3 are outlined in Table 13 below.

Table 13

Study 3 Conditions Summary

Condition	Autonomy	Generosity
Active Sharing	+	+
Passive Sharing	-	+
Passive Receiving	-	-

In addition to autonomous decision-making, it would also be interesting to investigate the role that autonomous actions might play in the affective benefit of sharing. In all three conditions in Study 3, the experimenter moved the stickers into the bags, so

even in the active sharing condition when children got to make the decisions about how the stickers would be allocated, the experimenter moved the stickers. This allowed us to measure the relative impact of observing the distribution of resources after children made free choices (i.e., active sharing) or simply watched the choices being made by the experimenter in sharing (i.e., passive sharing) or non-sharing (i.e., passive receiving) contexts. To parse apart the relative impacts of actively *choosing* the sharing versus actively *doing* the sharing, future research could include different control conditions in which children experience different levels of choice about how to allocate resources and different levels of action when it comes to distributing the resources.

In effect, Study 3 did not investigate whether there is an affective benefit to sharing in children, but rather whether there is an affective benefit to sharing in children who showed negative empathy in response to watching a sad video about another child. Therefore, it would be preferable if we either reduced children's baseline positive affect in another way, by focusing on the self or another neutral context, or if we did not first induce negative affect in children. As an alternative, future research could use a series of different conditions like those used by Aknin et al. (2012b). We could then have children take part in different scenarios that require them to make various prosocial decisions, including mandatory and elective sharing, with or without active distribution of the rewards, with or without a personal cost. We could then code differences in children's facial affect across these various conditions which could be counterbalanced for order.

As outlined previously, self-reported affect ratings may be of less value than facial affect coding in this context. Based on the results of Study 3, it appears that self-reported affect using the FAS is valid in some sense because there is a change over time.

Similarly, the facial affect coding also seems to be sensitive to variability over time and between conditions. Since facial affect seems to be a more sensitive way to examine differences in children's affect than self-report at this age, it may be important to consider other more objective and comprehensive affective coding schemes, such as the '*Facial Action Coding System for Infants and Young Children*' (*Baby FACS*; Oster, 2006).

Interestingly, Ekman, Davidson, and Friesen (1990) found adults engaged in more 'Duchenne' social smiling (involving contraction of the eye muscles) when watching pleasant versus unpleasant videos, and that these social smiles were associated with self-reported and physiological arousal as measured by electroencephalogram (EEG). In future research, it might be important to differentiate between different types of positive facial affect, as simple (versus social) smiles may not be the best indicator of positive affect.

Finally, in addition to self-report using an affect scale, children could also freely self-report their affect using an open-ended question. They could then be prompted to explain why they felt this way. Qualitative analysis of such open-ended justifications could potentially provide some insight into children's internal experiences of positive affect.

Conclusions

Study 3 examined if there is an affective benefit to sharing by comparing children's self-reported and facial expressions of affect under conditions in which they could make active choices about sharing with a personal cost, versus conditions in which they observed sharing or simply received rewards for themselves. Study 3 found a significant positive increase in children's self-reported affect from before to after the

RAT for children in all conditions; however, there was no difference in self-reported affect after the RAT between those who actively shared, passively shared, or passively received stickers.

However, facial affect coding revealed that there was a significant effect of condition, in which children in the active sharing condition displayed more highly positive facial affect than those in the passive sharing condition, and those in the passive sharing condition showed more positive facial affect than those in the passive receiving condition. Further analysis of the facial affect coding revealed that across the three conditions, there was no significant difference in children's facial expressions based on the outcome of individual trials. Differences in children's facial expressions of affect across the three conditions may be due to another factor (such as having a choice in their actions or receiving some justification for the experimenter's actions) that may have impacted their expressions of positive affect. Finally, further trial-by-trial analysis of children's facial affect coding from Studies 1 and 2 provides the first known evidence that children can show more positive affect when selecting resources for themselves than when sharing resources with another unknown child in both costly and non-costly sharing contexts.

Together, the non-significant findings from Studies 1 and 2, and the contradictory findings from Study 3, provide preliminary evidence that relations between positive affect and sharing may not be strong in early school-aged children. The general discussion reviews these findings in the context of relevant research in this area.

CHAPTER 5: GENERAL DISCUSSION

Together, the studies included in this dissertation examined three primary relations between positive affect and sharing behaviour in early childhood from various perspectives. The series of experiments included in this program of research addressed the following questions: (1) How does other-oriented positive empathy for another child impact children's sharing behaviour?; (2) How does self-oriented positive affect impact children's sharing behaviour?; and (3) How does engaging in sharing impact children's affect? Overall, the findings from these studies were relatively inconsistent with much of the recent literature published in this area.

In Study 1, we examined the impact of positive empathy on children's sharing behaviour. Children watched a video of another child experiencing either positive or neutral affect, then they were asked to rate the other child's affect and their own affect before taking part in a RAT with the fictional child. Children rated the character in the positive video as having significantly more positive affect than the character in the neutral video (especially when they saw the neutral video after the positive video). However, children's self-affect ratings were not significantly different between the two conditions. Therefore, this study was not successful in fully inducing a differential empathic response between the positive and neutral conditions. Additionally, the experimental manipulations did not result in significant differences in children's subsequent sharing behaviour. In sum, although our manipulation appeared to successfully manipulate children's other-affect ratings for the character in the positive and neutral videos, this did not impact their self-affect ratings nor their subsequent sharing behaviour toward the child from the video.

Similarly, in Study 2, we examined if children's own positive affect might impact their sharing behaviour. Children ranked five toys then rated how another child would feel if they received their most or least favourite toy. Afterward, children took part in a RAT with a fictitious child. Overall, children thought another child their age would feel more positive affect if they received their favourite toy and more negative affect if they received their least favourite toy. Children's own affective and behavioural responses to receiving either their most or least favourite toy corroborated this. However, the different conditions did not impact children's subsequent sharing behaviour. In sum, although our experimental manipulation appeared to successfully impact children's affect, this did not influence their subsequent sharing behaviour toward another child.

In Study 3, we examined if children would derive an affective benefit from sharing by comparing their self-reported and facial expressions of affect under different RAT conditions in which they could make active choices about sharing, versus conditions in which they observed sharing, or simply received rewards for themselves. Study 3 found a significant positive increase in self-reported affect from before to after the RAT for children in all conditions; however, there was no significant difference in self-reported affect after the RAT between those who actively shared, passively shared, or passively received stickers. Conversely, facial affect coding revealed a significant effect of condition, in which children in the active sharing condition displayed more positive facial affect than those in the passive sharing condition, and those in the passive sharing condition showed more positive facial affect than those in the passive receiving condition. This finding was consistent with our hypotheses and with earlier work by Aknin et al. (2012b) and Aknin et al. (2015a). However, contrary to hypotheses, further

trial-by-trial analyses of the facial affect coding from Study 3 indicated that across the three conditions, there was no significant difference in children's facial expressions based on the outcome of the trial (i.e., whether it resulted in prosocial or non-prosocial behaviour). Therefore, it seems that differences in children's facial expressions of positive affect across the three conditions may be due to another factor (such as making active choices about their actions or receiving some justification for the experimenter's actions), and not necessarily due to active sharing. Additionally, trial-by-trial analyses of the facial affect coding from Studies 1 and 2 indicated that children displayed more positive affect when selecting resources for themselves than when sharing resources with another unknown child in both costly and non-costly sharing contexts.

Together, these three studies provide limited evidence for strong relations between positive affect and sharing behaviour in early childhood. It is possible that unlike adults, children might not have internalized the link between positive affect and prosocial behaviour, so they might not engage in sharing behaviour as a means of promoting or maintaining positive affect. It is possible that this ability develops later in life. Previous developmental research by Cialdini and Kenrick (1976) examined how reminiscing about negative or neutral experiences impacted how many tokens 6- to 8-year-olds, 10- to 12-year-olds, and 15- to 18-year-olds shared with other children. Importantly, they found a linear increase in sharing across the three age-groups after a negative affect-induction, in which older children shared more than younger children. Cialdini and Kenrick postulated that children may learn over time that prosocial behaviour can result in positive increases in their own affective state, so later in development, older children may use this as a strategy to increase their own affect when they are experiencing negative affect.

In sum, Studies 1 and 2 did not find any evidence for a relation between children's ratings of positive affect for another child or their own feelings of positive affect and their subsequent sharing behaviour. Although Study 3 found that children displayed significantly more positive facial expressions when engaging in active sharing than when passively sharing or passively receiving rewards, this did not seem to be due to active sharing per se, as children did not show more positive affect on prosocial versus non-prosocial trials. Below we provide a discussion of the novel contributions that are provided by this program of research, including links to the broader literature in this area. We then provide a brief overview of theoretical and clinical implications, along with a discussion of the limitations of this research, and suggestions for future research.

Novel Contributions and Links to the Literature

Together, the three studies included in this dissertation help to provide insight into the relations between positive affect and sharing behaviour in early childhood. Contributions to our current body of knowledge are outlined below, across the general areas of sharing behaviour, positive affect, theoretical implications, and clinical implications.

Sharing

Numerous motivations may influence children's sharing behaviour. As noted previously, if children were only motivated by inequity aversion or prosocial interests, then we would expect them to share in all trials regardless of the cost. Conversely, if they were only motivated by self interest, then we would expect them *not* to share in any trials and only keep resources for themselves. Findings from Studies 1 and 2 suggest that children varied their responses and shared more in no-cost than in cost sharing trials. This

significant finding suggests that children are likely motivated by both prosocial and self interests. Accordingly, children's prosocial interests may have motivated them to share on no-cost trials when they had nothing to lose, and their own self interest may have motivated them *not* to share on cost trials when they had to give up a sticker for themselves in order to share with their partner. Together, inequity aversion, prosocial interests, and self interests may all be at play in influencing children's choices about how to share in the RAT.

Children were quite generous in the RATs and they shared between half to two-thirds of the time across the three studies. The rate of sharing in these studies is like that found in other research. For example, Williams et al. (2014) found that 5- and 6-year-old children generally shared between half and two-thirds of their stickers in a similar RAT; however, their trials also included advantageous and disadvantageous inequity trials.

