PROSOCIALITY AND WELL-BEING IN YOUNG PEOPLE

A thesis submitted to the University of Manchester for the degree of Doctor of Clinical Psychology in the Faculty of Medical and Human Sciences

2010

Peter James Taylor

School of Psychological Sciences
LIST OF CONTENT

LIST OF CONTENT ................................................................. 2
LIST OF TABLES ........................................................................ 7
LIST OF FIGURES ..................................................................... 8
ABSTRACT .................................................................................. 9
DECLARATION ............................................................................ 10
COPYRIGHT STATEMENT .............................................................. 11
ACKNOWLEDGEMENTS ............................................................... 12
LIST OF COMMON ABBREVIATIONS ............................................ 13
NOTE ON PUBLISHED MATERIAL ................................................... 13
PAPER 1 ..................................................................................... 14

1. A Meta-Analytic Review of the Relationship between Prosociality, Internalizing Disorder and Self-Esteem in Young People .................................................. 14
   1.1. Abstract .......................................................................... 15
   1.2. Introduction ...................................................................... 16
   1.3. Method ............................................................................ 21
      1.3.1. Search Strategy .......................................................... 21
      1.3.2. Data Extraction ......................................................... 23
      1.3.3. Meta-Analytic Calculations ........................................... 25
   1.4. Results ............................................................................ 26
      1.4.1. Study Characteristics .................................................. 26
3. Psychometric Properties and Development of the Brief Adolescent Prosocial Perception Scales (BAPPS).................................................................................89

3. 1. Abstract ...............................................................................................90

3.2. Introduction ..........................................................................................91

3.3. Summary and Hypotheses ...................................................................96

3.4. Method ...................................................................................................97

3.4.1. Participants .......................................................................................97

3.4.2. Measures ..........................................................................................98

3.4.3. Psychometric Procedure .................................................................101

3.5. Results ..................................................................................................103

3.5.1. Item Screening ..................................................................................103

3.5.2. Exploratory Factor Analysis .............................................................104

3.5.3. BAPPS Development .......................................................................107

3.5.4. Confirmatory Factor Analysis (CFA) ..............................................107

3.5.5. Concurrent Validity ..........................................................................108

3.5.6. Discriminant Validity ......................................................................112

3.5.7. Incremental Validity .........................................................................112

3.6. Discussion .............................................................................................113

3.7. Footnote ................................................................................................117

3.8. References ............................................................................................118
4. Discrepancies in Parental and Self-Appraisals of Prosocial Characteristics predict Emotional Problems in Adolescents

4.1. Abstract

4.2. Introduction

4.3. Method

4.3.1. Participants

4.3.2. Measures

4.3.3. Statistical Analysis

4.4. Results

4.4.1. Missing Data

4.4.2. Sample Characteristics

4.4.3. Predicting the Probability of Emotional Disorder

4.5. Discussion

4.6. References

5. Critical Evaluation

5.1. Overview

5.1.1. Paper Outline

5.1.2. Theoretical Implications

5.1.3. Clinical Implications

5.1.4. Overlap with Altruism and Attachment

5.1.5. Prosocial Development and Transition into Adulthood

5.2. Methodological and Conceptual Decisions
5.2.1. Choice of Outcomes

5.2.2. Meta-Analysis vs. Narrative Review

5.2.3. Secondary Analysis of Survey Data

5.2.4. Difficulties in the Progression between Studies

5.3. Future Research

5.4. References

APPENDIX I: SUBJECTIVE WELL-BEING SCALE

APPENDIX II: INITIAL BAPPS ITEM SET

APPENDIX III: SOCIAL SUPPORT SCALE

APPENDIX IV: DEFINITION OF PROSOCIALITY

APPENDIX V: BRIEF ADOLESCENT PROSOCIAL PERCEPTIONS SCALES (BAPPS)

APPENDIX VI: JOURNAL GUIDELINES FOR EMPIRICAL PAPERS (Papers 2, 3 & 4)
LIST OF TABLES

Study 1
Table 1: Summary of Studies Included in the Meta-Analyses ........................................ 27
Table 2: Results of Meta-Regression .................................................................................. 36

Study 2
Table 1: Table 1: Descriptive Statistics (Provided for Total Sample and Male and Females Separately) and Correlations for Variables Included in the Study........................................ 75
Table 2: Results of Clustered Regression Analysis ............................................................ 77

Study 3
Table 1: Demographic Information for the Exploratory and Confirmatory Samples (both n = 1988) .......................................................................................................................... 99
Table 2: Factor Loadings from Exploratory Factor Analysis of BAPPS Items ............. ..105
Table 3: Results of Correlations between BAPPS-S, BAPPS-P and SDQ Subscale Score .................................................................................................................................109
Table 4: Descriptive Statistics and Pairwise Comparisons ..............................................110

Study 4
Table 1: Sample Characteristics ........................................................................................137
Table 2: Descriptive Statistics and Correlations for Variables Included in the Analysis .142
Table 3: Results of Logistic Regressions Predicting the Odds of Emotional Disorder with either SDQ or Personal Strength Prosocial Variables ...................................................... 143
LIST OF FIGURES

Study 1

Figure 1: A flow-chart outlining articles identified through the search process .......................... 22

Figure 2: Forest plot for meta-analysis of the effect of prosociality on internalizing problems ........................................................................................................................................ 35

Figure 3: Forest plot for meta-analysis of the effect of prosociality on self-esteem................. 39

Figure 4: Funnel plots for internalizing problems (top) and self-esteem (bottom)............... 41

Study 4

Figure 1: Graphs displaying the association between parent-rated prosociality and probability of emotional disorder at moderately low \((M - 1 \, SD)\), medium \((M)\) and moderately high \((M + 1 \, SD)\) levels of self-rated prosociality. The upper graph is with the SDQ prosocial scale and the lower graph is with the personal strengths scale......................... 146
ABSTRACT

A thesis submitted to the University of Manchester for the degree of Doctor of Clinical Psychology

Candidate: Peter James Taylor

Title: Prosociality and Well-Being in Young People

June 2013

Prosociality describes the tendency to engage in behaviours that aim to enhance or maintain the well-being of others, for example, sharing and co-operating. In children and adolescents this trait is often viewed as a core aspect of social competence and an important developmental outcome. Prosociality may also play an important role in how young people navigate their increasingly complex social world. This raises the question of whether individual differences in prosociality are related to young peoples’ well-being, such as their risk of developing psychological problems. The goal of the current series of research was to explore this question.

A series of four studies was designed to answer this question. This research made use of pre-existing survey data, including the “mental health of children and young people in Great Britain, 2004” survey (Papers 3 & 4) and the “Understanding Society” survey (Paper 2), enabling access to large sample sizes. In Paper 1, a meta-analysis was undertaken to determine the nature of the relationship between prosociality and two important clinical outcomes, internalizing disorder and low self-esteem. This review identified a significant but small relationship between greater prosociality and reduced internalizing disorder or low self-esteem. In Paper 2, a longitudinal study explored the relationship between prosociality and well-being over a 1-year-period in children and adolescents. This study did not identify any prospective effect of prosociality upon subsequent changes in well-being. Two further studies explored the factors that may influence whether prosociality is linked to well-being. In Paper 3 the possibility that existing measures of prosociality may partly account for the small or null relationships observed so far (Papers 1 & 2) was explored by developing and validating a new measure of prosociality. This new measure appeared psychometrically robust and demonstrated advantages over pre-existing scales of prosociality. In Paper 4, a cross-sectional study was undertaken to explore whether the discrepancy in young peoples’ self-ratings and parental ratings of prosociality has a relationship with emotional problems (i.e., depression and anxiety). A moderator analysis found that self-rated and parent-rated prosociality may interact to determine risk of psychological problems in young people. This study suggested that the discrepancy in ratings of prosociality may be more important in predicting psychological problems than overall ratings by individual informants.

Results support the relevance of prosociality to well-being in young people and highlight how factors such as the measurement of prosociality and the interpersonal context within which it occurs impact upon this relationship.
DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning. The data used in Papers 2, 3 and 4 were sourced from large survey datasets that have been made available for use by researchers.
COPYRIGHT STATEMENT

i. The author of this thesis (including any appendices and/or schedules to this thesis) owns certain copyright or related rights in it (the “Copyright”) and s/he has given The University of Manchester certain rights to use such Copyright, including for administrative purposes.

ii. Copies of this thesis, either in full or in extracts and whether in hard or electronic copy, may be made only in accordance with the Copyright, Designs and Patents Act 1988 (as amended) and regulations issued under it or, where appropriate, in accordance with licensing agreements which the University has from time to time. This page must form part of any such copies made.

iii. The ownership of certain Copyright, patents, designs, trade marks and other intellectual property (the “Intellectual Property”) and any reproductions of copyright works in the thesis, for example graphs and tables (“Reproductions”), which may be described in this thesis, may not be owned by the author and may be owned by third parties. Such Intellectual Property and Reproductions cannot and must not be made available for use without the prior written permission of the owner(s) of the relevant Intellectual Property and/or Reproductions.

iv. Further information on the conditions under which disclosure, publication and commercialisation of this thesis, the Copyright and any Intellectual Property and/or Reproductions described in it may take place is available in the University IP Policy (see http://www.campus.manchester.ac.uk/medialibrary/policies/intellectualproperty.pdf), in any relevant Thesis restriction declarations deposited in the University Library, The University Library’s regulations (see http://www.manchester.ac.uk/library/aboutus/regulations) and in The University’s policy on presentation of Theses.
ACKNOWLEDGEMENTS

In regards to Paper 2: Understanding Society is an initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research. Data from this survey have been made available for research via the UK data archive (www.data-archive.ac.uk). The UK data archive, data commissioners, principal investigators (The University of Essex, Institute for Social and Economic research; National Centre for Social Research), depositors (The University of Essex, Institute for Social and Economic research), funders and copyright holders (The Economic and Social Research Council) bear no responsibility for the analysis or interpretation of the data in this study.

