**An Investigation of Factors Influencing the Prosocial Behaviour of Australian Adolescents**

Amy Wong

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**An Investigation of Factors Influencing the Prosocial Behaviour of Australian Adolescents**

Prosocial behaviour is voluntary behaviour aimed to benefit others (Williams et al., 2017). These voluntary behaviours are positive such as helping, sharing as well as comforting and cooperating with others (Putra et al., 2021). Research in this field has identified prosocial behaviour to be beneficial for one's wellbeing and development (Rijsewjik et al., 2016). Additionally, a wide range of studies have demonstrated the importance of prosocial behaviour as a facilitator of peoples' adjustment and transition from childhood to adulthood (Williams et al., 2017). For both younger children and adolescents, research on gender differences in prosocial behaviour have consistently reported females to be more prosocial than males (Putra et al., 2021). During childhood, both the act of giving and receiving help becomes prominent as young children often react prosocially to the distress of others and are eager to provide them with help (Malonda et al., 2019). As for receiving help, young children mainly depend on their parents to be their support system (Rijsewjik et al., 2016). However, this dynamic switches during one's transition to adolescence as the act of giving and receiving help transfers gradually from parents to peers (Allen et al., 2018). During adolescence, there are many potential factors that could contribute to one's tendency to engage in prosocial behaviours. Additionally, there are potential implications this may have on one's wellbeing and development (Zou et al., 2020). Thus, it is important to understand the factors that influence adolescent prosocial behaviour.

Parenting styles are attitudes that shape a parent's care of and treatment towards their own child (Liu et al., 2021). Research on this topic has demonstrated parenting styles to be a reliable predictor of adolescent prosocial behaviour (Rijsewjik et al., 2016). This is because parents are influential figures in their child's life and children often mimic their

parents' behaviour (Malonda et al., 2019). Parenting styles can be conceptualised as two dimensions; warm and angry parenting. Parental warmth is the presence of positive communication, support, and responsiveness in parent-child relationships as well as the encouragement of child autonomy (Allen et al., 2018). In contrast, angry parenting styles involve negative and uncooperative parent-child relationships that are unproductive for the growth and autonomy of the child (Zou et al., 2020).

Both types of parenting have been associated with child and adolescent development, in particular the fostering and hindering of prosocial behaviour. A recent American study investigating predictors of prosocial behaviour demonstrated that parental warmth is positively correlated with prosocial behaviour whilst angry parenting had a negative association (Allen et al., 2018). The same results have been found in multiple Chinese and Australian studies that have focused on harsh parental discipline and prosocial behaviour in early adolescence (Wang et al., 2021). Research has also identified differences between the parenting of mothers and fathers and the parental influence this has on adolescent prosocial behaviour. For example, warm mothers have demonstrated to have more positive influence on a child's prosocial behaviour than warm fathers (Malonda et al., 2019). Angry mothers also have more of a negative influence on a child compared to angry fathers (Allen et al., 2018). Explanations for this difference have been linked to the different types of care each parent provides, with mothers often being the main caregiver and spending the most time with the child (Padilla-Walker et al., 2016).

Adolescence is a transitional phase during which relationships with peers become increasingly important (Malonda et al., 2019). Peer attachment refers to a bond or relationship between one or multiple peers (Gorrese, 2016). Established peer attachments can be distinguished by relationships that satisfy an adolescents' need for emotional

support and a ‘safe haven’ created by friends, something that was previously provided by parents during childhood (Balluerka et al., 2016). Research has demonstrated that strong peer attachments and healthy peer relationships have been associated with better psychological wellbeing and prosocial behaviour (Lan, 2019). Research has also found peers to be more influential than parents during adolescence as peers become more relatable to adolescents than their parents (Gorrese, 2016). As for gender differences amongst adolescents, females tend to report higher levels of attachment to their peers than males (Liu et al., 2021). One explanation for this is the gender differences in socialisation. For example, females tend to prioritise closeness and open communication with their peers more than males (Gorrese et al., 2012). Given the significance of peer relationships for the development of adolescents, it is important to understand the nature of these relationships and its impact on adolescent prosocial behaviour.