Across Studies 1 and 2 we consistently found a difference between cost and no-cost sharing trials, in which children were more generous in no-cost trials. Overall, Sparks et al. (2017) also found children tended to share more in no-cost than cost trials in a similar RAT, and when they found differences between their conditions, these tended to be in cost as opposed to no-cost sharing trials. Moore (2009) also found that 4.5- to 6-year-old children shared more in no-cost versus cost trials of the RAT, but only when sharing with a stranger and not when sharing with a friend or non-friend. Perhaps children in Studies 1 and 2 conceptualized their sharing partner as a stranger, as opposed to a friend or non-friend, since their sharing was more like the sharing with a stranger in the study by Moore (2009).

Surprisingly, Williams et al. (2014) did *not* find any difference in children's sharing on cost versus no-cost trials, even though the sharing partner was also a stranger, presented as a character from a negative or neutral affect-inducing video (much like our videos in Study 1). It is possible that the children in Williams et al.'s study treated the child in the video as a friend because they were told that she was supposed to come into the laboratory that day, but she was unable to because she either lost her dog (negative condition) or had a yard sale (neutral condition). On the other hand, children in Study 1 were introduced to the child in the video in a similar fashion, but they were not told that she was supposed to come into their school that day because it was thought that this could create confusion for some children. This subtle difference in the way the characters were introduced could have been enough to change children's conceptualization of the child in the video as a potential friend versus a stranger.

All sharing partners in Studies 1, 2, and 3 were same-aged fictitious children who were not present for the RAT. This decision was made to allow for greater experimental control, as introducing a real child into this experimental sharing situation would have introduced numerous potential confounds. Similar fictitious sharing partners have been used successfully in previous research involving RATs of this kind (e.g., Paulus & Moore, 2017; Williams et al., 2014).

Affect

The terms 'positive affect' or 'happiness' may be conceptualized in many ways; however, for the purposes of this dissertation, we narrowed our focus to both other-oriented positive empathy and self-oriented positive affect. Children's affective states can be assessed using various physiological, behavioural, and psychological measures (see

Mauss & Robinson, 2009 for a review). In the current research program, we relied on children's self-report to provide an internal measure of their affective states, and adult coding of children's behaviour to provide an external measure of their affective expressions.

In all three studies, we had children rate their own or other children's affect using McGrath et al.'s (1985) FAS. This affect scale was appropriated from the pain literature but used successfully in similar research examining children's affective states (e.g., Paulus & Moore, 2017; Williams et al., 2014). Children tended to polarize their ratings and selected extremely positive or negative affect ratings. These findings are consistent with previous research conducted in our laboratory by Zhang et al. (2016), which found that children tend to rate their baseline affect as highly positive.

In addition to collecting children's ratings of their own affect during the experimental manipulation, we also used Akinin et al.'s (2012b) facial affect coding scheme to obtain adult ratings of children's facial displays of affect in Studies 2 and 3. The coding of children's facial expressions of affect seemed to provide more variable and nuanced data than their self-report ratings. However, this facial information was more valuable in contexts in which children were engaging in a dynamic interaction than when they were simply watching a video. We planned to use Akinin et al.'s affect coding scheme in Study 1 to verify if children's facial expressions differed between the positive and neutral conditions while they were watching the videos. However, this coding was not pursued because pilot coding revealed minimal variation in children's facial expressions, with most children holding a static neutral expression while watching the

videos. Although facial affect coding was informative in other contexts in Studies 2 and 3, it may not be universally applicable to all of children's activities.

We also assessed children's behavioural ratings of affect in response to receiving their most or least favourite toys in Study 2 using Hudson and Jacques' (2014) coding scheme, which included facial, vocal, verbal, and behavioural domains. Surprisingly, children's self-report measures of affect in Study 2 were not highly related to their facial expressions of affect. There was a discrepancy between how children said they felt during an activity or how they predicted another child would feel, and the expressions they displayed on their faces. This may speak to children's poor self-assessment or prediction of their affective states, or these two measures may be tapping into different underlying concepts.

As expected, Aknin et al.'s (2012b) and Hudson and Jacques' (2014) coding schemes were correlated on the measure of facial affect. They were also correlated when looking at Hudson and Jacques' overall coding scheme, which used an average of the four behavioural affect ratings across facial, vocal, verbal, and behavioural indices. This provides some corroboration that these two scales may be tapping into similar constructs.

Theoretical Implications

Unfortunately, the findings from this program of research did not lend support for a unifying theory accounting for the complex interrelations between affect and sharing. As outlined previously, there are numerous psychological theories which attempt to explain the various relations between positive affect and sharing. These relations are likely multidirectional, and under certain circumstances, it is possible that multiple theories could work in tandem. For example, the focus of attention theory (Rosenhan et

al., 1981) could be at play if self-oriented (versus other-oriented) positive affect increases prosocial behaviour due to a downward social comparison. Recall that the hedonic contingency theory (Wegener & Petty, 1994) postulated that people will modify their behaviours to increase positive affect. In line with this model, the mood maintenance theory (Isen & Simmonds, 1978) could propagate prosocial behaviour, if the individual who experienced the initial feelings of positive affect from sharing chose to engage in more sharing behaviour to further increase their feelings of positive affect. If engaging in prosocial behaviour can positively impact our affective state, this may provide intrinsic motivation for people to engage in prosocial behaviours such as sharing. This could create a positive feedback loop, in which self-oriented positive affect increases sharing behaviour, and sharing increases feelings of positive affect, and so on (Aknin et al., 2012a). However, other-oriented positive empathy could interfere with this cycle by decreasing the propensity to engage in prosocial behaviour. Further research is required to understand these relations more fully.

Table 2 has been revised in order to summarize how the various theories discussed in this dissertation predict that self-oriented and other-oriented positive and negative affect will impact children's sharing behaviour. The revised table only includes the negative state relief (Cialdini et al., 1973), hedonic contingency (Wegener & Petty, 1994), mood maintenance (Isen & Simmonds, 1978), and focus of attention (Rosenhan et al., 1981) theories, which were directly addressed in this program of research. The primary findings from Studies 1 and 2 are noted below the predicted direction of change for each of the relevant types of affect. See the revised Table 14 below.

Table 14

Summary of how different theories predict affect will impact sharing, with findings from the current research program included in italics

Theory	Self-Oriented Positive Affect	Self-Oriented Negative Affect	Other-Oriented Positive Affect	Other-Oriented Negative Affect
Negative State Relief	Decrease <i>No Difference</i>	Increase <i>No Difference</i>		Increase <i>Not Tested</i>
Hedonic Contingency	Increase <i>No Difference</i>		Increase <i>No Difference</i>	
Mood Maintenance	Increase <i>No Difference</i>		Increase <i>No Difference</i>	
Focus of Attention	Increase <i>No Difference</i>	Decrease <i>No Difference</i>	Decrease <i>No Difference</i>	Increase <i>Not Tested</i>
Empathic Approach/Avoidance			Increase <i>No Difference</i>	Increase <i>Not Tested</i>

Findings from the current program of research do not lend empirical support for the theories outlined above. Study 1 examined how other-oriented positive affect impacts children's sharing behaviour in comparison to a neutral control. The hedonic contingency (Wegener & Petty, 1994), mood maintenance (Isen & Simmonds, 1978), and empathic approach/avoidance (Andreychik & Lewis, 2017) theories would predict that this form of positive affect would increase sharing behaviour. However, the focus of attention theory (Rosenhan et al., 1981), would predict that other-oriented positive affect would decrease children's sharing behaviour. However, we found no difference in cost and no-cost sharing between children who watched another child experiencing positive or neutral affect. Therefore, our findings do not lend support to any of these theories.

Study 2 examined how both self-oriented positive and negative affect impact children's sharing behaviour. The hedonic contingency (Wegener & Petty, 1994) and mood maintenance (Isen & Simmonds, 1978) theories would predict that this form of positive affect would also increase sharing behaviour. However, the negative state relief theory (Cialdini et al., 1973) would predict that if an individual is already experiencing self-oriented positive affect then they would have no need to engage in prosocial behaviour to ameliorate their affective state. On the other hand, the focus of attention theory (Rosenhan et al., 1981) would predict that self-oriented positive affect would increase sharing behaviour, whereas self-oriented negative affect would decrease children's sharing. As noted above, the negative state relief theory (Cialdini et al., 1973) would also predict that self-oriented negative affect would increase children's sharing. Unfortunately, we found no difference in cost and no-cost sharing between these two groups. Therefore, our findings do not lend support to any of these theories.

Recall that the mood maintenance theory postulates that when individuals are already experiencing positive affect, they tend to engage in prosocial behaviour to continue experiencing further positive affect, but only if they perceive the prosocial behaviour as pleasant (Isen & Simmonds, 1978). It is possible that children in Studies 1 and 2 did not perceive the sharing as intrinsically rewarding, and so did not believe that this would help to maintain or increase their positive affect.

Consistent with previous child studies (Aknin et al. 2012b; Aknin et al., 2015a), Study 3 found that children displayed more positive affect when engaging in active sharing with a personal cost than when passively observing sharing or simply receiving rewards. Interestingly, the one significant correlation between children's affect and their

sharing behaviour indicated that children with lower self-reported affect before taking part in the RAT shared more. This is consistent with the negative state relief theory (Cialdini et al., 1973), which suggests that individuals may engage in prosocial behaviour as a means to ameliorate their negative affective state.

Clinical Implications

Accumulating research suggests there may be a bidirectional feedback loop in which sharing leads to greater positive affect and higher self-oriented positive affect leads to increased generosity in both adults and children (Aknin et al., 2012a). However, findings from the current program of research do not support these relations in children. If a bidirectional association between self-oriented positive affect and sharing exists in adults, then it might be possible to intervene at either point to increase prosocial behaviour or to increase feelings of positive affect. However, the interrelations between these variables in childhood remain unclear. In this subsection, both the affective benefits of increasing prosocial behaviour, and the prosocial benefits of increasing self-oriented positive affect are explored, followed by a brief consideration of this work for specific clinical populations in psychology.