In regards to Papers 3 and 4: The data used in this paper were from the “mental health of children and young people in Great Britain, 2004” survey, commissioned by the Department of Health and the Scottish Executive Health Department and undertaken by the Office of National Statistics. Data from this survey have been made available for research via the UK data archive (www.data-archive.ac.uk). These data have received crown copyright. The UK data archive, data commissioners, creators, depositors and copyright holders bear no responsibility for the analysis or interpretation of the data in the current study.

General: I would like to thank my supervisor and friend, Prof. Alex Wood, whose support and advice have made this work possible. I would also like to thank Prof. Graham Dunn and Dr Julie Morris for their helpful input on statistical matters pertaining to Papers 2 and 3. I also owe thanks to the Course Team at the University of Manchester and my fellow trainees for their help along the way. Lastly I would like to thank my ever prosocial wife, Amy, for the myriad ways she has helped and supported me along the way.
LIST OF COMMON ABBREVIATIONS

BAPPS = Brief Prosocial Perceptions Scale
CFA = Confirmatory Factor Analysis
EFA = Exploratory Factor Analysis
MVML = Missing Value Maximum Likelihood
SDQ = Strengths & Difficulties Questionnaire
SWB = Subjective Well-Being
WLS = Weighted Least Squares

NOTE ON PUBLISHED MATERIAL

Paper 4 is currently published with the British Journal of Clinical Psychology. The full reference is:


Paper 3 is currently published with the Journal of Child and Family Studies. The full reference is:

PAPER 1

1. A Meta-Analytic Review of the Relationship between Prosociality, Internalizing Disorder and Self-Esteem in Young People

Journal: Clinical Psychology Review

Word count: 11,984
1.1. Abstract

Internalizing problems and low self-esteem represent substantial clinical issues that affect many young people. Prosociality is often described as a core area of social functioning, and it may be associated with a reduced risk of internalizing problems and low self-esteem. The current review aimed at quantifying the relationship of prosociality with internalizing problems and self-esteem via a meta-analysis of the extant literature. The literature search identified 41 papers (n = 28,383) meeting the review criteria. Random-effects meta-analyses indicated that prosociality was significantly associated with lowered levels of internalizing problems and low self-esteem. Moderating variables were explored via meta-regression analyses. These indicated that there was a stronger effect of prosociality upon internalizing problems were depression or internalizing symptoms in general were the outcome, compared to where anxiety symptoms were the outcome. Larger effect sizes were also associated with the use of prosociality variables based on a aggregation of multiple raters. It was concluded that prosociality is meaningfully related to levels of internalizing disorder and self-esteem. The possibility that prosociality may be linked to constructs such a heightened concern for another person’s welfare is considered as a possible explanation for the positive relationship with anxiety symptoms.
1.2. Introduction

Internalizing disorders and low self-esteem are substantial clinical problems that are often associated with later childhood and the onset of adolescence (Cyranowski, Frank, Young & Shear, 2000; Mann, Hosman, Schaalma & de Vries, 2004; Orth, Robins & Robert, 2008; Overholser et al., 1995). Internalizing disorder encompasses problems characterised by a disturbance in mood, most notably depressive or anxiety disorders (for a conceptual and historical review, see Zahn-Waxler, Klimes-Dougan & Slattery, 2000). Where these difficulties emerge in young people, they predict an increased likelihood of future dysfunction (Fergusson, Boden, and Horwood, 2007; Hammen, Brennan, Keenan-Miller, & Herr, 2008; Orth et al., 2008; Trzesniewski et al., 2006). Understanding the variables that are associated with internalizing problems and low self-esteem is therefore an important goal, since such information is relevant in the prediction of and intervention for such difficulties. Numerous authors highlight the clinical benefits of considering areas of positive functioning and resilience over a focus on dysfunction alone (see reviews by Tedeschi & Kilmer, 2005; Wood & Tarrier, 2010). Prosociality is one example of a positive trait, which has been highlighted as a core component of children and adolescents’ social functioning and development (Chen, Li, Li, Li & Liu, 2000; Eisenberg & Mussen, 1989; Gresham, Cook, Crews & Kern, 2004; Hay, 1994; Wentzel, Filisetti & Looney, 2007) and may influence the development of internalizing and self-esteem difficulties. We are aware of no review exploring the extant literature regarding the association between prosociality and internalizing disorders (e.g., depression and anxiety) and self-esteem in young people (defined here as the period from pre/early-adolescence to late adolescence; 10 – 17 years). Consequently, the aim of the current study was at quantifying these relationships via meta-analysis.

Prosociality can be understood as a disposition towards engaging in a range of behaviours that aim to enhance or maintain the well-being of another, including overt
helping and sharing behaviours (Pastorelli, Bararanelli, Cermak, Rozsa & Caprara, 1997; Weir & Duveen., 1981); affiliative and co-operative behaviours, including interpersonal warmth (e.g., trying to get along with others, adopting a polite, supportive manner (Greener, 2000; Scourfeld, John, Martin & McGuffin, 2004); behaviours characterised by concordance with social norms and values, including abiding by rules, or behaving responsibly and reliably (Chen et al., 2000; Wentzel et al., 2007). The assumption that prosociality has trait-like qualities is supported by research demonstrating that different prosocial behaviours tend to be stable or inter-correlated within individuals across situations and over time (Eisenberg et al., 2002; Eisenberg & Mussen, 1989; Hay, 1994), forming individual differences which appear to be stable across adolescence (Carlo, Crockett, Randall & Roesch, 2007). Individual differences in prosociality begin to consolidate following infancy and differentiation continues thereafter (Hay, 1994; Hay & Cook, 2010; Scourfield et al., 2004). Hence by later childhood (e.g., aged 10 years), individual differences in prosociality should be robust.

Altruism and empathy (the vicarious experience of emotional states consistent with those of the other person) may represent predisposing factor for prosocial acts, and have been theoretically distinguished from prosociality itself (Batson, 1998; Eisenberg & Mussen, 1989; Fabes et al., 1999). Prosociality has also been distinguished from sociability (i.e., the motivation or drive to engage in social interaction; Chen et al., 2000) and social acceptance (Zimmer-Gembeck, Hunter & Pronk, 2007). Prosociality is typically inter-correlated with externalizing problems (or delinquency), for example, $r = -.29$, for direct aggression (see review by Card, Stucky, Sawalani & Little, 2008) and, $r = -.13$ to -.41, for behavioural problems in general (Bandura et al., 1999; Filbert & Flynn, 2010; Sletta, Valås & Skaalvik, 1996). These correlations are not as high as to indicate singularity (e.g., < .70; Tabachnick & Fidell, 1996) suggesting that prosociality and externalizing represent distinct dimensions. This possibility is further supported by evidence that there are cases of individuals who score highly on both prosocial and antisocial dimensions (Hay & Pawlby,
2003), and by factor analyses of measures that have tended to support distinct prosocial and externalizing factors (Goodman, 2001; Ladd, Herald-Brown & Andrews, 2009).

As a key element of social functioning, prosociality may play an important part in an individual’s ability to navigate their social world. It has been observed that levels of prosociality are associated with levels of peer acceptance (Bandura et al, 1999; Crick, 1996; Ladd et al., 2009; Zimmer-Gembeck, et al., 2007). Consequently, young people with particularly low levels of prosociality may struggle more in the management of relationships with peers, and face an increased risk of rejection. Social rejection in turn can produce short-term increases in negative affect and a reduction in positive affect (Stroud, Tanofsky-Kraff, Wilfley, & Salovey, 2000) and has been associated with greater depressive symptoms in high school students (Beeri & Lev-Wiesel, 2011). Prosocial acts may also be inherently self-rewarding (Batson, 1998) due to the concordance with internalized norms and values regarding prosocial behaviour (Eisenberg & Mussen, 1989). Prosocial acts may therefore increase positive affect and lead to the receipt of gratitude, both of which have been robustly associated with well-being (see reviews by Lyubomirsky, King& Diener, 2005; Wood, Froh & Geraghty, 2010). Hence, it may be expected that young people with greater levels of prosociality would have lower levels of internalizing problems.

However, some authors have suggested that the reverse relationship, with prosociality being linked to a heightened risk of internalizing disorder, may be apparent in some contexts. It has been suggested that prosociality may be associated with heightened concerns about another person’s well-being (Hay, 1994; Hay & Pawlby, 2003; Zahn-Waxler et al., 2008). Where these concerns become excessive, such as may be the case for young people with excessive responsibilities or few coping resources, it may take the form of chronic worry about another person’s well-being. There is evidence that prosociality is correlated with excessive worry about relatives’ welfare, which in turn predicts greater internalizing disorder (Hay & Pawlby, 2003). Similarly excessive guilt may be linked to
prosocial tendencies but can leave an individual vulnerable to internalizing disorders (Kim, Thibodeau & Jorgensen 2011). Prosociality may also be employed as a strategy to obtain acceptance in individuals with excessive concerns regarding negative social evaluation (Rudolph & Conley, 2005). This preoccupation with how you are perceived by others could become pathological, as in the case of social phobia (e.g., Wells, 1997). Consequently, there is some uncertainty as to whether prosociality would be expected to predict greater or lesser levels of internalizing problems. This uncertainty highlights the need of the present review. It is possible that the relationship will depend on the specific form of internalizing disorder being considered. Mechanisms such as excessive worry about another person’s welfare or social-evaluative concerns appear particularly characteristic of anxiety symptoms (e.g., social phobia and separation anxiety; Carr, 2006). Consequently, one tentative hypothesis is that whilst prosociality may be negatively related to internalizing problems in general, a non-significant or even positive relationship may exist with anxiety symptoms in particular.