Recreational activities have also been associated with adolescent prosocial behaviour (Zhang et al., 2020). Existing empirical studies have demonstrated that neighbourhood green space quality positively impacts adolescent health and promotes prosocial behaviour (Dadvand et al., 2014). Green spaces are open areas such as parks, playgrounds and gardens. These areas facilitate prosocial behaviour amongst adolescents as they provide the opportunity to interact with others in nature through sharing and helping (Markevych et al., 2014). Studies have consistently concluded that there is a direct effect between green space quality and prosocial behaviour (Sanders et al., 2015). It is suggested that a lack of green space provides adolescents with fewer opportunities to exercise, play sports with others and spend time engaging with physical activity in nature (Putra et al., 2021). Overall, adolescents carry out less physical activity when green spaces aren’t accessible to them, resulting in the uptake of

less interactive and healthy past times (Akpinar, 2020). These inactive past times present less opportunities for adolescence to engage and develop prosocial behaviour (Amoly et al., 2013).

At the age of 12-13 years old, adolescents spend a lot of time in their day-to-day life with screens (Weinstein, 2018). Screens are used at home for homework, entertainment and communication as well as at school for educational purposes. During childhood, Australian children spend on average 2 hours a day with screens (Akpinar, 2017). This screen time doubles to 4 hours when children enter their early years of adolescence (Um et al., 2019). Excessive screen use has been associated with obesity, sleep problems, depression and lower academic performance in adolescents (Sanders et al., 2015). Although screen time is still under-researched, previous studies have identified a strong relationship between adolescent screen time and prosocial behaviour. Higher screen time has been associated with lower prosocial behaviour amongst adolescents (Weinstein, 2018). This is a result of less opportunity for adolescents to interact with others and to engage in prosocial behaviour whilst using screens (Neza et al., 2019). Research has also focussed on the consumption of inappropriate entertainment as well as negative media and the impact this has on hindering adolescent prosocial behaviour (Akpinar, 2017). As screens are becoming a common part of adolescents' lifestyles, it is important to understand the effects this has on prosocial behaviour. Research findings can assist parents and teachers to make informed decisions about screen time rules for adolescents (Um et al., 2019).

Socioeconomic status is a potential confounding factor in the relationships between prosocial behaviour and its predictors (Amoly et al., 2013). Research suggests that adolescents living in neighbourhoods with greater levels of socio-economic disadvantage

have higher levels of social, emotional and behavioural problems than adolescents living in more affluent neighbourhoods (Feng et al., 2017). In particular, it has been identified that adolescents from lower socioeconomic families are less prosocial (Putra et al., 2021). An explanation for this is that less affluent neighbourhoods provide adolescents with less opportunity to engage in prosocial behaviour (Zhang et al., 2020). Previous research has highlighted that children from lower socioeconomic families, by default, have less interaction with green space throughout their development as, in these areas, it is often inaccessible, unmaintained or unsafe (Bates et al., 2018). This results in less adolescent physical activity and involvement in team sports as these past times are simply not an attainable option in these neighbourhoods. Furthermore, less physical activity is correlated with higher screen time, resulting in less opportunity for adolescents to interact with others face-to-face in order to engage in prosocial behaviour (Akpinar, 2020). Hence, socioeconomic status is an important factor to control for and explore when assessing the relationships between prosocial behaviour and its potential predictors (Dadvand et al., 2014).

Accordingly, this study asked, “what factors influence prosocial behaviour amongst adolescents aged 12-13?”.

This study explored the following hypotheses:

(1) Adolescent females are more prosocial behaviour than adolescent males (Putra et al., 2021).
(2) Adolescent females have stronger attachment to their peers than adolescent males (Gorrese et al., 2012, Liu et al., 2021).
(3) Warm parenting will be positively associated with adolescent prosocial behaviour (Allen et al., 2018; Wang et al., 2021).

(4) Angry parenting will be negatively associated with prosocial behaviour (Allen et al., 2018; Wang et al., 2021).