There may be important affective benefits of increasing prosocial behaviour in adults. Lyubomirsky et al. (2005) suggest happiness is determined by three major factors, including genetics and circumstances that may be beyond our control, as well as activities that we may be able to choose to engage in more frequently. Specifically, they suggest that cognitive, behavioural, and volitional activities may help to increase well-being and they propose different interventions to accomplish this, such as engaging in acts of kindness or practicing grateful thinking. If engaging in prosocial behaviour presents a

means of increasing positive affect, this could have important implications for individuals suffering from low mood, as increasing their frequency of generous behaviour may help to increase their feelings of happiness, at least temporarily. Research suggests that positive affect may enhance both physical and mental health in adults (e.g., Fredrickson & Joiner, 2002; Fredrickson & Losada, 2005). Emerging research with 9- to 11-year-old children also suggests that encouraging them to engage in acts of kindness over time can increase their well-being and peer acceptance (Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012). Further research is required to understand the potential implications of engaging in prosocial behaviour for children's long-term well-being.

Consistent with previous child studies (i.e., Aknin et al. 2012b; Aknin et al., 2015a), this program of research found that children who engaged in active sharing showed higher rates of positive affect than children who passively observed sharing or passively received the same material rewards. It is possible that these differences in expressions of positive affect are related to higher degrees of social engagement. However, given the potential affective benefits that could be gained from engaging in voluntary prosocial behaviour, caregivers may be interested in working to increase such behaviours in children. However, it may be important for caregivers to think about *how* they reinforce children's prosocial behaviour because it is theorized that receiving an extrinsic reward (e.g., a treat or toy) for engaging in intrinsically rewarding behaviour may lead to an 'over-justification effect' (Lepper, Greene, & Nisbett, 1973). Ironically, incentivizing prosocial behaviour may decrease the affective benefits and lead to a decrease in prosocial behaviour in children (e.g., Eisenberg, Wolchik, Goldberg, & Engel, 1992; Warneken & Tomasello, 2008). Within the field of economics, Frey and

Jegen (2001) refer to the tendency for extrinsic incentives such as monetary rewards to decrease intrinsic incentives and reduce prosocial behaviour as the 'motivational crowding-out effect'. Therefore, attention should be paid to this when attempting to promote increases in prosocial behaviour.

On the other hand, there may be important prosocial benefits to increasing self-oriented positive affect. The current program of research did not find evidence for strong relations between self-oriented positive affect and sharing in children; however, previous research suggests self-oriented positive affect can lead to increased prosocial behaviour in both children (e.g., Barnett & Bryan, 1974; Barnett et al., 1979; Isen, Horn, & Rosen, 1973; Moore et al., 1973; Rosenhan et al., 1974; Underwood et al., 1977) and adults (e.g., Aderman, 1972; Isen, 1970; Isen, Clark, & Schwartz, 1976; Isen & Levin, 1972; Manucia, Baumann, & Cialdini, 1984; O'Malley & Andrews, 1983; Veitch, de Wood, & Bosko, 1977). If increasing self-oriented positive affect presents a means of increasing prosocial behaviour, this could have important implications for individuals who are experiencing conduct problems or low levels of prosocial behaviour toward their peers. As Light et al. (2015) suggest, interventions could be developed at both the individual or societal level to promote both self-oriented positive affect and generosity. Emerging research suggests interventions can be used to increase prosocial behaviour and have found this results in increased positive affect or wellbeing in adults (e.g., Otake, Shimai, Tanaka-Matsumi, Otsui, & Fredrickson, 2006). Similarly, Sweet and Johnson (1990) found *Meditation-Enhanced Empathy Training (MEET)* may be used to increase empathy in an adult clinical population. Research by Jones, Greenberg, and Crowley (2015)

suggests that there may be a link between early social-emotional functioning and later adult health outcomes, so this may have important implications for early development.

Social and emotional learning in elementary classrooms is increasing; however, many interventions focus on decreasing negative behaviours (e.g., aggression and violence) and few focus on increasing prosocial behaviours (e.g., sharing and helping). An example of an intervention meant to increase everyday prosocial behaviours is the *Random Acts of Kindness* program (which was founded in Colorado in 2000). This intervention has been recently empirically evaluated, and can be found by visiting the website www.randomactsofkindness.org.

Anik, Aknin, Dunn, and Norton (2015) caution that trying to encourage prosocial behaviour by informing people of the potential affective benefits of sharing may inadvertently have the opposite effect. However, previous research by Benson and Catt (1978) suggests that informing adults that sharing can increase their positive affect resulted in increased donations compared to suggesting it was their social responsibility, especially when the charitable cause involved a negative condition beyond the recipient's control (e.g., environmental disaster or hereditary illness). Additionally, recent research suggests preschoolers can identify that sharing would lead to more positive emotions and that not engaging in sharing would lead to more negative emotions, and that these ratings predicted their subsequent sharing behaviour (Paulus & Moore, 2017). Whereas, other research suggests most adults have the false belief that spending money on others results in less positive affect than spending on themselves (Dunn et al., 2008), unless they think about the abstract, as opposed to concrete, aspects of sharing (Aknin, Van Boven, and Johnson-Graham, 2015b). It is possible that educating people about this commonly held

false belief might change the way they conceptualize sharing with a personal cost and detract from the affective benefits of this prosocial behaviour. However, Aknin et al. (2015b) found that increasing adults' awareness of the potential affective benefits of sharing did not appear to decrease this effect, at least in the short-term.

Finally, the current program of research did not find evidence for strong relations between other-oriented positive empathy and sharing behaviour in children. Although there are some mixed findings in the literature, some research suggests that other-oriented positive affect can decrease prosocial behaviour (Barnett et al., 1979; Rosenhan et al., 1981; Thompson et al., 1980). Therefore, attempting to manipulate positive empathy in particular may require special considerations. In fact, Bloom (2016) argued that empathy is not always helpful and can lead us astray from rational deliberation and cause more harm than good. Zaki and Cikara (2015) highlight that increased empathy does not always lead to increased prosocial behaviour, and suggested that interventions designed to increase prosocial behaviour may be more successful if they also focus on equity instead of simply focusing on empathy. On the other hand, across a series of experimental studies, Reis et al. (2010) found that responding with positive empathy had a positive impact on social relationships with both close contacts and strangers. Therefore, it may be beneficial to increase empathy as a means of increasing social connectivity, even if this does not increase prosocial behaviour in children. Interestingly, adults who donated money to a charity experienced more positive affect when they gave the donation directly to a peer associated with the charity and got to observe their positive reaction (Aknin, Dunn, Sandstrom, & Norton, 2013b), highlighting the importance of social connection in the interrelation between sharing and positive empathy.

The benefits of generally increasing both positive affect and prosocial behaviour may seem obvious, but accumulating evidence suggests there may be a myriad of benefits to increasing self-oriented positive affect, beyond simply ‘feeling good’. Fredrickson (2004) highlights the benefits of positive affect, using the *broaden and build theory*, which suggests various positive emotions may facilitate our engagement with our social environment and help us build our personal resources. This work may have important clinical implications for individuals with certain disorders which impact their ability to empathize with others. For example, people with Autism Spectrum Disorders (ASD) may struggle to interpret the thoughts, feelings, and actions of other people, which may make it difficult to empathize with their emotions (Baron-Cohen, 2009). This might make it difficult for individuals with ASD to gain affective benefits from the interrelations between sharing and positive empathy. Future research could examine if individuals with ASD respond differentially to these tasks than those without ASD in order to examine this question further.

Limitations

Overall, this program of research provided well-controlled investigations of the basic relations between positive affect and sharing in children from multiple perspectives. However, there are some important limitations shared by all three studies which require further discussion. Specifically, there are critical limitations related to the areas of sharing behaviour, positive affect, study design, and participant demographics, which will be discussed in turn below.

Sharing

All three studies included in this dissertation used a RAT to quantify children's sharing behaviour. There are important limitations related to the RAT that should be considered, including the nature of the sharing partners, the rewards (i.e., stickers), and the ecological validity of the task.

In the three studies included in this dissertation, 5- and 6-year-olds made decisions about how to allocate resources between themselves and a previously unknown sharing partner who was not present. Although previous research has found that children will share differentially with sharing partners who are not present (e.g., Sparks et al., 2017; Williams et al., 2014), this may have impacted our findings. Moore (2009) found children engaged in similar levels of no-cost sharing with a friend and a stranger, but they engaged in less costly sharing with a stranger. In Studies 1 and 2, children showed the same pattern of sharing as that shown in Moore (2009) in the stranger condition, in which children were more generous in no-cost than in cost sharing trials; therefore, children may have conceptualized their sharing partners as a stranger.

Although the sharing partners used in Study 2 were matched to the participant's sex, the sharing partners used in Studies 1 and 3 were always a female child. This may have led to different impacts on the male and female participants, although the number of boys and girls was evenly distributed across the two orders and co-varying out sex did not significantly change the analyses.

All three of these studies used stickers as a reward, which may not appeal to all children. We have some anecdotal evidence that stickers may be valued by many of the 5- and 6-year-old children included in this research. Specifically, in the practice trial at the beginning of all the RATs, we asked children if they wanted 1 or 2 stickers for themselves. Most children (~80%) elected to receive 2 stickers as opposed to 1 sticker, suggesting they preferred to receive more of these rewards. Additionally, all children chose to take their stickers home with them at the end of each of the three studies, suggesting they were interested in keeping these rewards. This practice trial administered as part of the RAT could also be a measure of something else, such as a desire for fairness. For example, when asked if they wanted 1 or 2 stickers for themselves, some children said they only wanted 1 sticker and asked if their sharing partner could have a sticker as well (although this request was not granted). At the end of the study, some children commented that they shared every time so both they and their sharing partner could have the same number of stickers; however, a few children noted that the distribution of resources was not perfectly even because they got an extra sticker at the beginning. Other commonly-used rewards for children, such as candy or toys, could be employed in future research, which might result in different sharing behaviour.