Prosociality would also be expected to correlate with self-esteem. By the second to third years of life prosociality can be reflected upon by children as a social construct and starts to become embedded within a socio-moral framework, linked in with concepts of being “naughty” and “good” (Hay & Cook, 2010). Hence, even from this early point, prosociality starts to become tied to the self-concept and linked to judgments of self-worth. Prosociality is generally viewed as desirable in many cultures and may be tied to particular norms regarding reciprocity and social responsibility (Batson, 1998; Hay, 1994) so that prosociality may readily be internalized by youth as standards or expectation they should be meeting. Low self-esteem has been linked to discrepancies in ideal and actual self-states (Higgins, 1987; Ferguson, Hafen & Laursen, 2010), which may emerge where internalized norms regarding prosocial behaviour are not met. Sociometer theory posits that the function of self-esteem is to provide a form of internal gauge signalling a person’s likelihood of being rejected or accepted by others (Leary, Schreindorfer & Haupt, 1995).
Hence, where low prosociality leads to social rejection, low self-esteem may be expected. Self-esteem also has relatively established associations with emotional distress and psychopathology (Baumeister, Campbell, Krueger & Vohs, 2003; Leary et al., 1995) and so may mediate the relationship between prosociality and internalizing problems. Whilst it is assumed here that prosociality is a causal agent driving changes in internalizing and self-esteem, it is also plausible that low self-esteem and internalizing symptoms would disrupt a young person’s disposition towards prosocial responding (e.g., Wentzel et al., 2007). Reciprocal relationships are also possible.

A number of methodological study characteristics may moderate the size of the relationship between prosociality and internalizing problems/self-esteem. Discrepancies in ratings between informants are a well-documented phenomenon in the domain of child and adolescent psychopathology research (Achenbach, McConaughy & Howell, 1987; De Los Reyes & Kazdin, 2005). It is therefore possible that the size of the relationship between prosociality and internalizing problems or self-esteem also varies depending on who assesses prosociality. Greater bias may, for example, be associated with particular informants, such as teachers who have to consider the behaviour of a whole classroom of children, leading to an attenuation of correlations. Second, the methodological quality of individual studies is a factor that may contribute to overall heterogeneity in the results and moderate effect size with lower quality studies often showing larger effects (Egger, Smith, Schneider & Minder, 1997). We therefore assessed the moderating effect of measurement quality, referring to whether or not study measures have been previously validated. Third, whilst the review focussed on young people aged 10-17 years, some studies were expected where the sample age range overlapped only partially with these boundaries (e.g., sample age range of 5 to 11 years). These studies were still included but the effect of including these studies upon the aggregated effect size was explored. Fourth, the country of origin of participants may moderate the effect size. For example, countries may vary in the
emergence of prosocial acts and the cultural emphasis placed upon them (e.g., Trommsdorff, Friedlmeier & Mayer, 2007).

The goal of the current review is to employ meta-analysis to quantify the relationship between prosociality and internalizing problems or self-esteem in the extant literature. We predicted that an overall negative relationship will be observed between prosociality and both emotional/internalizing disorder and self-esteem. However, we further predicted that an effect in the opposite direction would be observed when anxiety symptoms in particular were the outcome. The meta-analyses focussed on bivariate relationships. However, many studies also employ multiple regression or path analysis to provide a more complex and comprehensive picture of the relationship between variables. We therefore provide a narrative description of these additional analyses where they arise.

1.3. Method

1.3.1. Search Strategy

Journal articles were searched (by PJT) via core online databases in the fields of medicine, psychology and psychiatry: PsycINFO, Medline and Embase (1980 – 30th June 2012). Search terms included the keywords Prosocial$ (where $ indicates a wildcard operator), combined (using the AND boolean operator) with keywords indicating the relevant age group (Child, Adolescen$) and keywords indexing emotional or internalizing problems (Depress$, Anxi$, Internalizing, Well-being, Wellbeing, “Mood disorder”, Self-harm, Self-injury, Suicid$, Emotionality, Self-worth, Self-concept, Self-esteem). This initial search was supplemented by searches of citation within included articles, key literature reviews and theses. Figure 1 present a flow chart of the search process and articles identified at each step. All corresponding authors of selected articles were contacted regarding whether they had additional unpublished research that may fit the review inclusion criteria. Conference abstracts and theses on the topic of prosociality were
reviewed for any additional published or unpublished research that may fit the review criteria. A single unpublished analysis was included (Taylor & Wood, 2012).

![Flowchart](image)

**Figure 1:** A flow-chart outlining articles identified through the search process
Articles were required to meet the following inclusion criteria: a) English-language; b) included a measure of prosocial behaviour, attitudes or perceptions; c) included a measure of emotional problems, internalizing disorder (depressive or anxiety symptoms or diagnoses), or self-esteem and self-worth; d) undertook an analysis exploring either the concurrent association between prosociality and emotional difficulties or the effect of prosociality upon the change in the outcome variable over time; and e) participants were aged between 10 years and 17 years of age. Where an age range was not reported, academic grade or mean age ± the standard deviation was used to indicate age range. Where a sample’s age-range fell partially within our criterion age range, they were included in the meta-analysis and the effect of including these studies was explored as a moderator. Studies were excluded if they recruited from college, as this was viewed as a subsequent social and developmental transition, or recruited young people with an intellectual disability or autistic spectrum disorder, as these conditions are liable to influence the way prosociality manifests and is perceived. As our focus was on exploring prosociality as a construct with at least partial trait-like qualities, we ignored studies that focussed on specific single instances of helping or supportive behaviour, such as volunteerism or giving blood. This decision was supported by the character of the identified research, where most studies purporting to explore prosociality measured the variable in this more general, trait-like sense.

1.3.2. Data Extraction

Where multiple studies employed the same dataset, a single study was selected based on methodological rigor and relevance to the aims of the review. Where multiple measures of the same outcome were present (e.g., depressive symptoms), a single effect was selected based on methodological quality (Burke, Arkowitz & Mencola, 2000; Palmier-Clause, Taylor, Varese & Pratt, 2012): a) Measures that had been psychometrically validated were preferred over non-validated measures; b) interview based measures were preferred to self-report measures; c) outcomes assessing depressive or
anxiety symptoms specifically were preferred to more general measures of internalizing symptoms as the latter may provide less precise information. Where a study featured cross-sectional effects at multiple time-points, data from earliest suitable time point were used to limit the impact of repeated measurement effects on variable score (e.g., Menard, 2008). Where outcome measures featured multiple relevant subscales, these were combined using the formula described by Borenstein, Hedges, Higgins and Rothstein (2009). Where separate effects were estimated for different informants, aggregation was not suitable due to the likelihood of low inter-rater agreement (e.g., Achenbach et al., 1987). Instead, parent-rated measures (particularly, mother) were favoured (5 instances) in order to maintain a consistent approach. It was assumed that parents would have a more holistic understanding of their children than would others, such as teachers. In one instance when the choice was between a peer-rated and teacher-rated measure, the former was used as the latter measure was limited to only two items (Sletta et al., 1996). Where effects were provided for multiple samples within a study the recommendations of Borenstein and colleagues (2009) were followed. Where studies presented effects for several independent samples (e.g., different geographic locations) these were treated as independent effects. Where a study presented effects for multiple potentially related samples (e.g., boys and girls attending the same school) these were combined.

The measures employed by studies were classified as either validated or non-validated, depending on whether prior research published in a peer review journal had been undertaken to ascertain their reliability and validity. Studies using only validated measures were classified as having ‘good’ measurement quality, whilst the remainder were classified as ‘moderate/poor’. These classifications were then used as a moderating variable in the meta-analyses. All data extraction and coding were undertaken by the first author. All data extraction was then double checked by a third author (AH).
1.3.3. Meta-Analytic Calculations

Meta-analyses were undertaken in Stata Version 12 (Stata Corporation, College Park, Texas, USA), using a random-effects model, as effect sizes were expected to vary as a consequence of study characteristics (Borenstein et al., 2009). As correlational analyses were commonly employed, Fisher’s Z statistics were used as the input for the analysis. The presence of statistical heterogeneity was assessed via the $Q$ test of statistical heterogeneity and quantified via the $I^2$ statistic (Huedo-Medina, Sánchez-Meca, Marín-Martínez & Botella, 2006). The effects of moderating variables were explored using meta-regression, using the Knapp-Hartung variance estimator, following the recommendations of Harbord and Higgins (2008). The prediction that the relationship prosociality has with anxiety may differ to its relationship with depression/internalizing in general was tested by contrasting studies that employed measures of either anxiety symptoms, depressive symptoms (Suicidal ideation was classified as a depressive symptom) or general internalizing symptoms (no distinction was made between anxiety or depression). Other exploratory moderators included informant type for the prosociality measure (self, other, mixed informants, where ‘other’ refers to parents, teachers, peers and other external observers), sample country (American, European, other), measure quality (good, moderate/poor) and sample range (within the 10-17 years range or outside). For informant type, the label ‘mixed’ was used for any study that aggregated measures completed by multiple different informants (e.g., self and caregiver as in Smith, Leve & Chamberlain, 2011; or peers and teacher as in Wentzel et al., 2007). Categorical moderators were dummy coded with internalizing disorders, self-report and ‘other’ country, forming the reference categories, respectively.

We assessed the possible impact of publication bias (i.e., bias due to a greater likelihood of small studies with non-significant findings not being included) via funnel plots and Egger’s test (Egger et al., 1997; Sterne & Harbord, 2004). Both of these methods follow the logic that publication bias will be visible as an absence of smaller or less precise
studies with lower effect sizes, leading to an asymmetrical spread of studies as study precision or standard error reduces. The funnel plot explores this visually, whilst Egger’s test involves a regression analysis in order to identify asymmetry. The current sample of studies exceeded minimum recommended criteria for these methods (≥ 10; Sterne, Egger & Moher, 2008).

1.4. Results

1.4.1. Study Characteristics

Forty-one studies were identified and included in the final review (n = 28,383). The characteristics of these studies are outlined in Table 1. Fourteen studies featured self-esteem as an outcome, whilst 32 (k = 37 samples) featured internalizing symptoms as an outcome.