Furthermore, this study investigated whether the following factors influence adolescent prosocial behaviour; gender, socio-economic status, parenting styles (warm and angry styles), peer attachment, greenspace quality, screen time and physical activity. It was hypothesized that all these variables will significantly influence adolescent prosocial behaviour. Overall, this study was carried out to further explore and understand adolescent prosocial behaviour.

## Method

### Data Set

This study used data from the Longitudinal Study of Australian Children (LSAC), a national longitudinal population-based cohort study of young people and their families across Australia (Feng et al., 2017). The LSAC began in 2004 and data has been collected every 2 years since by the Department of Social Services in collaboration with the Australian Institute of Family Studies and the Australian Bureau of Statistics (Putra et al., 2017). Data for this study was derived from Wave 5 of the K (Kindergarten) cohort. This data was collected in 2012, where the 3956 participants were 12-13 years of age.

### Measures

*Prosocial behaviour*

Prosocial behaviour was generated from the scores of parental reports on the prosocial scale from Goodman's Strengths and Difficulties Questionnaire (SDQ) (Putra et al., 2021). Parents responded to five statements about their child's behaviours, with a score of 0 for not true, 1 for somewhat true and 2 for certainly true. Prosocial behaviour was expressed in final scores ranging from 0 to 10, with a higher score indicating greater prosocial behaviour (Putra et al., 2021). This scale has previously demonstrated good test-retest reliability with a Cronbach alpha of 0.77 (Mieloo et al., 2012).

*Gender*

Gender was measured as the child's biological sex (male or female). This was identified by the child's primary care-giver.

*Socioeconomic status*

Socioeconomic status was generated through the Index of Relative Socioeconomic Disadvantage from the Socio-economic Indexes for Areas (SEIFA) (Feng et al., 2017). This index took into account variations between residential areas in a range of variables including unemployment, educational attainment and income. A lower index score indicates higher area disadvantage. Index scores are standardised against a mean of 1000 with a standard deviation of 100 (O'Donnell et al., 2020). Average SEIFA scores are 1000 but usually fall between 900 and 1100 (Shoesmith et al., 2020).

*Parenting Styles*

Parenting styles were constructed from the parental warmth and angry parenting scales answered by Parent 1, the child's primary caregiver. Both scales consisted of 6 questions with a 5 point-rating scale for each item. Items on the parental warmth scale were based on the Child Rearing Questionnaire, which has an excellent test-retest reliability of 0.96 (Ruiz et al., 2017). The angry parenting scale was based on items used in the Canadian National Longitudinal Study of Child & Youth with a decent test-retest reliability of 0.72 (Wong et al., 2021). Statements such as the following were included on the warm and angry parenting scales respectively, "How often do you tell this child how happy he/she makes you?" and "How often are you angry when you punish this child?" (Liu et al., 2021).

*Peer attachment*

Peer attachment was measured by the responses of study children on the Peer Attachment Scale from the Inventory of Peer and Parental Attachment (IPPA). This scale was originally developed by Greenberg, Seigel and Leich in 1984 and has been revised since (Guarnieri et

al., 2010). There are two subscales; peer trust and peer communication. Both subscales consist of four items that assess the availability, responsiveness and helpfulness of peers (Liu et al., 2021). These items are rated on a 5-point scale from 1 for almost always true to 5 for almost never true (Guarnieri et al., 2010). A higher score on this measure reflects poorer peer attachment (Liu et al., 2021). The test-retest reliability for this scale is strong with the Cronbach's alpha of .86 (Guarnieri et al., 2010).

*Green space quality*

This study used parental perceptions of green space in their respective neighbourhoods to measure green space quality (Putra et al., 2021). The following statement "There are good parks, playgrounds and play space in this neighbourhood" was rated by parents on a Likert scale (Sanders et al., 2015). Responses were recorded from 1-4, from strongly disagree to strongly agree.

*Physical activity*

A question from the Amherst questionnaire was answered by parents to assess their child's activity preferences in their free time, in particular their preference of physical activity (Sanders et al., 2015). Activities in the active pastime categories included sports, dancing, going to a park and playing in nature. The Amherst questionnaire was created in 1996 as part of the Amherst Health and Activity Study (Sallis et al., 2002). From previous research, this question has demonstrated strong test- retest reliability of 0.88 (Shoesmith et al., 2020).