Finally, it is unclear if the results we obtained using the RAT in an experimental setting would generalize to real-world environments. Studies 1 and 2 found ceiling effects for the no-cost sharing data since children had no deterrent to share with their partner when there was no cost to do so. These studies also found both ceiling and floor effects for cost sharing data, as some children shared every time regardless of trial-type (contributing to a ceiling effect), whereas other children shared in the no-cost trials but

did not share in the cost trials (contributing to a floor effect). In real-world contexts, it is unlikely that children would frequently be presented with opportunities to make numerous sharing decisions in a row, as they were in the RAT. Children likely experience much more complex sharing situations in everyday life. Therefore, it is unclear if considerations such as children's own positive affect, or the positive affect of another child, might impact their choices to share in the real world. In the future, more realistic sharing situations could be used to study this more naturalistically in children (e.g., using observation in schools or daycares). The ecological validity of our findings is limited, as children are more likely to be involved in much more complex sharing situations involving present peers or siblings with whom they have preexisting social relationships.

Affect

One of the greatest limitations of this program of research is the difficulty clearly operationally defining and measuring affect in general and positive affect in particular. As outlined in the general introduction, there are likely many different types of positive affect, and it may be difficult to distinguish between them, especially in children. It may also be difficult to distinguish between positive affect and other emotions, as feelings can be complex and labile. Since our affective states may be partially internally felt and externally expressed, it can be challenging to decipher what a child might be feeling. Two of the most common ways to assess this are by asking the individual to report their own feelings or trying to ascertain how they might feel through behavioural observations; however, both these approaches may be limited and biased. Eisenberg and Fabes (1990) review the relative benefits of self-report, facial affect, and physiological data as measures of affect and find they may all be useful indices.

Affect was measured using a modified version of McGrath et al.'s (1985) FAS in each of the three studies. We found both ceiling and floor effects in which children tended to pick extremely positive or negative values on the FAS. It seemed that they tended to polarize their affect ratings as either positive or negative and rarely selected more neutral ratings. Children's tendency to polarize their affect ratings may have contributed to difficulties with our data analysis, as the FAS data tended to be either positively or negatively skewed. This also likely accounted for some of our null results. Specifically, in Study 1 children had some difficulty differentiating between another character's positive and neutral affect as expressed in a video, especially when they saw the neutral video first. Unless given other information as a means of comparison (e.g., children rated the character's affect less positively in the neutral condition if they had first seen the positive condition), children tended to make ceiling-high positive ratings on the scale as a default. Although we found a significant difference between children's affect ratings of the character in the video, the experimental manipulation did not impact their own highly positive affect ratings. Similarly, in Study 3, children rated their own affect as highly positive after the RAT across all three conditions. This made it challenging to differentiate between subtle variations in children's affective experiences, which were more apparent based on the coding of their facial expressions.

Additionally, although a large body of previous research has examined facial expressions of emotion (e.g., Aknin et al., 2012b; Ekman et al., 1980; Ekman et al., 1990; Ekman et al., 1978; Ekman & Friesen, 1982; Oster, 2006), there are still problems with subjectivity when it comes to reliably assessing positive affect by observing the human face. We used Aknin et al.'s (2012b) coding scheme to measure children's positive affect

in all three studies, as either a primary measure of interest or a manipulation check. Our inter-rater agreement was not as high as that reported by Aknin et al., in which they achieved $\alpha = .92$ and we achieved $\alpha = .82$ in Study 3. Although it was still relatively reliable, the coders reported some ambiguity while making judgements about the children's displays of facial affect while coding the videos, especially when children's facial affect was highly variable within a single trial (e.g., if they showed both negative and positive affect).

The coding of facial expressions of emotion can be subjective to measure and also difficult to interpret. Ekman and Friesen (1982) explained that although smiling can often be clearly identified, it can be challenging to interpret since there are different types of smiles, including 'felt smiles', 'false smiles', and 'miserable smiles' which all convey different meanings. These different types of smiles may reinforce the notion that facial expressions might be a way to express internal emotions or they can also be used as a method of social communication. More recent work by Platt, Hofmann, Ruch, and Proyer (2013) suggests adults' expressions of positive affect differed based on if they feared being laughed at by others. We may be able to control our expressions of positive affect based on external social pressure and either enhance or repress expressions of positive affect. This makes it difficult to reliably infer someone's internal affective experience based on their external affective behaviours.

Study Design

Studies 1 and 2 used mixed between- and within-subjects designs, whereas Study 3 was a within-subjects design that used yoking to match participants. There are pros and cons to both these approaches. Originally it was hoped that using mixed between- and

within-subjects designs would help to increase our power, but the addition of different orders complicated our interpretation of the data, especially when we found three-way interactions that are likely not replicable.

Study 3 was conducted within a laboratory setting, whereas Studies 1 and 2 were conducted in school settings. Testing in schools was much more efficient, so Studies 1 and 2 were conducted over a much shorter period of time, which may have increased the experimenter's internal consistency. However, Study 3 was conducted in a single laboratory setting (as opposed to various school settings) that provided a better controlled environment and may have increased the study's internal consistency.

Studies 1 and 2 drew from rural populations, whereas Study 3 relied on an urban sample of volunteers. Both these groups of children were predominantly Caucasian and there was slightly more diversity in the participants seen in Study 3. Studies 1 and 2 were conducted in school settings, whereas Study 3 was conducted in a laboratory setting. Children in the laboratory setting were often accompanied by their parents, which could have impacted their responses to questions. On the contrary, children seen in schools may have felt that they were supposed to be more obedient or supply 'correct' answers within that educational context, although all children were assured that there are no right or wrong answers to any of the study questions.

Since Studies 1 and 2 were conducted in a school setting, they required much less commitment on the part of the parents, as they only had to sign and return the consent form to their child's school. Parents in Study 3 had to take time to come into the laboratory with their child. This could have resulted in differences between the two

participant populations. The children seen in Studies 1 and 2 likely characterize a more representative sample of the population.

Participant Demographics

The characteristics of our participants, such as age and cultural background, are important to consider. Participants in all three of these studies were limited in that they were a relatively homogeneous group composed of predominantly Caucasian, English-speaking children. Subsequent studies could include demographic questions about children's ethnic background and their parents' socioeconomic status, as these factors could potentially impact their performance on these tasks.

All children included in this research were 5 or 6 years of age. It is important to highlight that children develop different skills over time, based on developmental stages as opposed to specific chronological ages (Moore, 2006). However, this age-group was selected because previous research suggests younger 3- and 4-year-old children tend to behave more selfishly, whereas older 7- and 8-year-old children behave more fairly (Fehr et al., 2008). We hoped that this middle age-group would show more flexibility in their sharing behaviour and that their resource allocations might be more sensitive to experimental manipulations. However, it is possible that children in this age-group may have been less sensitive to the manipulations, since previous research has found that some experimental manipulations are not as successful with younger than older children. For example, Barnett and Bryan (1974) found a competition with feedback manipulation impacted the sharing behaviour of grade 5 boys (approximately 10-11 years of age) but not grade 2 boys (approximately 8 to 9 years). Therefore, extending the age range to look at developmental changes over time may have been more informative.

Directions for Future Research

This dissertation provides a succinct examination of some of the basic relations between positive affect and sharing behaviour in children. However, there is much more research to be conducted in this area. Some ideas for future research projects are proposed below, including investigating different types of positive affect, other motivations for sharing, potential developmental changes in relations between positive affect and sharing, as well as interdisciplinary and qualitative research.

As noted in the general introduction, a variety of emotions may fall under the umbrella term ‘positive affect’ beyond happiness, such as awe, hopefulness, pride, admiration, and gratitude. This program of research took a generalized view of positive affect as a starting point from which to investigate these phenomena in children. Previous research with adults suggests certain types of positive affect related to elation and awe predict increased prosocial behaviour, whereas general amusement or happiness may not (Piff et al., 2015; Schnall et al., 2010). Future research could examine more specifically if there are differences between these diverse positive emotions in children.

Both the negative state relief theory (Cialdini et al., 1973) and the hedonic contingency theory (Wegener & Petty, 1994) generally suggest that people are motivated to engage in prosocial behaviour if they expect it will result in an affective benefit, either to decrease negative affect or further increase positive affect. Therefore, we expected that children in all three studies would engage in sharing behaviour to gain an affective benefit from acting prosocially. However, this assumes that children would find the sharing task intrinsically rewarding. Recall that Dunn et al. (2008) found most adults erroneously believed that spending money on themselves would make them happier than

spending money on someone else. However, Aknin et al. (2015b) found when adults thought about the abstract, as opposed to concrete, aspects of prosocial behaviour they predicted that engaging in such prosocial behaviour would lead to greater positive affect. On the other hand, preschoolers were able to identify that sharing would lead to more positive emotions and that not engaging in sharing would lead to more negative emotions, and these ratings predicted their subsequent sharing behaviour (Paulus & Moore, 2017). It would have been interesting to look at subgroups of children across Studies 1, 2, and 3 who shared more or less to see if they either kept more for themselves or gave more stickers away due to a desire to increase their own positive affect. It is possible that there were two subgroups of children acting in different ways, which could have washed out some of our effects. Asking children a question about their motives for sharing might have revealed insight into their behaviour on the RATs. It would be interesting if a response to a question such as “*What do you think would make you happier: getting stickers for yourself or giving stickers to another child?*” was correlated with children’s actual behaviour on the RAT.

Another avenue for future research is examining the interactions between various motivations for prosocial behaviour, including social recognition and future reciprocity (see Bekkers & Wiepking, 2011; Martin & Olson, 2015 for reviews). Martin and Olson (2015) underscore that a theory which suggests affective benefits may motivate prosocial behaviour, does not replace other explanations for why we act generously. In fact, they explain that affective benefits may even promote other intrinsic or extrinsic motivations to engage in prosocial behaviour. Although our real-world sharing experiences are likely driven by a complex interplay between a multitude of variables, these phenomena have

generally been studied in isolation to produce clear scientific research studies. However, larger-scale multi-variable research in real-world contexts may be able to address interrelations between some of these different variables to better understand our rich social worlds.