For both the self-esteem and internalizing studies the large majority were cross-sectional in design. Moreover, of the thirteen identified longitudinal studies, only three tested the effect of prosociality on changes in outcome (Chen et al., 2000; Gest, Sesma, Masten & Tellegen, 2006; Hay & Pawlby, 2003), one of which involved a baseline assessment of prosociality at age four years that fell below the age range for the current review (Hay & Pawlby, 2003). Whilst American samples were most common, a large degree of diversity was present, with samples derived from Europe (e.g., Belgium, Finland, Sweden), the Middle East (e.g., Iran), Asia (e.g., China, Indonesia) and elsewhere (e.g., Australia, Canada). The majority of studies recruited community samples, often via schools. Clinical or vulnerable groups that were recruited included children with experiences of maltreatment (Kaufman & Cicchetti, 1989), children in care (Aguilair-Vafaie, Roshani, Hassanabadi, Masoudian & Afruz, 2011; Filbert & Flynn, 2010; Smith et al., 2011), former child-soldiers (Betancourt et al., 2010), refugees (Daud, Klinteberg & Rydelius, 2008), and incarcerated adolescents (Suk et al., 2009). Unfortunately, the studies in these more vulnerable samples are too few and varied to warrant sub-analysis.
Table 1: Summary of Studies Included in the Meta-Analyses

<table>
<thead>
<tr>
<th>Author</th>
<th>Design</th>
<th>Sample characteristics</th>
<th>Prosociality measure</th>
<th>Outcome measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylor &amp; Wood, unpublishe analysis</td>
<td>Cross-sectional</td>
<td>Community sample from UK ($n = 3976$); Aged 11-17 years</td>
<td>SDQ-PS (Self)</td>
<td>DAWBA – Internalizing Disorders (Aggregated: Self, Caregiver)</td>
</tr>
<tr>
<td>Aguiliar-Vafaie et al., 2011</td>
<td>Cross-sectional</td>
<td>Iranian children in foster care ($n = 140$); Aged 11-18 years</td>
<td>SDQ-PS (Caregiver)</td>
<td>SDQ – Emotional Difficulties subscale (Caregiver)</td>
</tr>
<tr>
<td>Smith et al., 2011</td>
<td>Longitudinal</td>
<td>American girls in foster care ($n = 100$); Aged 11-12 years$^a$</td>
<td>PDRC – Prosociality subscale (Aggregated: Caregiver, Self)</td>
<td>PDRC – Internalizing subscale (Aggregated: Caregiver, Self)</td>
</tr>
<tr>
<td>Waldman et al., 2011</td>
<td>Cross-sectional</td>
<td>American twins; $n = 1981$; Aged 6-18 years</td>
<td>CADS – Prosociality factor (Caregiver)</td>
<td>CAPS (Caregiver)</td>
</tr>
<tr>
<td>Zwirs et al., 2011</td>
<td>Cross-sectional</td>
<td>Netherland community sample ($n = 2185$); Aged 8-10 years$^b$</td>
<td>SDQ-PS (Teacher)</td>
<td>SDQ – Emotional Difficulties subscale (Teacher)</td>
</tr>
<tr>
<td>Betancourt</td>
<td>Longitudinal</td>
<td>Former child soldiers of Sierra Leone</td>
<td>Non-validatated adaption of Oxford refugee</td>
<td>Non-validatated adaption of</td>
</tr>
<tr>
<td>Authors</td>
<td>Study Type</td>
<td>Sample Description</td>
<td>Measure/Scale Description</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>et al., 2010</td>
<td>Cross-sectional</td>
<td>$n = 156$; Aged 12-17 years $^a$</td>
<td>program measure – Prosocial Attitudes subscale (Self; MacMullin &amp; Loughry, 2004)</td>
<td></td>
</tr>
<tr>
<td>Oberle et al., 2010</td>
<td>Cross-sectional</td>
<td>Canadian community sample ($n = 99$); Aged 9-11 years</td>
<td>Non-validated Adaption of existing scale (Self)</td>
<td></td>
</tr>
<tr>
<td>Padilla-Walker et al., 2010</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 489$); 9-14 years (separate effects for single and two-parent families)</td>
<td>Untitled internalizing scale (Self; Barber, Stolz &amp; Olsen, 2005)</td>
<td></td>
</tr>
<tr>
<td>Sallquist et al., 2010</td>
<td>Longitudinal</td>
<td>Indonesian community sample, Muslim students ($n = 959$); Aged 11-16 years</td>
<td>Non-validated Internalizing scale (Caregiver)</td>
<td></td>
</tr>
<tr>
<td>Kim et al., 2009</td>
<td>Longitudinal</td>
<td>American young smokers ($n = 270$); Aged 7-17 years $^b$</td>
<td>Non-validated measure of prosocial beliefs (Self)</td>
<td></td>
</tr>
<tr>
<td>Ladd et al., 2009</td>
<td>Longitudinal</td>
<td>American community sample ($n = 391$); Aged 11 years $^b$</td>
<td>CBC – Prosocial Behaviour subscale (Caregiver)</td>
<td></td>
</tr>
<tr>
<td>Suk et al., 2009</td>
<td>Cross-sectional</td>
<td>Belgian community sample ($n = 1548$); Incarcerated Belgian adolescents ($n = 290$); Aged 12-18 years</td>
<td>Non-validated scale of prosocial beliefs (Self)</td>
<td></td>
</tr>
<tr>
<td>Culotta et al., 2009</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 60$); APQ – Proactive Prosocial subscale (Self)</td>
<td>Non-validated scale of social satisfactions (Self)</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Study Type</td>
<td>Sample Description</td>
<td>Data Collection</td>
<td>Measures</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Goldstein, 2008</td>
<td>Sectional</td>
<td>Aged 11-16 years</td>
<td></td>
<td>Anxiety (Self)</td>
</tr>
<tr>
<td>Daud et al., 2008</td>
<td>Cross-sectional</td>
<td>Refugees in Sweden ($n = 80$); Aged 7-17 years</td>
<td>SDQ-PS (Teacher)</td>
<td>PTSD – dichotomous (Self)</td>
</tr>
<tr>
<td>French et al., 2008</td>
<td>Longitudinal</td>
<td>Indonesian Muslim youths ($n = 183$); Aged 12-17 years</td>
<td>CSBS (Caregiver)</td>
<td>Non-validated internalizing measure (Caregivers)</td>
</tr>
<tr>
<td>Tam, 2008</td>
<td>Cross-sectional</td>
<td>Chinese community sample ($n = 1116$); Aged 12-15 years$^a$</td>
<td>ABQ – Prosocial subscale (Self)</td>
<td>CDI (Self)</td>
</tr>
<tr>
<td>Elgar et al., 2007</td>
<td>Longitudinal</td>
<td>Canadian community sample ($n = 3929^d$); Aged 10-15 years</td>
<td>Non-validated scale of prosociality (Self)</td>
<td>Non-validated scale of internalizing (Self)</td>
</tr>
<tr>
<td>Wentzel et al., 2007</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 339$); Aged 11-13 years$^b$</td>
<td>Two aggregated scales: Peer nomination;</td>
<td>WAI – Depressive Affect (Self)</td>
</tr>
<tr>
<td>Zimmer-Gembeck et al., 2007</td>
<td>Cross-sectional</td>
<td>Australian community sample ($n = 334$); Aged 9-13 years</td>
<td>Peer nomination</td>
<td>CDI (Self)</td>
</tr>
<tr>
<td>Gest et al., 2006</td>
<td>Longitudinal</td>
<td>American community sample ($n = 612$); Aged 8-12 years</td>
<td>RCP (Peer nomination)</td>
<td>Non-validated internalizing symptoms checklist (Caregiver)</td>
</tr>
<tr>
<td>Ruchkin et al., 2006</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 1343$); Russian community sample ($n = 1343$)</td>
<td>DDS (Self)</td>
<td>Depression – dichotomous, BASC (Self)</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Sample Details</td>
<td>Measures</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------</td>
<td>---------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Diamantoulou et al., 2005</td>
<td>Cross-sectional</td>
<td>Belgian community sample ($n = 946$); Aged 14-17 years</td>
<td>Two aggregated measures: SCI – Prosocial orientation subscale (Teacher); Peer nomination</td>
<td>RCBQ – Internalizing problems subscale (Teacher)</td>
</tr>
<tr>
<td>Rotenberg et al., 2004</td>
<td>Longitudinal</td>
<td>Swedish community sample ($n = 635$; Aged 11-12 years$^a$)</td>
<td>Peer nomination</td>
<td>CDI (Self)</td>
</tr>
<tr>
<td>Bandura et al., 2003</td>
<td>Longitudinal</td>
<td>Canadian community sample ($n = 350$); Aged 11-14 years</td>
<td>Non-validated modification of existing scale (Self)</td>
<td>CES-D (Self)</td>
</tr>
<tr>
<td>Hay &amp; Pawlby, 2003</td>
<td>Longitudinal</td>
<td>Italian community sample ($n = 464$); Aged 14-19 years</td>
<td>SDQ-PS (Aggregated: Self, Teacher, Caregiver)</td>
<td>SDQ – Emotional Difficulties (Aggregated: Self, Caregiver)</td>
</tr>
<tr>
<td>Chen et al., 2000</td>
<td>Longitudinal</td>
<td>Chinese community sample ($n = 540$); Aged 10-12 years$^a$</td>
<td>Peer nomination</td>
<td>CDI (Self)</td>
</tr>
<tr>
<td>Bandura et al., 1999</td>
<td>Longitudinal</td>
<td>Italian community sample ($n = 282$); Aged 11 years$^a$</td>
<td>Three aggregated measures: Non-validated modification of existing scale (Self); Peer nomination; Non-validated teacher rating</td>
<td>Three aggregated measures: CDI (Self); Peer nomination; Non-validated teacher rating</td>
</tr>
<tr>
<td>Wentzel &amp; McNamara, 1999</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 167$); Aged 11 years$^b$</td>
<td>Peer nomination</td>
<td>WAI – Depressed Affect (Self)</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Design</td>
<td>Sample Description</td>
<td>Self-esteem Measure(s)</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Slee, 1995</td>
<td>Cross-sectional</td>
<td>Australian community sample (n = 353); Aged 10 years</td>
<td>PRQ – Prosocial subscale (Self)</td>
<td>DSS (Self)</td>
</tr>
<tr>
<td>Rudolph et al., 1994</td>
<td>Cross-sectional</td>
<td>American community sample (n = 161); Aged 7-12 years</td>
<td>SBS – Prosocial Behaviour subscale (Self)</td>
<td>CDI (Self)</td>
</tr>
<tr>
<td>Vinnick &amp; Erickson, 1992</td>
<td>Cross-sectional</td>
<td>American community sample (n = 91); Aged 7-10 years</td>
<td>MESS – Prosocial factor (Caregiver). Not validated for this group.</td>
<td>CBC – Internalizing subscale (Self)</td>
</tr>
<tr>
<td>Murphy et al., 1989</td>
<td>Cross-sectional</td>
<td>Irish community sample (n = 80 boys); Aged 9-11 years</td>
<td>PBQ (Teacher)</td>
<td>STAI (Self)</td>
</tr>
<tr>
<td>Filbert &amp; Flynn 2010</td>
<td>Cross-sectional</td>
<td>Canadian looked after children (n = 97); Aged 10-17 years</td>
<td>SDQ-PS (Caregiver)</td>
<td>AAR – Self-esteem (Self)</td>
</tr>
<tr>
<td>Sallquist et al., 2010</td>
<td>Longitudinal</td>
<td>Indonesian community sample, Muslim students (n = 959); Aged 11-16 years</td>
<td>CSBS (Caregiver)</td>
<td>SPPA – global self-worth subscale (Self)</td>
</tr>
<tr>
<td>Lindsey et al., 2008</td>
<td>Cross-sectional</td>
<td>American community sample (n = 268); Aged 11-13 years</td>
<td>CSBS (Caregiver)</td>
<td>PCSC (Self)</td>
</tr>
<tr>
<td>Tam, 2008</td>
<td>Cross-sectional</td>
<td>Chinese community sample (n = 1116); Aged 12-15 years</td>
<td>ABQ – Prosocial subscale</td>
<td>RSE (Self)</td>
</tr>
<tr>
<td>Schwartz</td>
<td>Cross-sectional</td>
<td>American community sample,</td>
<td>PTM (Self)</td>
<td>RSE (Self)</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Sample</td>
<td>Measure</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Diamantop et al., 2005</td>
<td>Cross-sectional</td>
<td>Hispanic community sample ($n = 347$); Aged 11-13 years&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Two aggregated measures: SCI – Prosocial orientation subscale (Teacher); Peer nomination</td>
<td></td>
</tr>
<tr>
<td>Salmivalli et al., 2005</td>
<td>Cross-sectional</td>
<td>Finnish community sample ($n = 589$); Aged 11-13 years</td>
<td>Peer nomination</td>
<td></td>
</tr>
<tr>
<td>Rotenberg et al., 2004</td>
<td>Longitudinal</td>
<td>Canadian community sample ($n = 350$); Aged 11-14 years</td>
<td>Peer nomination</td>
<td></td>
</tr>
<tr>
<td>Simons et al., 2001</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 68$); Aged 12-13 years&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Non-validated scale of prosocial behaviour (Caregiver)</td>
<td></td>
</tr>
<tr>
<td>Chen et al., 2000</td>
<td>Longitudinal</td>
<td>Chinese community sample ($n = 540$); Aged 10-12 years&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Peer nomination</td>
<td></td>
</tr>
<tr>
<td>Smith et al., 1999</td>
<td>Cross-sectional</td>
<td>American community sample ($n = 100$); Aged 11-13 years</td>
<td>Non-validated scale of prosocial attitudes (Self)</td>
<td></td>
</tr>
<tr>
<td>Sletta et al., 1996</td>
<td>Cross-sectional</td>
<td>Norwegian community sample ($n = 95$); Aged 14-18 years</td>
<td>Peer nomination</td>
<td></td>
</tr>
<tr>
<td>Rigby &amp; Cross, 1999</td>
<td>Cross-sectional</td>
<td>Australian community sample ($n = $)</td>
<td>Non-validated Peer Relations</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Participants</td>
<td>Measure(s)</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>--------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Slee, 1993</td>
<td>sectional</td>
<td>Aged 12-18 years</td>
<td>Questionnaire – Prosocial subscale (Self)</td>
<td></td>
</tr>
<tr>
<td>Kaufman &amp; Cicchetti, 1989</td>
<td>Cross-sectional</td>
<td>American children with a history of maltreatment ($n = 70$) and matched controls ($n = 137$); Aged 5-11 years</td>
<td>Non-validated scale presented in thesis CCQ (Observer)</td>
<td></td>
</tr>
</tbody>
</table>