*Screen time*

Screen time was measured by the amount of time the study children watched television weekly. This was estimated by their parents that answered the following question, "About how many minutes in a typical week would you say that your child watches TV or videos at home?" (Sanders et al., 2015). Their responses were recorded in whole minutes and entered into the dataset as continuous variables (Neza et al., 2019).

## Results

As can be seen in Table 1, there were slightly more males in the sample, and the respondents tended to be housed in high disadvantage areas as indicated by the SEIFA index. Most parents reported their child to be prosocial and agreed that there was good green space quality in their neighbourhood. As for physical activity, almost half of the sample tended to engage in physical activity during their free time whilst the other half preferred inactive pastimes.

**Table 1**

*Demographics of Study Sample*

| Variables | Wave 5 (12-13 years) |
|---|---|
| Total sample | 3956 |
| *Child's sex* | |
| Male | 2020 (51.06%) |
| Female | 1936 (48.93%) |
| *Area disadvantage (SEIFA)* | |
| High | 40.63% |
| Moderate | 30.42% |
| Low | 28.92% |
| *Adolescent Prosocial Behaviour* | |
| Certainly True | 72.88% |
| Somewhat True | 25.8% |
| Not True | 1.32% |

| Variables | Wave 5 (12-13 years) |
|---|---|
| *Green space quality* | |
| Strongly Disagree | 3.05% |
| Do not agree | 8.17% |
| Agree | 49.99% |
| Strongly Agree | 38.8% |
| *Physical Activity* | |
| Usually chooses inactive pastimes | 44.31% |
| Usually chooses active pastimes | 38.73% |
| Just as likely to choose active as inactive pastimes | 16.96% |

*Note.* Percentages were reported as the sample was not equal across the variables due to missing data.

A Welch's t-test was carried out to compare adolescent prosocial behaviour in males and females. Adolescent prosocial behaviour scores differed significantly by gender, $t(2191.6) = -8$, $p < .001$ with the 95% confidence interval of -0.69 to -0.42. There was a very small difference between the scores with males scoring (M=8.14) and females scoring (M=8.69). The Cohen's d effect size was 0.36, a small effect size. The hypothesis that predicted females to be more prosocial behaviour than males is supported by this result.

Another Welch's t-test was conducted to test for gender differences in adolescent peer attachment. Adolescent peer attachment scores differed significantly, $t(2239)=11.014$, $p < .001$ and the 95% confidence interval was 2.18 to 3.13. Males scored (M=15.96) and females scored (M=13.29). The Cohen's d effect size was 0.5, a medium effect size. Since higher scores on the Peer Attachment Scale demonstrate lower peer attachment,

Hypothesis 2 that predicted adolescent females to have stronger peer attachment is supported by this finding.

**Table 2**

*Summary of Correlations Between Adolescent Prosocial Behaviour and Parenting Styles*

| | Prosocial Behaviour | Warm Parenting (Father) | Warm Parenting (Mother) | Angry Parenting (Father) | Angry Parenting (Mother) |
|---|---|---|---|---|---|
| Prosocial Behaviour | - | | | | |
| Warm Parenting (Father) | 0.23** | - | | | |
| Warm Parenting (Mother) | 0.34** | 0.29** | - | | |
| Angry Parenting (Father) | -0.25** | -0.39** | -0.21** | - | |
| Angry Parenting (Mother) | -0.40** | -0.23** | -0.43** | 0.43** | - |

***Correlation is significant (p<.001)*

As can be seen in Table 2, Pearson's correlations were carried out to examine the relationships between adolescent prosocial behaviour and parenting styles. Adolescent prosocial behaviour and warm parenting of fathers and mothers were found to be weakly and positively correlated. Adolescent prosocial behaviour and angry parenting of both fathers and mothers were negatively correlated. Specifically, these correlations were weak

for angry fathers and moderate for angry mothers. These results support Hypothesis 3 and 4 that predicted warm parenting to be positively correlated with adolescent prosocial behaviour and angry parenting to have a negative correlation with adolescent prosocial behaviour.