This program of research focused on relations between positive affect and sharing in 5- and 6-year-old children. As outlined previously, this narrow age range was selected to examine relations between these variables during a specific window of development when children might be more flexible in their sharing behaviour (Fehr et al., 2008). We first hoped to establish evidence for relations between these variables at one point in childhood before examining any potential developmental progression in these relations. Since children did *not* show the same associations between positive affect and sharing that have been documented in adults, this may suggest that such relations develop at later developmental stages. Future research could examine if there are changes in these relations over time, as it is possible that younger or older children might respond differently to the experimental manipulations than the 5- and 6-year-olds. It would also be helpful to extend the same research methods to adult populations to observe if the lack of a finding (i.e., null results) we observed in 5- and 6-year-olds might be due to methodological weaknesses or if children may not exhibit the same relations between positive affect and sharing that are observed in adults. If so, it would be interesting to examine when these relations evolve and what factors may be involved in their development and maintenance.

Moving forward, it would be helpful to unite the disparate fields that study questions related to happiness and generosity, such as psychology, philosophy, and economics. Future research could stimulate interdisciplinary connections to unite these fields, as game theory did (see Gummerum, Hanoch, & Keller, 2008 for a review).

Research examining interrelations between positive affect and sharing are interesting and important in our society. Although concepts of positive affect and prosocial behaviour can be challenging to operationally define and empirically measure, there is an ongoing interest in understanding these phenomena. Other research approaches such as qualitative methods could be used to examine some of these concepts from a more holistic point of view. Although such investigations have their limitations, they may provide further insight into these complex interrelations from a first-person perspective.

Conclusions

This dissertation included three different ways to look at relations between positive affect and sharing in young children, including investigating how both other-oriented and self-oriented positive affect might impact children's subsequent sharing behaviour, and if there is an affective benefit associated with sharing in early childhood. The three studies included in this body of work focused on either other-oriented positive affect, self-oriented positive affect, or sharing behaviour as a starting point and we then examined how these primary variables impacted the other related variables in the model. See Figure 1 above for a visual summary of the interrelations between these three variables.

Sharing behaviour likely involves a complex process, which may be influenced by different affective motivations, along with other intrinsic and extrinsic motives. Emerging research also suggests that humans may be hardwired to engage in prosocial behaviour (Pfaff & Sherman, 2015). Therefore, there is likely a complex interplay between nature and nurture here, in which children may have a biological predisposition to find sharing inherently rewarding, and they may also be socialized to associate this prosocial behaviour with both extrinsic and intrinsic rewards such as positive affect. Akinin et al. (2012b) theorized that we likely evolved over time to experience affective benefits of sharing. Such affective benefits of sharing, especially when a personal cost is involved, may help to positively reinforce prosocial behaviours that require personal sacrifice. This explanation does not necessarily rule out other motivations to engage in prosocial behaviour, such as altruistic motivations (e.g., Batson & Shaw, 1991; Stocks et al., 2009). However, it may provide further intrinsic motivation to maintain this highly valued social behaviour.

The current dissertation examined various interrelations between sharing, self-oriented positive affect, and other-oriented positive empathy. The studies in this program of research did not lend much empirical support for relations between positive affect and sharing in children. However, further research should be considered in order to elucidate the complex interplay between these variables, in order to help us further understand the interrelations between positive affect and sharing in early child development.

REFERENCES

- Aderman, D. (1972). Elation, depression, and helping behavior. *Journal of Personality and Social Psychology*, 24, 91–101. doi: 10.1037/h0033366
- Aknin, L. B., Barrington-Leigh, C. P., Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., ... & Norton, M. I. (2013a). Prosocial spending and well-being: Cross-cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, 104(4), 635–701. doi: 10.1037/a0031578
- Aknin, L. B., Broesch, T., Hamlin, J. K., & Van de Vondervoort, J. W. (2015a). Prosocial behavior leads to happiness in a small-scale rural society. *Journal of Experimental Psychology: General*, 144(4), 788–795. doi: 10.1037/xge0000082
- Aknin, L. B., & Dunn, E. W. (2013). Wealth and subjective well-being: Spending money on others leads to higher happiness than spending on yourself. In J. J. Froh & A. C. Parks (Eds.), *Activities for Teaching Positive Psychology: A Guide for Instructors* (pp. 93–97). Washington, DC: American Psychological Association. doi: 10.1037/14042-015
- Aknin, L. B., Dunn, E. W., & Norton, M. I. (2012a). Happiness runs in a circular motion: Evidence for a positive feedback loop between prosocial spending and happiness. *Journal of Happiness Studies*, 13, 347–355. doi: 10.1007/s10902-011-9267-5
- Aknin, L. B., Dunn, E. W., Sandstrom, G.M., & Norton, M. I. (2013b). Does social connection turn good deeds into good feelings?: On the value of putting the ‘social’ in prosocial spending. *International Journal of Happiness and Development*, 1, 155–171. doi: 10.1504/IJHD.2013.055643
- Aknin, L. B., Dunn, E. W., Whillans, A. V., Grant, A. M., & Norton, M. I. (2013). Making a difference matters: Impact unlocks the emotional benefits of prosocial spending. *Journal of Economic Behavior and Organization*, 88, 90–95. doi: 10.1016/j.jebo.2013.01.008
- Aknin, L. B., Fleerackers, A. L., & Hamlin, J. K. (2014). Can third-party observers detect the emotional rewards of generous spending? *Journal of Positive Psychology*, 9(3), 198–203. doi: 10.1080/17439760.2014.888578
- Aknin, L. B., Hamlin, J. K., & Dunn, E. W. (2012b). Giving leads to happiness in young children. *Public Library of Science*, 7(6), e39211. doi: 10.1371/journal.pone.0039211

- Aknin, L. B., Sandstrom, G. M., Dunn, E. W., & Norton, M. I. (2011). It's the recipient that counts: Spending money on strong social ties leads to greater happiness than spending on weak social ties. *Public Library of Science*, *6*(2), e17018. doi: 10.1371/journal.pone.0017018
- Aknin, L. B., Van Boven, L., & Johnson-Graham, L. (2015b). Abstract construals make the emotional rewards of prosocial behavior more salient. *Journal of Positive Psychology*, *10*(5), 458–462. doi: 10.1080/17439760.2014.967801
- Aknin, L. B., Van de Vondervoort, J. W., & Hamlin, J. K. (2018). Positive feelings reward and promote prosocial behavior. *Current Opinion in Psychology*, *20*, 55–59. doi: 10.1016/j.copsy.2017.08.017
- Andreoni, J. (1989). Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of Political Economy*, *97*(6), 1447–1458. doi: 10.1086/261662
- Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal*, *100*(401), 464–477. doi: 10.2307/2234133
- Andreychik, M. R., & Lewis, E. (2017). Will you help me to suffer less? How about to feel more joy?: Positive and negative empathy are associated with different other-oriented motivations. *Personality and Individual Differences*, *105*, 139–149. doi: 10.1016/j.paid.2016.09.038
- Andreychik, M. R., & Migliaccio, N. (2015). Empathizing with others' pain versus empathizing with others' joy: Examining the separability of positive and negative empathy and their relation to different types of social behaviors and social emotions. *Basic and Applied Social Psychology*, *37*(5), 274–291. doi: 10.1080/01973533.2015.1071256
- Anik, L., Aknin, L. B., Dunn, E. W., & Norton, M. I. (2015). Feeling good about giving: The benefits (and costs) of self-interested charitable behavior. In D. M. Oppenheimer & C. Y. Olivola (Eds.), *The science of giving: Experimental approaches to the study of charity* (pp. 3–13). New York, NY: Psychology Press.
- Barnett, M. A., & Bryan, J. H. (1974). Effects of competition with outcome feedback on children's helping behavior. *Developmental Psychology*, *10*(6), 838–842. doi: 10.1037/h0037255
- Barnett, M. A., King, L. M., & Howard, J. A. (1979). Inducing affect about self or other: Effects on generosity in children. *Developmental Psychology*, *15*(2), 164–167. doi: 10.1037/0012-1649.15.2.164
- Baron-Cohen, S. (2009). Autism: The empathizing-systemizing (E-S) theory. *Annals of the New York Academy of Sciences*, *1156*(1), 68–80. doi: 10.1111/j.1749-6632.2009.04467.x

- Barraza, J. A. (2011). Positive emotional expectations predict volunteer outcomes for new volunteers. *Motivation and Emotion, 35*, 211–219. doi: 10.1007/s11031-011-9210-4
- Barraza, J. A., & Zak, P. J. (2009). Empathy toward strangers triggers oxytocin release and subsequent generosity. *Annals of the New York Academy of Sciences, 1167*(1), 182–189. doi: 10.1111/j.1749-6632.2009.04504.x
- Bartlett, M. Y., & DeSteno, D. (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science, 17*(4), 319–325. doi: 10.1111/j.1467-9280.2006.01705.x
- Batson, C. D., Sager, K., Garst, E., Kang, M., Rubchinsky, K., & Dawson, K. (1997). Is empathy-induced helping due to self-other merging? *Journal of Personality and Social Psychology, 73*(3), 495–509. doi: 10.1037/0022-3514.73.3.495
- Batson, C. D., & Shaw, L. L. (1991). Evidence for altruism: Toward a pluralism of prosocial motives. *Psychological Inquiry, 2*(2), 107–122. doi: 10.1207/s15327965pli0202_1
- Bekkers, R., & Wiepking, P. (2011). A literature review of empirical studies of philanthropy: Eight mechanisms that drive charitable giving. *Nonprofit and Voluntary Sector Quarterly, 40*(5), 924–973. doi: 10.1177/0899764010380927
- Benson, P. L., & Catt, V. L. (1978). Soliciting charity contribution: The parlance of asking for money. *Journal of Applied Social Psychology, 8*, 84–95. doi: 10.1111/j.1559-1816.1978.tb00767.x
- Blake, P. R., McAuliffe, K., & Warneken, F. (2014). The developmental origins of fairness: The knowledge-behavior gap. *Trends in Cognitive Sciences, 18*(11), 559–561. doi: 10.1016/j.tics.2014.08.003
- Bloom, P. (2016). *Against empathy: The case for rational compassion*. New York, NY: Ecco Press.
- Bloom, P., & Markson, L. (1998). Intention and analogy in children's naming of pictorial representations. *Psychological Science, 9*(3), 200–204. doi: 10.1111/1467-9280.00038
- Brenner, E. (2000). Mood induction in children: Methodological issues and clinical implications. *Review of General Psychology, 4*(3), 264–279. doi: 10.1037/1089-2680.4.3.264