Note: $^a$ Age based on Means and SD; $^b$ Age based on reported school grade/year; $^c$ Both depression and anxiety subscales available, but anxiety chosen as fewer studies in this category; $^d$ based on a conservative estimate of number of children completing relevant measures, following discussion with corresponding author; AAR = Assessment and Action Record (Flynn, Vincent & Legault, 2009); ABQ = Adolescent Behavior Questionnaire (Ma, 1998); APQ = Aggressive and Prosocial Behaviour Questionnaire (Boxer, Tisak & Goldstein, 2004); BASC = Behavior Assessment System for Children (Reynolds & Kamphaus, 1992); CADS = Child and Adolescent Disposition Scale (Lahey et al., 2008); CBS = Child Behavior Scale (Ladd et al., 2009); CAPS = Child and Adolescent Psychopathology Scale (Lahey et al., 2004); CBC = Child Behavior Checklist (Achenbach, 1991); CCQ = California Child Q-sort (Block & Block, 1969); CDI = Children’s Depression Inventory (Kovacs, 1992); CES-D = Centre for Epidemiological Studies Depression Scale (Radloff, 1977); CSBS = Children’s Social Behavior Scale (Crick, 1996); DAWBA = Development and Well-being Assessment (Goodman, Ford, Richards, Gatward & Meltzer, 2000); DDS = Disapproval of Deviancy Scale (Jessor, Donovan & Costa, 1989); DSS = Depression Self-rating Scale (Birleson, 1981); MESS = Matson Evaluation of Social Skills (Matson, Macklin & Hesel, 1985); PBQ = Prosocial Behaviour Questionnaire (Weir & Duveen, 1981); PCSC = Perceived Competence Scale for Children (Harter, 1982); PDRC = Parent Daily Report Checklist (Chamberlain & Reid, 1987); PRQ = Peer Relations Questionnaire (Rigby & Slee, 1993); PTM = Prosocial Tendencies Measure (Carlo & Randall, 2002); RCBQ = Rutter’s Child Behaviour Questionnaire (Rutter, Tizard & Whitmore, 1970); RCP = Revised Class Play (Masten et al., 1985); RSE = Rosenberg Self-Esteem scale (Rosenberg, 1979) SBS = Social Behavior Scale (Hops & Greenwood, 1988); SCI = Social Competence Inventory (Ryedell, Hagekull & Bohlin, 1997); SDQ = Strength & Difficulties Questionnaire (Goodman, 2001); SDQ-PS = Strength & Difficulties Questionnaire Prosocial Subscale; SDesQ = Self Description Questionnaire (Marsh, 1988); SPPA = Self-Perception Profile for Adolescence (Harter, 1988); SPQ = Seattle Personality Questionnaire for Children (Kusche, Greenberg & Beilke, 1988); STAI = State Trait Anxiety Inventory (Spielberger, 1989); WAI = Weinberger Adjustment Inventory Short Form (Weinberger, Feldman, Ford & Chastain, 1987).
A broad and diverse range of assessments were employed to measure prosociality across the studies \((k = 14)\) alongside many non-validated measures \((k = 14)\). Numerous studies \((k = 10)\) employed peer nomination methods in order to assess prosociality. Whilst the majority of measures focus on the tendency towards prosocial behaviour, such as cooperation or sharing, there were four examples of measures that purported to assess prosocial beliefs or attitudes \((\text{Kim, Fleming \& Catalano, 2009; Ruchkin, Sukhodolsky, Vermeiren, Koposov \& Schwab-Stone, 2006; Smith, Walker, Fields, Brookins \& Seay, 1999; Suk et al., 2009})\). On closer inspection, all these measures focussed on normative beliefs about whether it is acceptable to engage in antisocial acts \(\text{(e.g., “how wrong is it” to engage in stealing or lying? Ruchkin et al., 2006)}\). Normative beliefs are predictive of but not synonymous with the behaviour they approve \((\text{Amjad \& Wood, 2003})\). Hence, we made a post-hoc decision to explore the impact of this covariate via meta-regression.

1.4.2. Meta-Analysis: Internalizing

A random-effects meta-analysis was undertaken with internalizing problems as the outcome \((k = 37; n = 24,443)\). A significant inverse effect of prosociality on internalizing was observed, \(Z = 6.48, p < .01\), with a small effect size, \(r = -.14\) \((95\% \text{ CI} = -.18, -.10)\), and a high degree of heterogeneity, \(X^2 = 358.26, p < .01, I^2 = 90.00\%\). A forest plot of this effect is” displayed in Figure 2. Two outlier studies are apparent from Figure 2 \((\text{Bandura et al., 1999; Culotto \& Goldstein, 2008})\). Excluding these led to a similar aggregated effect, \(Z = 6.79, p < .01, r = -.14\) \((95\% \text{ CI} = -.18, -.10)\), \(X^2 = 291.11, p < .01, I^2 = 88.30\%\).
Figure 2: Forest plot for meta-analysis of the effect of prosociality on internalizing problems

Meta-regressions were used to assess potential moderators of this effect. Initially, we explored covariates individually, in separate models. The results of the planned analyses are reported in Table 2. Only two sets of covariates significantly moderated effect size, study outcome and informant type. We also considered a further post-hoc dichotomous covariate relating to whether the prosocial measure was based on beliefs about deviant behaviour ($k = 6$) or prosocial behaviour and characteristics more generally ($k = 31$), which was non-significant, $B = .00 (-.13, .14)$. 