**Table 3**

*Hierarchical Regression Analysis Summary of Potential Factors that Influence Adolescent Prosocial Behaviour*

| Variables | Odds Ratio | SE(B) | *t* |
|---|---|---|---|
| *Model 1* | | | |
| Constant | 8.175 | 0.56 | 14.57*** |
| Gender | 0.56 | 0.07 | 7.96*** |
| Socioeconomic Status | -0.00 | 0.00 | -0.07 |
| *Model 2* | | | |
| Constant | 8.2 | 0.61 | 13.26*** |
| Gender | 0.35 | 0.07 | 5.39*** |
| Socioeconomic Status | -0.00 | 0.00 | -1.56 |
| Warm Parenting | 0.35 | 0.03 | 10.3*** |
| Angry Parenting | -0.42 | 0.04 | -10.89*** |
| Peer Attachment | -0.02 | 0.01 | -4.31*** |

| Variables | Odds Ratio | SE(B) | *t* |
|---|---|---|---|
| *Model 3* | | | |
| Constant | 7.91 | 0.63 | 12.6*** |
| Gender | 0.36 | 0.07 | 5.45*** |
| Socioeconomic Status | 0.00 | 0.00 | -2.08* |
| Warm Parenting | 0.35 | 0.03 | 9.9*** |
| Angry Parenting | -0.41 | 0.04 | -10.66*** |
| Peer Attachment | -0.02 | 0.01 | -3.85*** |
| Greenspace Quality | 0.08 | 0.03 | 2.42* |
| Physical Activity | 0.15 | 0.03 | 4.3*** |
| Screen time | 0 | 0 | 0.53 |

**p<0.05, **p<0.01;***p<0.001*

As shown in Table 3, a three-stage hierarchical regression analysis was conducted with adolescent prosocial behaviour as the dependent variable. Demographic variables of gender and socioeconomic status were entered at stage one of the regression. Parenting variables (warm and angry parenting) and peer attachment were entered at stage two and adolescent recreational activities (green space quality, screen time, and physical activity) were entered at stage three. The variables were entered in this order as it seemed chronologically plausible based on research that suggests adolescent prosocial behaviour is influenced first by demographics followed by the support circles of adolescents and then by their recreational activities (Padilla-Walker & et al., 2018).

The hierarchical regression revealed that at stage one, demographics of gender and socioeconomic status contributed significantly to the regression model, F (2, 2238) = 31.7,

*p*< .001 and accounted for 2.7% of the variation in adolescent prosocial behaviour. Introducing the parenting and peer variables in stage 2 explained an additional 16.5% of the variation in adolescent prosocial behaviour and this change in $R^2$ was significant, F (5, 2235) = 107.6, $p < .001$. Finally, the addition of the recreational activities indicated that the eight independent variables accounted for 19.98% of the variation in adolescent prosocial behaviour and this change in $R^2$ square was also significant, F (8,2232) = 70.92, $p < .001$. When all eight independent variables were included in stage three, all variables except for screen time were significant influential factors of adolescent prosocial behaviour.

## Discussion

### Overview of Results

As indicated in the Results section, Hypothesis 1 was supported by the results of this study as females scored higher on prosocial behaviour than males. However, the strength of this difference is small and must be acknowledged when determining the implications of this finding. It is also important to note that with such a large sample size of 3956 adolescents, individual differences are masked.

Whilst some research has identified strong gender differences in adolescent prosocial behaviour, there are also some studies that haven't (Putra et al., 2020; Rijsewjik et al., 2016). For prosocial behaviour, gender differences are most significant amongst children 4-8 years old and in the beginning of adulthood starting from 20 years of age (Padilla-Walker et al., 2018). There is often a bigger divide between males and females during childhood where prosocial behaviour is affected and hindered by in and out group effects as well as gender stereotypes and norms (Carlo et al., 2018). It is suggested that during adolescence, individuals begin to merge friendship groups regardless of gender as well as become more comfortable and closer to friends of the opposite sex (Rijsewjik et al., 2016). The gender difference that females are more prosocial was not very strong in this study and this could potentially be a result of the young sample being 12-13 years old who have just entered their first year of adolescence (Putra et al., 2020).