- Brownell, C. A., Svetlova, M., Anderson, R., Nichols, S., & Drummond, J. (2013). Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy, 18*, 91–119. doi: 10.1111/j.1532-7078.2012.00125.x
- Brownell, C. A., Svetlova, M., & Nichols, S. (2009). To share or not to share: When do toddlers respond to another's needs? *Infancy, 14*, 117–130. doi: 10.1080/15250000802569868
- Carlson, M., Charlin, V., & Miller, N. (1988). Positive mood and helping behavior: A test of six hypotheses. *Journal of Personality and Social Psychology, 55*(2), 211–229. doi: 10.1037/0022-3514.55.2.211
- Chernyak, N., & Kushnir, T. (2013). Giving preschoolers choice increases sharing behavior. *Psychological Science, 24*(10), 1971–1979. doi: 10.1177/0956797613482335
- Cialdini, R. B., Darby, B. L., & Vincent, J. E. (1973). Transgression and altruism: A case for hedonism. *Journal of Experimental Social Psychology, 9*(6), 502–516. doi: 10.1016/0022-1031(73)90031-0
- Cialdini, R. B., & Kenrick, D. T. (1976). Altruism as hedonism: A social development perspective on the relationship of negative mood state and helping. *Journal of Personality and Social Psychology, 34*(5), 907–914. doi: 10.1037/0022-3514.34.5.907
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Cole, P. M. (1986). Children's spontaneous control of facial expression. *Child Development, 57*, 1309–1321. doi: 10.2307/1130411
- Cole, P. M., Jenkins, P. A., & Shott, C. T. (1989). Spontaneous expressive control in blind and sighted children. *Child Development, 60*, 683–688. doi: 10.2307/1130733
- Cowell, J. M., & Decety, J. (2015). The neuroscience of implicit moral evaluation and its relation to generosity in early childhood. *Current Biology, 25*(1), 93–97. doi: 10.1016/j.cub.2014.11.002
- Cowell, J. M., Lee, K., Malcolm-Smith, S., Selcuk, B., Zhou, X., & Decety, J. (2017). The development of generosity and moral cognition across five cultures. *Developmental Science, 20*(4), 1–12. doi: 10.1111/desc.12403

- Cunningham, M. R., Shaffer, D. R., Barbee, A. P., Wolff, P. L., & Kelley, D. J. (1990). Separate processes in the relation of elation and depression to helping: Social versus personal concerns. *Journal of Experimental Social Psychology, 26*(1), 13–33. doi: 10.1016/0022-1031(90)90059-U
- Cunningham, M. R., Steinberg, J., & Grev, R. (1980). Wanting to and having to help: Separate motivations for positive mood and guilt-induced helping. *Journal of Personality and Social Psychology, 38*(2), 181–192. doi: 10.1037/0022-3514.38.2.181
- Decety, J., & Cowell, J. M. (2014). The complex relation between morality and empathy. *Trends in Cognitive Sciences, 18*(7), 337–339. doi: 10.1016/j.tics.2014.04.008
- Decety, J., & Jackson, P. L. (2004). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews, 3*(2), 71–100. doi: 10.1177/1534582304267187
- DeSteno, D., Bartlett, M. Y., Baumann, J., Williams, L. A., & Dickens, L. (2010). Gratitude as moral sentiment: Emotion-guided cooperation in economic exchange. *Emotion, 10*(2), 289–293. doi: 10.1037/a0017883
- de Vignemont, F., & Singer, T. (2006). The empathic brain: How, when and why? *Trends in Cognitive Sciences, 10*(10), 435–441. doi: 10.1016/j.tics.2006.08.008
- Diener, E., Emmons, R. A., Larson, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75. doi: 10.1207/s15327752jpa4901_13
- Duan, C. (2000). Being empathic: The role of motivation to empathize and the nature of target emotions. *Motivation and Emotion, 24*(1), 29–49. doi: 10.1023/A:1005587525609
- Dunfield, K., Kuhlmeier, V. A., O'Connell, L., & Kelley, E. (2011). Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy, 16*, 227–247. doi: 10.1111/j.1532-7078.2010.00041.x
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science, 319*(5870), 1687–1688. doi: 10.1126/science.1150952
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2014). Prosocial spending and happiness using money to benefit others pays off. *Current Directions in Psychological Science, 23*(1), 41–47. doi: 10.1177/0963721413512503
- 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., & Fabes, R. A. (1990). Empathy: Conceptualization, measurement, and relation to prosocial behavior. *Motivation and Emotion, 14*(2), 131–149. doi: 10.1007/BF00991640
- Eisenberg, N., Fabes, R. A., Miller, P. A., Fultz, J., Shell, R., Mathy, R. M., & Reno, R. R. (1989). Relation of sympathy and personal distress to prosocial behavior: A multimethod study. *Journal of Personality and Social Psychology, 57*(1), 55–66. doi: 10.1037/0022-3514.57.1.55
- Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of Child Psychology: Social, emotional, and personality development* (6th ed.; pp. 646–718). New York, NY: Wiley.
- Eisenberg, N., McCreath, H., & Ahn, R. (1988). Vicarious emotional responsiveness and prosocial behaviour: Their interrelations in young children. *Personality and Social Psychology Bulletin, 14*(2), 298–311. doi: 10.1177/0146167288142008
- Eisenberg, N., & Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 101*(1), 91–119. doi: 10.1037/0033-2909.101.1.91
- Eisenberg, N., Wolchik, S. A., Goldberg, L., & Engel, I. (1992). Parental values, reinforcement, and young children's prosocial behavior: A longitudinal study. *Journal of Genetic Psychology, 153*(1), 19–36. doi: 10.1080/00221325.1992.10753699
- Ekman, P., Davidson, R. J., & Friesen, W. V. (1990). The Duchenne smile: Emotional expression and brain physiology: II. *Journal of Personality and Social Psychology, 58*(2), 342–353. doi: 10.1037/0022-3514.58.2.342.
- Ekman, P., & Friesen, W. V. (1982). Felt, false, and miserable smiles. *Journal of Nonverbal Behavior, 6*(4), 2389–252. doi: 10.1007/BF00987191
- Ekman, P., Friesen, W. V., & Ancoli, S. (1980). Facial signs of emotional experience. *Journal of Personality and Social Psychology, 39*(6), 1125–1134. doi: 10.1037/h0077722
- Ekman, P., Friesen, W. V., & Hager, J. C. (1978). *Facial action coding system (FACS): A technique for the measurement of facial action*. Palo Alto, CA: Consulting Psychologists Press.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175–191. doi: 10.3758/BF03193146

- Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature*, *454*(7208), 1079–1083. doi: 10.1038/nature07155
- FeldmanHall, O., Dalgleish, T., Evans, D., & Mobbs, D. (2015). Empathic concern drives costly altruism. *Neuroimage*, *105*, 347–356. doi: 10.1016/j.neuroimage.2014.10.043
- Feshbach, N. D., & Roe, K. (1968). Empathy in six- and seven-year-olds. *Child Development*, *39*(1), 133–145. doi: 10.2307/1127365
- Field, A. (2009). *Discovering statistics using SPSS (Statistical Package for Social Scientists)*. Thousand Oaks, CA: Sage Publications.
- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society: Biological Sciences*, *359*(1449), 1367–1377. doi: 10.1098/rstb.2004.1512
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, *13*, 172–175. doi: 10.1111/1467-9280.00431
- Fredrickson, B. L., & Losada, M. R. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist*, *60*, 678–686. doi: 10.1037/0003-066X.60.7.678
- Frey, B. S., & Jegen, R. (2001). Motivation crowding theory. *Journal of Economic Surveys*, *15*(5), 589–611. doi: 10.1111/1467-6419.00150
- Frisch, M. B., Cornell, J., Villanueva, M., & Retzlaff, P. J. (1992). Clinical validation of the Quality of Life Inventory: A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment*, *4*(1), 92–101. doi: 10.1037/1040-3590.4.1.92
- Gebauer, J. E., Riketta, M., Broemer, P., & Maio, G. R. (2008). Pleasure and pressure based prosocial motivation: Divergent relations to subjective well-being. *Journal of Research in Personality*, *42*(2), 399–420. doi: 10.1016/j.jrp.2007.07.002
- Geenen, N. Y., Hohelüchter, M., Langholf, V., & Walther, E. (2014). The beneficial effects of prosocial spending on happiness: Work hard, make money, and spend it on others? *Journal of Positive Psychology*, *9*(3), 204–208. doi: 10.1080/17439760.2014.891154
- Genevsky, A., Västfjäll, D., Slovic, P., & Knutson, B. (2013). Neural underpinnings of the identifiable victim effect: Affect shifts preferences for giving. *Journal of Neuroscience*, *33*(43), 17188–17196. doi: 10.1523/JNEUROSCI.2348-13.2013