<table>
<thead>
<tr>
<th>Study ID</th>
<th>ES (95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamantopoulou et al</td>
<td>-0.38 (-0.46, -0.30)</td>
<td>3.15</td>
</tr>
<tr>
<td>Daud et al</td>
<td>0.00 (0.32, 0.32)</td>
<td>1.16</td>
</tr>
<tr>
<td>Smith et al</td>
<td>-0.31 (-0.51, -0.11)</td>
<td>1.99</td>
</tr>
<tr>
<td>Aguilar-Vafaei et al</td>
<td>-0.02 (-0.19, 0.15)</td>
<td>2.28</td>
</tr>
<tr>
<td>Oberle et al</td>
<td>0.03 (-0.16, 0.22)</td>
<td>2.06</td>
</tr>
<tr>
<td>Betancourt et al</td>
<td>0.22 (0.07, 0.38)</td>
<td>2.37</td>
</tr>
<tr>
<td>Sailquist et al</td>
<td>-0.10 (-0.27, 0.07)</td>
<td>2.22</td>
</tr>
<tr>
<td>Ladd et al</td>
<td>-0.13 (-0.22, -0.04)</td>
<td>3.06</td>
</tr>
<tr>
<td>Elgar et al</td>
<td>-0.03 (-0.07, -0.00)</td>
<td>3.47</td>
</tr>
<tr>
<td>Tam</td>
<td>-0.15 (-0.21, -0.09)</td>
<td>3.31</td>
</tr>
<tr>
<td>Culotto &amp; Goldstein</td>
<td>0.44 (0.18, 0.70)</td>
<td>1.52</td>
</tr>
<tr>
<td>Wentzel et al</td>
<td>-0.15 (-0.27, -0.03)</td>
<td>2.74</td>
</tr>
<tr>
<td>Zimmer-Gembeck et al</td>
<td>-0.28 (-0.38, -0.17)</td>
<td>2.88</td>
</tr>
<tr>
<td>Bandura et al(a)</td>
<td>-0.03 (-0.12, 0.06)</td>
<td>3.03</td>
</tr>
<tr>
<td>Vinnick et al</td>
<td>-0.11 (-0.32, 0.10)</td>
<td>1.90</td>
</tr>
<tr>
<td>Bandura et al(b)</td>
<td>-0.56 (-0.68, -0.45)</td>
<td>2.78</td>
</tr>
<tr>
<td>Chen et al</td>
<td>-0.15 (-0.24, -0.07)</td>
<td>3.10</td>
</tr>
<tr>
<td>Wentzel &amp; McNamara</td>
<td>-0.16 (-0.31, -0.01)</td>
<td>2.42</td>
</tr>
<tr>
<td>Slee</td>
<td>-0.08 (-0.19, 0.02)</td>
<td>2.90</td>
</tr>
<tr>
<td>Hay &amp; Pawby</td>
<td>-0.07 (-0.25, 0.11)</td>
<td>2.14</td>
</tr>
<tr>
<td>Taylor &amp; Wood</td>
<td>-0.08 (-0.11, -0.05)</td>
<td>3.47</td>
</tr>
<tr>
<td>Rudolph et al</td>
<td>-0.07 (-0.25, 0.12)</td>
<td>2.14</td>
</tr>
<tr>
<td>Murphy et al</td>
<td>-0.30 (-0.53, -0.08)</td>
<td>1.79</td>
</tr>
<tr>
<td>Gest et al</td>
<td>-0.13 (-0.27, 0.01)</td>
<td>2.57</td>
</tr>
<tr>
<td>Rotenberg et al</td>
<td>-0.02 (-0.14, 0.10)</td>
<td>2.77</td>
</tr>
<tr>
<td>Kim et al</td>
<td>-0.23 (-0.35, -0.11)</td>
<td>2.76</td>
</tr>
<tr>
<td>French et al</td>
<td>-0.14 (-0.29, 0.01)</td>
<td>2.49</td>
</tr>
<tr>
<td>Zwirs et al</td>
<td>-0.24 (-0.29, -0.20)</td>
<td>3.42</td>
</tr>
<tr>
<td>Waldman et al(1)</td>
<td>-0.35 (-0.40, -0.30)</td>
<td>3.36</td>
</tr>
<tr>
<td>Waldman et al(2)</td>
<td>-0.29 (-0.33, -0.25)</td>
<td>3.43</td>
</tr>
<tr>
<td>Padilla-Walker et al(1)</td>
<td>-0.15 (-0.31, 0.01)</td>
<td>2.34</td>
</tr>
<tr>
<td>Padilla-Walker et al(2)</td>
<td>-0.10 (-0.21, 0.01)</td>
<td>2.89</td>
</tr>
<tr>
<td>Suk et al(clin)</td>
<td>-0.06 (-0.18, 0.06)</td>
<td>2.79</td>
</tr>
<tr>
<td>Suk et al(comm)</td>
<td>-0.15 (-0.20, -0.10)</td>
<td>3.37</td>
</tr>
<tr>
<td>Ruchkin et al(1)</td>
<td>-0.15 (-0.20, -0.10)</td>
<td>3.35</td>
</tr>
<tr>
<td>Ruchkin et al(2)</td>
<td>-0.09 (-0.15, -0.03)</td>
<td>3.29</td>
</tr>
<tr>
<td>Ruchkin et al(3)</td>
<td>-0.13 (-0.20, -0.07)</td>
<td>3.27</td>
</tr>
<tr>
<td>Overall (I-squared = 90.0%, p = 0.000)</td>
<td>-0.14 (-0.18, -0.10)</td>
<td>100.00</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis

Overall (I-squared = 90.0%, p = 0.000)
Table 2: Results of Meta-Regression

| Moderator             | Internalizing disorder | Self-Esteem | | | |
|-----------------------|------------------------|-------------|-------------------|------------------|
|                       | Individual covariates^a| Multiple covariates | Individual covariates |
|                       | Coefficient | Lower CI | Upper CI | Coefficient | Lower CI | Upper CI | Coefficient | Lower CI | Upper CI |
| Outcome               |            |          |          |            |          |          |            |          |          |
| Internalizing (k = 17)^b |            |          |          |            |          |          |            |          |          |
| Depression (k = 15)   | .02        | -.08     | .11      | -.03       | -.12     | .06      | Other (k = 10) | .04 | -.19 | .28 |
| Anxiety (k = 5)       | .25*       | .08      | .42      | .22*       | .07      | .37      | Other (k = 9)^b | American (k = 5) | .13 | -.09 | .35 |
| Informant             |            |          |          |            |          |          |            |          |          |
| Self (k = 16)^b       |            |          |          |            |          |          |            |          |          |
| Mixed (k = 5)         | -.24*      | -.38     | -.10     | -.23*      | -.35     | -.10     | Measure quality |        |       |     |
| Other (k = 16)        | -.09       | -.19     | .00      | -.11*      | -.20     | -.02     | Good (k = 5/14) | .05 | -.18 | .27 |
| Country               |            |          |          |            |          |          |            |          |          |
| Other (k = 11)^b      |            |          |          |            |          |          |            |          |          |
| American (k = 14)     | -.08       | -.21     | .04      |            |          |          |            |          |          |
| European (k = 12)     | -.11       | -.23     | .02      |            |          |          |            |          |          |
| Measure quality       |            |          |          |            |          |          |            |          |          |
| Good (k = 17/37)      | .04        | -.07     | .14      |            |          |          |            |          |          |
| Sample range          |            |          |          |            |          |          |            |          |          |
Within (k = 25/37)  -06  -17  .05

Note: Variables with more than two categories were dummy coded; All CI 95%; * p < .01; a within the first series of meta-regressions, covariates were examined individually. If covariates consisted of multiple dummy variables, however, all dummy variables were included together in the analysis; b reference category
In order to explore the amount of heterogeneity accounted for by the significant moderators in combination, we conducted a further meta-regression with both sets of significant covariates included in a single model. The results of this analysis are also reported in Table 2. This final model accounted for 53.20% of the variance in the aggregated effect size, with 76.61% of the residual variance being attributable to heterogeneity or true variance between studies. Overall smaller negative effect sizes were associated with having anxiety as an outcome (compared to studies measuring depressive symptoms or general internalizing problems where no distinction between symptom type was made) and relying on self-report measures of prosociality.

Subgroup analyses were used to probe significant moderator effects. For study outcome, whilst a significant negative effect was observed where depression/general internalizing symptoms were the outcome, $r = -0.16 (-0.20, -0.12), p < 0.01$, there was a non-significant positive effect where anxiety symptoms were the outcome, $r = 0.08 (-0.15, 0.30), p = 0.52$. For informant type, subgroup analyses suggested a larger effect, $r = -0.29 (-0.43, -0.14), p < 0.01$, for multiple informants, and smaller effects for other-rated prosociality, $r = -0.17 (-0.22, -0.12), p < 0.01$, and self-rated prosociality, $r = -0.08 (-0.12, -0.05), p < 0.01$. We explored whether the moderating effects of informant remained after excluding those studies where anxiety symptoms were the outcome and found that this made no substantive difference.