The results of this study also support Hypothesis 2 that predicted adolescent females to have stronger peer attachment than adolescent males. This result aligns with the findings of previous research and adds supporting evidence to existing literature. Females tend to have stronger attachment to their peers than males during adolescence as they prioritise friendships in different ways (Liu et al., 2021). For example, adolescent females tend to rely

on emotional support from a few close friends that they can trust and communicate openly with (Gorrese, 2016). On the other hand, adolescent males tend to have a larger group of friends in which relationships are more distant, resulting in weaker peer attachment (Gorrese et al., 2012).

As for the third and fourth hypothesis regarding parenting styles, they were both supported by the results of this study. The positive correlation between warm parenting and prosocial behaviour aligns with previously established literature that explains this relationship to be a result of children's tendencies to mimic the modelled behaviour of their warm parents (Malonda et al., 2019). As for the negative correlation between angry parenting and prosocial behaviour, previous research states that angry parenting is ineffective and unhealthy parenting that hinders a child's understanding of helping others and willingness to be prosocial (Wong et al., 2021).

An interesting finding from this study is that angry mothers had a stronger correlation with prosocial behaviour than angry fathers. This result is supportive of previous research that have associated this finding with mothers often being the main caregiver and spending the most time with the child (Padilla-Walker et al., 2016). Hence, children tend to be most influenced by the warm parenting of their mothers.

The main finding of this study is that 19.98% of the variance in adolescent prosocial behaviour was accounted for by gender, socioeconomic status, warm and angry parenting styles, peer attachment, green space quality and physical activity. Firstly, gender was a highly significant variable that strongly influenced prosocial behaviour. Gender remained significant throughout the model, demonstrating its importance for prosocial behaviour and supporting previous research (Carlo et al., 2018).

Secondly, socioeconomic status remained insignificant until the addition of recreational activities in Model 3. This is an insightful finding as socioeconomic status has previously been established as an influential factor and mediator in relationships between physical activity and greenspace quality (Bates et al., 2018). Socioeconomic status strongly influences adolescent prosocial behaviour as it determines the accessibility of greenspace which in turns influences opportunities for physical activity as well as prosocial behaviour (Zhang et al., 2020).

Thirdly, parenting styles and peer attachment were both highly significant factors that contributed the most variance to adolescent prosocial behaviour. This finding is consistent with literature that has highlighted the influential role parenting and peers have on an individual's transition to adolescence (Malonda et al., 2019). This result has also been complimented by the t-tests and correlations conducted in this study for parenting and peers, producing well-rounded and insightful results on their influence on adolescent prosocial behaviour (Wong et al., 2021).

Lastly, the recreational activities variables of greenspace and physical activity were significant but added the least variance to the model. This finding was expected as literature has demonstrated social support circles from parents and peers to be most influential for prosocial behaviour (Malonda et al., 2019). However, greenspace being the weakest variable in the model was a surprising and unexpected finding. This is because there are multiple meta-analyses and longitudinal studies that have identified strong relationships between green space quality and prosocial behaviour. However, the role of green space quality has been found to be less influential for the prosocial behaviour of individuals as they get older (Putra et al., 2021).

The regression model was successful as nearly 20% of the variance of adolescent prosocial behaviour was accounted for. The other 80% of variance could potentially be accounted for by a range of different variables. However, a future improvement to this model would be to include adolescent mental health. This variable may contribute a significant amount of variance to adolescent prosocial behaviour as research in this area has identified mental health to strongly influence prosocial behaviour (Zhang et al., 2020).

The other key finding of this study is it that screen time did not influence adolescent prosocial behaviour. This was an unexpected finding as previous research has demonstrated strong relationships between adolescent prosocial behaviour and screen time (Barthorpe et al., 2020; Neza et al., 2019). However, a plausible explanation for this result is the measure of screen time used in this study which will be discussed below as a limitation.