- Gray, K. (2010). Moral transformation: Good and evil turn the weak into the mighty. *Social Psychological and Personality Science*, *1*(3), 253–258. doi: 10.1177/1948550610367686
- Grayson, D. (2004). Some myths and legends in quantitative psychology. *Understanding Statistics*, *3*(2), 101–134. doi: 10.1207/s15328031us0302_3
- Gross, J., & Hayne, H. (1999). Drawing facilitates children's verbal reports after long delays. *Journal of Experimental Psychology: Applied*, *5*(3), 265–283. doi: 10.1037/1076-898X.5.3.265
- Guéguen, N., & de Gail, M. (2003). The effect of smiling on helping behavior: Smiling and good Samaritan behavior. *Communication Reports*, *16*(2), 133–140. doi: 10.1080/08934210309384496
- Gummerum, M., Hanoch, Y., & Keller, M. (2008). When child development meets economic game theory: An interdisciplinary approach to investigating social development. *Human Development*, *51*(4), 235–261. doi: 10.1159/000151494
- Güth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior and Organization*, *3*(4), 367–388. doi: 10.1016/0167-2681(82)90011-7
- Harbaugh, W. T., Mayr, U., & Burghart, D. R. (2007). Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science*, *316*(5831), 1622–1625. doi: 10.1126/science.1140738
- Hare, T. A., Camerer, C. F., Knoepfle, D. T., & Rangel, A. (2010). Value computations in ventral medial prefrontal cortex during charitable decision making incorporate input from regions involved in social cognition. *Journal of Neuroscience*, *30*(2), 583–590. doi: 10.1523/JNEUROSCI.4089-09.2010
- Harker, L., & Keltner, D. (2001). Expressions of positive emotion in women's college yearbook pictures and their relationship to personality and life outcomes across adulthood. *Journal of Personality and Social Psychology*, *80*, 112–124. doi: 10.1037/0022-3514.80.1.112
- Hauser, D. J., Preston, S. D., & Stansfield, R. B. (2014). Altruism in the wild: When affiliative motives to help positive people overtake empathic motives to help the distressed. *Journal of Experimental Psychology: General*, *143*(3), 1295–1305. doi: 10.1037/a0035464
- Hayes, A. F. (2006). A primer on multilevel modeling. *Human Communication Research*, *32*, 385–410. doi: 10.1111/j.1468-2958.2006.00281.x

- Hepach, R., Vaish, A., & Tomasello, M. (2012). Young children are intrinsically motivated to see others helped. *Psychological Science, 23*(9), 967–972. doi: 10.1177/0956797612440571
- Hornstein, H. A., LaKind, E., Frankel, G., & Manne, S. (1975). Effects of knowledge about remote social events on prosocial behavior, social conception, and mood. *Journal of Personality and Social Psychology, 32*(6), 1038–1046. doi: 10.1037/0022-3514.32.6.1038
- Hudson, A., & Jacques, S. (2014). Put on a happy face!: Inhibitory control and socioemotional knowledge predict emotion regulation in 5- to 7-year-olds. *Journal of Experimental Child Psychology, 123*, 36–52. doi: 10.1016/j.jecp.2014.01.012
- Isen, A. M. (1970). Success, failure, attention, and reaction to others: The warm glow of success. *Journal of Personality and Social Psychology, 15*(4), 294–301. doi: 10.1037/h0029610
- Isen, A. M., Clark, M., & Schwartz, M. F. (1976). Duration of the effect of good mood on helping: Footprints on the sands of time. *Journal of Personality and Social Psychology, 34*(3), 385–393. doi: 10.1037/0022-3514.34.3.385
- Isen, A. M., Horn, N., & Rosenhan, D. L. (1973). Effects of success and failure on children's generosity. *Journal of Personality and Social Psychology, 27*(2), 239–247. doi: 10.1037/h0034777
- Isen, A. M., & Levin, P. F. (1972). Effect of feeling good on helping: Cookies and kindness. *Journal of Personality and Social Psychology, 21*(3), 384–388. doi: 10.1037/h0032317
- Isen, A. M., & Simmonds, S. F. (1978). The effect of feeling good on a helping task that is incompatible with good mood. *Social Psychology Quarterly, 41*(4), 346–349. doi: 10.2307/3033588
- Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *Journal Information, 105*(11), 2283–2290. doi: 10.2105/AJPH.2015.302630
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986). Fairness and the assumptions of economics. In R. M. Hogarth & M. W. Reder (Eds.), *Rational choice: The contrast between economics and psychology* (pp. 101–116). Chicago, IL: University of Chicago Press.
- Kämpfe, N., & Mitte, K. (2009). What you wish is what you get?: The meaning of individual variability in desired affect and affective discrepancy. *Journal of Research in Personality, 43*(3), 409–418. doi: 10.1016/j.jrp.2009.01.007

- Konow, J., & Earley, J. (2008). The hedonistic paradox: Is homo economicus happier? *Journal of Public Economics*, 92(1), 1–33. doi: 10.1016/j.jpubeco.2007.04.006
- Larsen, R. J. (2000). Toward a science of mood regulation. *Psychological Inquiry*, 11(3), 129–141. doi: 10.1207/S15327965PLI1103_01
- Larsen, R. J., & Augustine, A. A. (2008). Basic personality dispositions: Extraversion/neuroticism, BAS/BIS, positive/negative affectivity, and approach/avoidance. In A. J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 151–164). Hillsdale, NJ: Lawrence Erlbaum Associate.
- Layous, K., Nelson, S. K., Oberle, E., Schonert-Reichl, K. A., & Lyubomirsky, S. (2012). Kindness counts: Prompting prosocial behavior in preadolescents boosts peer acceptance and well-being. *Public Library of Science*, 7(12), e51380. doi: 10.1371/journal.pone.0051380
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the 'overjustification' hypothesis. *Journal of Personality and Social Psychology*, 28(1), 129–137. doi: 10.1037/h0035519
- Levine, L. E., & Hoffman, M. L. (1975). Empathy and cooperation in 4-year-olds. *Developmental Psychology*, 11(4), 533–534. doi: 10.1037/h0076680
- Light, S. N., Moran, Z. D., Swander, L., Le, V., Cage, B., Burghy, C., ... & Davidson, R. J. (2015). Electromyographically assessed empathic concern and empathic happiness predict increased prosocial behavior in adults. *Biological Psychology*, 104, 116–129. doi: 10.1016/j.biopsycho.2014.11.015
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137–155. doi: 10.1023/A:1006824100041
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9(2), 111–131. doi: 10.1037/1089-2680.9.2.111
- Malti, T., Gummerum, M., Keller, M., & Buchmann, M. (2009). Children's moral motivation, sympathy, and prosocial behaviour. *Child Development*, 80, 442–460. doi: 10.1111/j.1467-8624.2009.01271.x
- Manucia, G. K., Baumann, D. J., & Cialdini, R. B. (1984). Mood influences on helping: Direct effects or side effects? *Journal of Personality and Social Psychology*, 46(2), 357–364. doi: 10.1037/0022-3514.46.2.357

- Martela, F., & Ryan, R. M. (2016). Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motivation and Emotion, 40*(3), 351–357. doi: 10.1007/s11031-016-9552-z
- Martin, A., & Olson, K. R. (2015). Beyond good and evil: What motivations underlie children's prosocial behavior? *Perspectives on Psychological Science, 10*(2), 159–175. doi: 10.1177/1745691615568998
- Mauss, I. B., & Robinson, M. D. (2009). Measures of emotion: A review. *Cognition and Emotion, 23*(2), 209–237. doi: 10.1080/02699930802204677
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*(2), 249–266. doi: 10.1037/0033-2909.127.2.249
- McGrath, P. A., de Veber, L. L., & Hearn, M. T. (1985). Multidimensional pain assessment in children. *Advances in Pain Research and Therapy, 9*, 387–393.
- Miller, J. G., Nuselovici, J. N., & Hastings, P. D. (2016). Nonrandom acts of kindness: Parasympathetic and subjective empathic responses to sadness predict children's prosociality. *Child Development, 87*(6), 1679–1690. doi: 10.1111/cdev.12629
- Moore, C. (2006). *The development of commonsense psychology*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Moore, C. (2009). Fairness in children's resource allocation depends on the recipient. *Psychological Science, 20*, 944–948. doi: 10.1111/j.1467-9280.2009.02378.x
- Moore, C. (2013). Homology in the development of triadic interaction and language. *Developmental Psychobiology, 55*, 59–66. doi: 10.1002/dev.21032
- Moore, B. S., Underwood, B., & Rosenhan, D. L. (1973). Affect and altruism. *Developmental Psychology, 8*(1), 99–104. doi: 10.1037/h0033847
- Morelli, S. A., Lieberman, M. D., & Zaki, J. (2015). The emerging study of positive empathy. *Social and Personality Psychology Compass, 9*(2), 57–68. doi: 10.1111/spc3.12157
- Morelli, S. A., Rameson, L. T., & Lieberman, M. D. (2014). The neural components of empathy: Predicting daily prosocial behavior. *Social Cognitive and Affective Neuroscience, 9*, 39–47. doi: 10.1093/scan/nss088
- Nelson, S. K., Layous, K., Cole, S. W., & Lyubomirsky, S. (2016). Do unto others or treat yourself?: The effects of prosocial and self-focused behavior on psychological flourishing. *Emotion, 16*(6), 850–861. doi: 10.1037/emo0000178

- Niesta Kayser, D., Greitemeyer, T., Fischer, P., & Frey, D. (2010). Why mood affects help giving, but not moral courage: Comparing two types of prosocial behaviour. *European Journal of Social Psychology*, *40*(7), 1136–1157. doi: 10.1002/ejsp.717
- O'Malley, M. N., & Andrews, L. (1983). The effect of mood and incentives on helping: Are there some things money can't buy? *Motivation and Emotion*, *7*(2), 179–189. doi: 10.1007/BF00992901
- Oster, H. (2006). *Baby FACS: Facial Action Coding System for infants and young children*. New York, NY: New York University.
- Otake, K., Shimai, S., Tanaka-Matsumi, J., Otsui, K., & Fredrickson, B. L. (2006). Happy people become happier through kindness: A counting kindnesses intervention. *Journal of Happiness Studies*, *7*(3), 361–375. doi: 10.1007/s10902-005-3650-z
- Paulus, M., & Moore, C. (2017). Preschoolers' generosity increases with understanding of the affective benefits of sharing. *Developmental Science*, *20*(3), e12417. doi: 10.1111/desc.12417
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment*, *5*, 164–172. doi: 10.1037/1040-3590.5.2.164
- Pfaff, D. W., & Sherman, S. (2015). *The altruistic brain: How we are naturally good*. Oxford, UK: Oxford University Press.
- Piff, P. K., Dietze, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology*, *108*(6), 883–899. doi: 10.1037/pspi0000018
- Platt, T., Hofmann, J., Ruch, W., & Proyer, R. T. (2013). Duchenne display responses towards sixteen enjoyable emotions: Individual differences between no and fear of being laughed at. *Motivation and Emotion*, *37*(4), 776–786. doi: 10.1007/s11031-013-9342-9
- Prinz, J. J. (2011). Is empathy necessary for morality? In A. Coplan & P. Goldie (Eds.), *Empathy: Philosophical and psychological perspectives* (pp. 211–229). Oxford, UK: Oxford University Press.
- Rameson, L. T., & Lieberman, M. D. (2009). Empathy: A social cognitive neuroscience approach. *Social and Personality Psychology Compass*, *3*(1), 94–110. doi: 10.1111/j.1751-9004.2008.00154.x