1.4.3. Meta-Analysis: Self-Esteem

A random-effects meta-analysis was undertaken with self-esteem problems as the outcome ($k = 14; n = 5,210$). A significant positive effect of prosociality on self-esteem was observed, $Z = 5.06, p < 0.01$, with a small effect size, $r = 0.16 (95\% \text{ CI} = 0.10, 0.22)$, and a high degree of heterogeneity, $X^2 = 57.88, p < 0.01, I^2 = 77.50\%$. A forest plot of this effect is displayed in Figure 3.
Figure 3: Forest plot for meta-analysis of the effect of prosociality on self-esteem

Meta-regressions were again conducted to explore moderator effects. As there were fewer studies within the meta-analysis of self-esteem, it was necessary to collapse certain moderator categories (for informant type and sample country). The results of these analyses are reported in Table 2. None of the moderators were significant. As only one study included a sample whose ages fell outside the specified range of 10 to 17 years (Kaufman & Cicchetti, 1989), numbers were deemed too small for meta-regression. We repeated the meta-analysis excluding this study and observed similar results, $Z = 5.23, p < .01, r = .13$ (95% CI = .8, .18), but with smaller, moderate level of heterogeneity, $X^2 = 32.97, p < .01, I^2 = 63.60\%$. 
1.4.4. Publication Bias

The presence of publication bias was explored via funnel plots for both self-esteem and internalizing outcomes. These plots are displayed in Figure 4. Whilst there is no indication of publication bias for internalizing problems, there is some asymmetry in the plot for self-esteem, implying that smaller studies with smaller or non-significant (or reverse) findings may have been missed. However, the results of Egger’s test do not indicate significant asymmetry for either self-esteem; $a = 1.44, p = .30$, or Internalizing, $a = 0.21, p = .83$.

1.4.5. Multivariate Effects

Several identified studies included additional multivariate effects and relationships which were not included in the meta-analysis. One alternative explanation for any relationship between prosociality and internalizing problems is that it is an artefact of the relationship between externalizing and internalizing problems. A number of studies allowed this possibility to be explored by testing the relationship between prosociality and internalizing disorder whilst controlling for behavioural problems. In one study a path model indicated that prosociality continues to exert an influence upon internalizing even when externalizing problems are taken into account (Bandura et al., 1999). Boulard, Quertemont, Gauthier and Born (2012) reported that prosocial behaviour, assessed via a non-validated eight-item inventory, positively predicted depressed affect in two independent samples, after controlling for verbal and physical aggression alongside numerous other social, academic and demographic variables, a finding that runs counter to our hypotheses. However, two studies (Slee, 1995; Rigby & Slee, 1993) observed a significant effect of the tendency to be prosocial on depression (negative relationship) or self-esteem (positive relationship) whilst controlling for the tendency to be a bully or a victim. Overall, there is some, albeit limited, evidence to suggest that prosociality is related to internalizing difficulties beyond the effects of externalizing problems, though this evidence is not consistent.
Figure 4: Funnel plots for internalizing problems (top) and self-esteem (bottom)
Two identified studies also included path analyses whereby prosociality influenced self-esteem and depressive symptoms through its effect on interpersonal relationships (i.e., peer acceptance or loneliness; Sletta et al., 1996; Zimmer-Gembeck et al., 2007). In the former study, this indirect effect only held for teacher-rated not peer-rated variables. Furthermore, neither study conducted a systematic analysis of mediation, considering also the possible direct effect of prosociality on well-being, so that these results are difficult to interpret. Nonetheless, they provide some evidence for the hypothesis that prosocial behaviour leads to improved self-esteem and lowered internalizing problems through its effect on interpersonal relationships.

We only identified two studies that examined the prospective effects of prosociality. Chen and colleagues (2000) explored the effect of baseline prosociality on depressive symptoms and perceived self-worth two years later in Chinese early adolescents (11-13 years). They did not observe any effect of prosociality on change in depressive symptoms or self-worth. Likewise, Gest and colleagues (2006) found that peer nominated (using the Revised Class Play; Masten, Morison & Pellegrini, 1985) prosociality did not predict change in internalizing symptomatology over a 10-year period. However, in Chen and colleagues’ study significant interaction effects were apparent, whereby baseline prosociality did predict depressive symptoms and self-worth at follow-up, when these variables presented more of a problem at baseline (i.e., lower self-worth and higher depressive symptoms). The authors suggest this effect indicates that prosociality may only come to exert a protective on young people who are vulnerable to later difficulties.

1.5. Discussion

1.5.1. Overview of Findings

The aim of the current review was to explore the relationship between levels of prosociality and self-esteem or internalizing problems, in pre-adolescents and adolescents. The results of the meta-analyses supported the first hypothesis, demonstrating that greater
levels of prosociality were associated with greater self-esteem and lower levels of internalizing symptoms. The second hypothesis was also partially supported, with meta-regression suggesting that whilst an inverse relationship was apparent between prosociality and depression/internalizing disorders, a trend towards a positive relationship existed when anxiety symptoms were the outcome. A review of multivariate effects provided evidence that the relationship between prosociality and well-being is not purely an artefact of the association these variables have with externalizing problems.

Two studies provided evidence of the mediational effect of prosociality on self-esteem and depressive symptoms via peer acceptance (Sletta et al., 1996; Zimmer-Gembeck et al., 2007), suggesting that this may be one mechanism mediating the link between prosociality and internalizing/self-esteem. The finding that prosociality had a trend towards a positive relationship with anxiety partly supports suggestions that prosociality may have negative consequences in some circumstances, such as the claims that prosociality may be associated with excessive concerns about others or social-evaluative concerns about the self (Hay; 1994; Hay & Pawlby, 2003; Rudolph & Conley, 2005), which could readily increase vulnerability to anxiety disorders. The lack of a clearly significant positive relationship may be because the harmful consequences of prosociality may only apply to a subset of young people. It may be that prosociality is more likely to be associated with anxiety in certain individuals, such as in adolescent girls (Cyranowski et al., 2000; Zahn-Waxler et al., 2008) or those with excessive caring responsibilities.

Whilst the observed effect sizes were small according to conventional criteria (Cohen, 1988), there are nonetheless large enough to be meaningful, for example, exceeding other important effects in public health (Rosenthal, 1990), and being similar in size to other important predictors of internalizing disorder in children, such as the effect of exposure to domestic violence \(r = .19\; \text{Wolfe, Crooks, Lee, McIntyre-Smith & Jaffe, 2003}\). The results suggest that prosociality is linked with internalizing problems and self-esteem to a meaningful degree, but it is clearly not the singular determinant. The absence
of larger effect sizes may be attributable to the multiply determined nature of self-esteem and internalizing disorders (Ahadi & Diener, 1989) and the multi-faceted nature of the putative mechanisms that account for these relationships. In the case of internalizing problems, larger effects were associated with using other-ratings or mixed multiple informants to rate prosociality. Basing the assessment of prosociality on multiple different informants may have the advantage of removing bias associated with any individual perspective, with each new perspective adding unique information to the aggregate variable, so providing a better estimate of the construct (e.g., Kerr, Lunkenheimer & Olson, 2007). Nonetheless, conceptual issues remain regarding the combination of multiple viewpoints into a single variable, particularly where inter-rater agreement is low. The findings suggested that self-rated prosociality has a weaker relationship with internalizing problems. There is evidence that some adolescents who are at greater risk of emotional problems may produce heightened or elevated self-appraisals of prosociality, possibly as part of a maladaptive psychological defence (Taylor & Wood, in press). Such a phenomenon could account for attenuated correlations between self-ratings and measures of psychopathology.

1.5.2. Methodological Limitations in the Identified Literature

The identified literature was largely cross-sectional in nature. Consequently, it is impossible to determine the direction of the effect. Whilst two longitudinal studies did not observe significant effects of prosociality on change in outcome over 2 and 10 year periods, it is difficult to draw conclusions from these two studies alone. The majority of studies recruited community samples, with only a minority focussing on specific clinical or vulnerable populations of interest. The ability to generalise the results of the meta-analysis to such populations is therefore limited. Such clinical groups may be important as the developmental pathways leading to the expression of prosocial attitudes and behaviours may vary in such individuals. For example, there is evidence that some forms of early
adversity, such as maltreatment, result in lower levels of prosociality compared to controls (Kaufman & Cicchetti, 1989; Stern, Lynch, Oates, O’Toole & Cooney, 1995).

In regards to the choice of assessments, one issue is the variety of measures employed. This may represent a threat to the comparability of results and a cause of heterogeneity. A particular issue is the tendency for a number of studies to employ non-validated measures, whose psychometric properties are not adequately established. Such measures may be lacking in validity or reliability, increase the degree of error in effect estimates and ultimately limit the internal validity of any observed results. A frequently used measurement technique was peer nomination. This method has the advantage of employing multiple informants, and thus limiting the error associated with a single perspective. Nonetheless, various problems exist with this approach including a reliance on one or two questions to tap a wider construct, vulnerability to particular forms of response biases (Poulin & Dishion, 2008), reliance on a single perspective (peers), and perhaps most troubling, few studies using this method cite a standardised procedure for conducting their assessment (i.e., use of standardized item sets and aggregation rules validated in past research).

1.5.3. Limitations

The meta-analyses revealed a high degree of statistical heterogeneity in the data, even after moderating factors were considered. Various factors, including the diversity in measures and samples may account for this degree of heterogeneity. Similarly high levels of heterogeneity have been reported by other meta-analyses (Huedo-Medina et al., 2006; Palmier-Clause et al., 2012). By employing a random-effects model, this heterogeneity will have been accounted for by the analyses. Adopting a narrative review approach would not have necessarily resolved this issue, as the degree of heterogeneity may have remained hidden and unexplored. Second, the number of available studies were low for particular meta-regression analyses (i.e., $k = 4$ samples for comparisons of study outcome and informant type). Small study numbers may have reduced power to identify significant
Third, the investigation into publication bias revealed some indication of bias for the studies examining self-esteem. This bias was apparent in the funnel plot, but was not detected by Egger’s test. Various other factors can create the impression of asymmetry in funnel plots, including sampling variation and chance (Borenstein et al., 2009; Sterne et al., 2008). Nonetheless, the possibility that unpublished work may be missing from the analysis of studies assessing self-esteem, which could have affected results, should be considered.