**Limitations of Current Study & Future research**

The results of this study are subject to multiple limitations. A limitation of this study is the measure of screen time. Screen time was not found to be significantly associated with adolescent prosocial behaviour, a finding inconsistent with other research in the field (Sanders et al., 2015). This finding was potentially a result of an unreliable and inaccurate measure of screen time. Parental reports of their child's total minutes of weekly television viewing was used in this study to measure screen time. This is a weak measure as it is a self-report and an estimate of screen time instead of actual documentation and time-keeping of the study child's typical day and pastimes (Barthorpe et al., 2020). Additionally, television viewing is only one aspect of screen time (Um et al., 2019). The measure used in this study dismissed other times adolescents use screens for purposes such as homework, social media and gaming.

Future studies should utilise a more insightful and reliable measure of screen time such as Time Use Diaries reported by study children on their daily activities (Barthorpe et al., 2020). This may produce results that align with previously established literature that demonstrate screen time to influence prosocial behaviour (Neza et al., 2019). Furthermore, the use of Time Use Diaries would provide further opportunity to research the impact of different types of screen time consumption on adolescent prosocial behaviour.

Another limitation of this study is that it only focused on one specific wave of the LSAC data. This study only provided insight on factors that influence adolescents' prosocial behaviour at the age of 12-13 years old in 2012. To gain more perspective on the transition from childhood to adolescence and the impact this has on prosocial behaviour, a comparison study across waves would be beneficial.

Whilst greenspace quality and socioeconomic status were significant in the hierarchical regression, they were quite simplistic and one-dimensional measures. An improvement for future studies would be to use techniques such as Principal Components Analysis to create multidimensional measures for both these variables in order to bring more depth and accuracy to future research. For example, greenspace quality could be complimented by measures of neighbourhood safety and community belonging to create a variable called neighbourhood status (Edwards et al., 2010). Studies that have done this have demonstrated insightful results regarding the relationship between neighbourhood status and prosocial behaviour (Rehling et al., 2021). And as for socioeconomic status, this variable would benefit from information about the education of parents, parents' income, languages spoken at home as well as cultural backgrounds and years living in Australia (Akpinar, 2020). This would provide more meaningful results as well as a more well-rounded insightful look

into the relationship between prosocial behaviour and the socioeconomic status of Australian adolescents and their families.

Future studies should also examine adolescent prosocial behaviour from multiple respondents. In this study, adolescent prosocial behaviour was solely based on parental reports of their childs' behaviour but future studies should compare the reports of parents, teachers and study children on adolescent prosocial behaviour. Previous research has identified that parents often rate the prosocial behaviour of their child higher than teachers (Obsuth et al., 2015). This is linked to parental bias as well as the different contextual environments, home and school, that prosocial behaviour is observed in (Obsuth et al., 2015). Research has also demonstrated that study children tend to rate their own prosocial behaviour much higher than by their parents and teachers as they think highly of themselves (Yagmurlu et al., 2011). Future research utilising all 3 respondents on the SDQ Prosociality scale will be able to examine prosocial behaviour in specific contexts and investigate the role of environmental factors on influencing adolescent prosocial behaviour.

Overall, this study has explored a range of factors that influence the prosocial behaviour of Australian adolescents aged 12-13 years old. It has been concluded that there are gender differences between the prosocial behaviour and peer attachment of adolescent males and females. Furthermore, the importance of warm parenting has been analysed and discussed in terms of facilitating adolescent prosocial behaviour. Alongside gender, peer attachment and parenting, this study also demonstrated that socioeconomic status, greenspace quality and physical activity are significant factors that influence prosocial behaviour. These findings support previously established LSAC and non-LSAC based research and contribute scientific findings to the conversation around parenting and transitional periods in child development.

This study also prompts and generates discussion on adolescent prosocial behaviour, a topic that is of increasing importance especially with COVID-19 (Singh et al., 2021). Experts have indicated that it is likely adolescents will experience an increase in screen time and a decrease in peer attachment, physical activity and time in nature due to COVID-19 restrictions (Poulain, et al., 2019). Parenting styles will also evolve as parents are likely to spend more time with children and take on new roles such as home-schooling due to the pandemic (Singh et al., 2021). It is important that this topic of adolescent prosocial behaviour isn't overlooked in the field of child development and is further researched to understand its implications for the mental health and development of individuals transitioning from childhood to adolescence.

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