- Rapp, D. J., Engelmann, J. M., Herrmann, E., & Tomasello, M. (2017). The impact of choice on young children's prosocial motivation. *Journal of Experimental Child Psychology, 158*, 112–121. doi: 10.1016/j.jecp.2017.01.004
- Reis, H. T., Smith, S. M., Carmichael, C. L., Caprariello, P. A., Tsai, F. F., Rodrigues, A., & Maniaci, M. R. (2010). Are you happy for me?: How sharing positive events with others provides personal and interpersonal benefits. *Journal of Personality and Social Psychology, 99*, 311–329. doi: 10.1037/a0018344
- Ren, Q., & Ye, M. (2016). Donations make people happier: Evidence from the Wenchuan earthquake. *Social Indicators Research, 1–20*. doi: 10.1007/s11205-016-1233-5
- Rheingold, H. L., Hay, D. F., & West, M. J. (1976). Sharing in the second year of life. *Child Development, 47*(4), 1148–1158. doi: 10.2307/1128454
- Rosenhan, D. L., Salovey, P., & Hargis, K. (1981). The joys of helping: Focus of attention mediates the impact of positive affect on altruism. *Journal of Personality and Social Psychology, 40*(5), 899–905. doi: 10.1037/0022-3514.40.5.899
- Rosenhan, D. L., Underwood, B., & Moore, B. (1974). Affect moderates self-gratification and altruism. *Journal of Personality and Social Psychology, 30*(4), 546–552. doi: 10.1037/h0037038
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. doi: 10.1037/0003-066X.55.1.68
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*(1), 141–166. doi: 10.1146/annurev.psych.52.1.141
- Sallquist, J., Eisenberg, N., Spinrad, T. L., Egguma, N. D., & Gaertner, B. M. (2009). Assessment of preschoolers' positive empathy: Concurrent and longitudinal relations with positive emotion, social competence, and sympathy. *Journal of Positive Psychology, 4*(3), 223–233. doi: 10.1037/t10140-000
- Saarni, C. (1984). An observational study of children's attempts to monitor their expressive behavior. *Child Development, 1504–1513*. doi: 10.2307/1130020
- Schmidt, M. F., & Sommerville, J. A. (2011). Fairness expectations and altruistic sharing in 15-month-old human infants. *Public Library of Science, 6*(10), e23223. doi: 10.1371/journal.pone.0023223
- Schnall, S., Roper, J., & Fessler, D. M. (2010). Elevation leads to altruistic behavior. *Psychological Science, 21*(3), 315–320. doi: 10.1177/0956797609359882

- Shaw, A., Montinari, N., Piovesan, M., Olson, K. R., Gino, F., & Norton, M. I. (2014). Children develop a veil of fairness. *Journal of Experimental Psychology*, *143*(1), 363–375. doi: 10.1037/a0031247
- Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I should but I won't: Why young children endorse norms of fair sharing but do not follow them. *Public Library of Science*, *8*(3), e59510. doi: 10.1371/journal.pone.0059510
- Smith, K. D., Keating, J. P., & Stotland, E. (1989). Altruism reconsidered: The effect of denying feedback on a victim's status to empathic witnesses. *Journal of Personality and Social Psychology*, *57*(4), 641–650. doi: 10.1037/0022-3514.57.4.641
- Sparks, E., Schinkel, M. G., & Moore, C. (2017). Affiliation affects generosity in young children: The roles of minimal group membership and shared interests. *Journal of Experimental Child Psychology*, *159*, 242–262. doi: 10.1016/j.jecp.2017.02.007
- Stocks, E. L., Lishner, D. A., & Decker, S. K. (2009). Altruism or psychological escape: Why does empathy promote prosocial behavior? *European Journal of Social Psychology*, *39*(5), 649–665. doi: 10.1002/ejsp.561
- Strayer, J. (1980). A naturalistic study of empathic behaviors and their relation to affective states and perspective-taking skills in preschool children. *Child Development*, *51*(3), 815–822. doi: 10.2307/1129469
- Strayer, J., & Roberts, W. (2004). Children's anger, emotional expressiveness, and empathy: Relations with parents' empathy, emotional expressiveness, and parenting practices. *Social Development*, *13*(2), 229–254. doi: 10.1111/j.1467-9507.2004.000265.x
- Stürmer, S., Snyder, M., Kropp, A., & Siem, B. (2006). Empathy motivated helping: The moderating role of group membership. *Personality and Social Psychology Bulletin*, *32*(7), 943–956. doi: 10.1177/0146167206287363
- Sweet, M. J., & Johnson, C. G. (1990). Enhancing empathy: The interpersonal implications of a Buddhist meditation technique. *Psychotherapy: Theory, Research, Practice, Training*, *27*(1), 19–29. doi: 10.1037/0033-3204.27.1.19
- Tabachnick, B. C., & Fidell, L. S. (2007). *Using multivariate statistics (4th edition)*. Needham Heights, MA: Allyn & Bacon.
- Tan, H. B., & Forgas, J. P. (2010). When happiness makes us selfish, but sadness makes us fair: Affective influences on interpersonal strategies in the dictator game. *Journal of Experimental Social Psychology*, *46*(3), 571–576. doi: 10.1016/j.jesp.2010.01.007

- Telle, N. T., & Pfister, H. R. (2012). Not only the miserable receive help: Empathy promotes prosocial behaviour toward the happy. *Current Psychology, 31*(4), 393–413. doi: 10.1007/s12144-012-9157-y
- Telle, N. T., & Pfister, H. R. (2016). Positive empathy and prosocial behavior: A neglected link. *Emotion Review, 8*(2), 154–163. doi: 10.1177/1754073915586817
- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior, 115*–131. doi: 10.2307/3090173
- Thompson, C., Barresi, J., & Moore, C. (1997). The development of future-oriented prudence and altruism in preschoolers. *Cognitive Development, 12*(2), 199–212. doi: 10.1016/S0885-2014(97)90013-7
- Thompson, W. C., Cowan, C. L., & Rosenhan, D. L. (1980). Focus of attention mediates the impact of negative affect on altruism. *Journal of Personality and Social Psychology, 38*(2), 291–300. doi: 10.1037/0022-3514.38.2.291
- Underwood, B., Froming, W. J., & Moore, B. S. (1977). Mood, attention, and altruism: A search for mediating variables. *Developmental Psychology, 13*(5), 541–542. doi: 10.1037/0012-1649.13.5.541
- Underwood, B., & Moore, B. S. (1982). Perspective-taking and altruism. *Psychological Bulletin, 91*, 143–173. doi: 10.1037/0033-2909.91.1.143
- Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective-taking and its relation to prosocial behavior in toddlers. *Developmental Psychology, 45*(2), 534–543. doi: 10.1037/a0014322
- Veitch, R., de Wood, R., & Bosko, K. (1977). Radio news broadcasts: Their effects on interpersonal helping. *Sociometry, 40*(4), 383–386. doi: 10.2307/3033489
- Vrugt, A., & Vet, C. (2009). Effects of a smile on mood and helping behavior. *Social Behavior and Personality, 37*(9), 1251–1257. doi: 10.2224/sbp.2009.37.9.1251
- Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science, 311*(5765), 1301–1303. doi: 10.1126/science.1121448
- Warneken, F., & Tomasello, M. (2008). Extrinsic rewards undermine altruistic tendencies in 20-month-olds. *Developmental Psychology, 44*(6), 1785–1788. doi: 10.1037/a0013
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070. doi: 10.1037/0022-3514.54.6.1063

- Wegener, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality and Social Psychology*, *66*(6), 1034–1048. doi: 10.1037/0022-3514.66.6.1034
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222–244 doi: 10.1037/a0016984
- Williams, A., O’Driscoll, K., & Moore, C. (2014). The influence of empathic concern on prosocial behavior in children. *Frontiers in Psychology*, *5*(425), 1–8. doi: 10.3389/fpsyg.2014.00425
- Williamson, G. M., & Clark, M. S. (1989). Providing help and desired relationship type as determinants of changes in moods and self-evaluations. *Journal of Personality and Social Psychology*, *56*, 722–734. doi: 10.1037/0022-3514.56.5.722
- Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children’s understanding of deception. *Cognition*, *13*(1), 103–128. doi: 10.1016/0010-0277(83)90004-5
- Wiwad, D., & Aknin, L. B. (2017). Motives matter: The emotional consequences of recalled self-and other-focused prosocial acts. *Motivation and Emotion*, *41*(6), 730–740. doi: 10.1007/s11031-017-9638-2
- Wu, Z., Zhang, Z., Guo, R., & Gros-Louis, J. (2017). Motivation counts: Autonomous but not obligated sharing promotes happiness in preschoolers. *Frontiers in Psychology*, *8*, 867–875. doi: 10.3389/fpsyg.2017.00867
- Yinon, Y., & Landau, M. O. (1987). On the reinforcing value of helping behavior in a positive mood. *Motivation and Emotion*, *11*, 83–93. doi: 10.1007/BF00992215
- Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology*, *28*(1), 126–136. doi: 10.1037/0012-1649.28.1.126
- Zaki, J. (2014). Empathy: A motivated account. *Psychological Bulletin*, *140*(6), 1608–1647. doi: 10.1037/a0037679
- Zaki, J., & Cikara, M. (2015). Addressing empathic failures. *Current Directions in Psychological Science*, *24*(6), 471–476. doi: 10.1177/0963721415599978
- Zhang, C., Longard, J., & Moore, C. (2016). *Does the discrepancy between self and other ratings of affect predict sharing in children?* Unpublished honours thesis, Department of Psychology and Neuroscience, Dalhousie University, Halifax, Canada.