**1.5.4. Clinical Implications**

One result of the current review that has substantial clinical implications is the possibility of a differential effect of prosociality on depression and internalizing symptoms versus anxiety symptoms. This result indicates that a greater predisposition towards prosocial behaviours may be unrelated to some subtypes of internalizing symptoms, namely anxiety, and so should not be regarded as a universally positive characteristic. Considering interventions aimed at young people experiencing emotional difficulties, the current review suggests that focussing on enhancing prosociality as a therapeutic fulcrum may lead to downstream benefits in regards to lowered internalising and depressive symptoms and improved self-esteem. Of course, this suggestion can only be tentatively made until the temporal relationship that self-esteem and depressive symptoms have with prosociality is better established. Therapeutic interventions have already been developed with the aim of promoting prosocial behaviour (e.g., Goldstein, Sherman, Gershaw, Sprafkin & Glick, 1978; Kim & Leve, 2011; Smith, Leve & Chamberlain, 2011; Solantaus, Paavonen, Toikka & Punamäki, 2010) suggesting that interventions developed with the goal of enhancing prosociality are feasible. The current review indicated only small effect sizes for the relationship between prosociality and disorder. It could therefore be argued that other variables with stronger connections to a young person’s vulnerability of emotional disorder may represent a better target for intervention. There may, however, be other advantages of focussing on aspects of positive functioning like prosociality, such as
enhanced acceptability and engagement (Geraghty, Wood & Hyland, 2010; Tedeschi & Kilmer, 2005; Wood & Tarrier, 2010). Existing interventions developed for treating emotional problems in adolescents, which focus primarily on areas of dysfunction, may therefore be enhanced by the introduction of additional treatment components relating to boosting prosocial behaviour.

1.6. Note

Andrew Horan is recognised as a co-author on this study for his involvement, providing parallel extraction of data from identified studies, undertaking searches of conference articles and contacting other authors related to this.
1.7. References


doi:10.1177/0146167296221004


Teacher ratings of children’s behaviour problems and functional impairment across gender and ethnicity: Construct equivalence of the Strengths and Difficulties
PAPER 2

2. Predicting Well-Being in Young People: The Role of Interpersonal Dispositions

Journal: The Journal of Positive Psychology

Word Count: 5,480
2.1. Abstract

Later childhood and adolescence can be a turbulent period in a young person’s life. Identifying factors which contribute to the impairments in well-being during this period is important for identifying at-risk individuals and informing intervention. Two broad interpersonal dispositions, antisociality and prosociality, have both been linked to well-being in young people. However, longitudinal research is lacking. The current study explores whether interpersonal dispositions can predict changes in well-being over time. A community sample of $n = 4899$ young people aged 10 – 15 years were followed up over a 1-year period. Data were obtained from the “Understanding Society” survey. Clustered regression analyses indicated that antisocial but not prosocial traits predicted a change in well-being, whereby more antisocial young people experienced a greater decline in well-being. These results highlight the impact of antisocial traits on well-being in young people.
2.2. Introduction

It has been argued that conceptualisations of mental health need to go beyond symptoms and psychopathology, to incorporate aspects of positive functioning and adaptation as well (Lyons, Huebner, Hills & Shinkareva, 2012; Park, 2004; Suldo, Thalji & Ferron, 2011; Wood & Tarrier, 2010). Subjective Well-Being (SWB) represents a more holistic outcome, providing information on functioning beyond what unipolar dimension of psychopathology account for (Huebner, 2004; Lyons et al., 2012; Proctor, Linley & Maltby, 2009). SWB can be understood as an individual’s evaluation of the general quality of their lives, encompassing both cognitive (e.g., life satisfaction) and affective elements (Diener, 1994; Diener, Suh, Lucas & Smith, 1999). SWB has been described as an operationalized form of the more commonly used concept of happiness (Suldo & Huebner, 2006). SWB may be a particularly important outcome in children and adolescents, where it is indicative of both physical and psychological problems and appears to represent a form of resilience against subsequent difficulties (Gilman & Huebner, 2003; Park, 2004; Proctor et al., 2009). The importance of SWB has been underscored by suggestions that this variable should feature more heavily as an outcome in clinical settings, suggesting a move away from a focus on symptom reduction alone (Pais-Ribeiro, 2004; Park, 2004; Swan, Watson & Nathan, 2009). Consequently, identifying those variables that predict subsequent changes or shifts in SWB is important in intervening with individuals at risk of low SWB. In the current study, we explore the role that interpersonal dispositions of prosocial and antisocial behaviour have in predicting SWB over time in young people.

Within young people, two broad dimensions of interpersonal disposition can be identified, prosocial and antisocial. Both of these variables appear to have trait-like properties, manifesting as individual differences (Carlo, Crockett, Randall & Roesch, 2007; Eisenberg et al., 2002; Eisenberg & Mussen, 1989; Sampson & Laub, 2004; Stanger, Achenbach & Verhulst, 1997). Prosociality involves the tendency towards behaviours
characterised by co-operating with, supporting or helping others (e.g., sharing, providing emotional or instrumental support), whilst antisociality involves the predispositions towards behaviours that are aversive to others (e.g., fighting, stealing). We use the term “antisocial behaviour” or “antisociality” rather than terms such as “conduct problems” or “externalizing disorder” to avoid the psychiatric implications of the latter, which may not always be appropriate when studying a non-clinical population. Although it might be assumed that these constructs represent two ends of the same continuum, factor analyses have generally presented them as two separate, though inter-correlated, dimensions (e.g., Goodman, 2001; Ladd, Herald-Brown & Andrews, 2009). Moreover, reports of children who use both antisocial and prosocial behaviours in combination support the view that they represent different dimensions (Hawley, 2006; Hay & Pawlby, 2003). It is important to distinguish these constructs from sociability, which describes the motivation or capacity to initiate and maintain social interaction with others but says less about the form and character of these interactions (Chen, Li, Li, Li & Liu, 2000).

Middle childhood and early adolescence (e.g., 10 – 15 years) is a time of numerous transitions and potential stressors, encompassing the academic (e.g., move to secondary school in the UK), social (growing importance of peer relationships) and cognitive (Increasingly abstract sense of self; Gilman & Huebner, 2003; Harter, 1999). Within this complex social world the way in which a young person approaches and manages interpersonal relationships is liable to be important to their SWB. Stable differences in prosocial and antisocial tendencies may emerge early in life and may have a substantial impact upon the child’s acceptance by peers (Hay, Payne & Chadwick, 2004). Prosocial behaviour is inherently affiliative and may therefore lead to greater peer acceptance, whilst antisocial behaviour is often aversive (even relational aggression may be disapproved of) and may lead to peer rejection (Hay et al., 2004; Newcomb, Bukowski & Pattee, 1993). Later in life these interpersonal dispositions may underlie distinct patterns of coping with life stressors (Blechman & Culhane, 1993). Delinquency has been associated with typically
less effective withdrawal based coping, whilst prosociality has been related to more active coping (Tam, 2008). It is also possible that the way in which young people are appraised by others as antisocial and prosocial and the extent to which they internalize these labels may also impact upon their self-perception and well-being (Pfeifer et al., 2009; Sampson & Laub, 2004). For these reasons, it may be expected that greater prosociality may contribute to greater SWB whilst antisociality may impair SWB (Veenstra, 2006).

There is surprisingly little research evidence supporting a relationship between prosociality and SWB. Studies in children (Froh, Bono & Emmons, 2010; Sun & Shek, 2010; 2012), adolescents (Gilman, 2001) and adults (Caprara & Steca, 2005) report cross-sectional relationships between prosociality and measures of life satisfaction. However, we could not identify any longitudinal studies that have explored this relationship. This is problematic, as it is currently unclear if prosociality actually contributes to improvements in SWB, or whether it is simply a consequence of SWB (and therefore arguably of less clinical value). Numerous studies detail a relationship of antisocial behaviours, including delinquency and violent or aggressive behaviours, with lower SWB and life satisfaction in middle to high-school age children (MacDonald, Piquero, Valios & Zullig, 2005; Suldo et al., 2011; Sun & Shek, 2010; 2012; Valois, Paxton, Zullig & Huebner, 2006) and in adolescents (Bartels, Cacioppo, van Beijsterveldt & Boomsma, in press). Problematically, whilst longitudinal studies have shown that earlier antisociality predicts later SWB, they do not appear to control for earlier levels of SWB, making it difficult to draw conclusions regarding the direction of affect (Meri et al., 2011; Olino, Seeley & Lewinsohn, 2010). A further limitation of the existing literature is that no longitudinal studies we could identify control for the shared variance between prosociality and antisociality. If these two variables do indeed represent overlapping but distinct dimensions, then any relationship between prosociality and SWB may simply be a result of the shared relationship with antisociality.
Both prosociality and antisociality are understood to vary by gender, with the typical pattern being greater prosociality in females and greater antisociality in males (Fabes, Carlo, Kupanoff & Laible, 1999; Hay et al., 2004). The developmental trajectory of antisocial behaviour may also vary between genders (Van Lier, Vitaro, Wanner, Vuijk & Crijnen, 2005). Consequently, the relationship that interpersonal disposition and peer support have upon changes in SWB over time may vary by gender. Consequently, we explored whether gender moderated any effects in the study.

The aim of the current study was to explore whether prosocial and antisocial traits could predict SWB or life satisfaction over a 12-month-period in a large sample of young people aged 10 to 15 years. This sample was obtained from the youth self-completion component of the recent “Understanding Society” survey of households in the UK, described as providing “The highest quality subjective well-being data available in the UK” (p. 36; Waldron, 2010). We predicted that baseline prosociality and antisociality would independently predict changes in SWB over the follow-up period.

2.3. Method

2.3.1. Participants

Participants were obtained from the UK Household Longitudinal Study (UKHLS). This is an on-going longitudinal survey of households in the UK focussing on a range of subjects from health to education (University of Essex, 2012; McFall, 2012). The current study focussed on participants completing the youth self-completion component of the survey, aimed at young people aged 10 to 15 years. Follow-up data was obtained from the second wave of the survey, which took place approximately one year later. Informed consent was obtained from all participants prior to inclusion. The sample consisted of $n = 4899$ young people (females: 50.27%, $n = 2463$; $M_{age} = 12.51$ years, $SD = 1.70$). Of the participants, 64.20% ($n = 3145$) defined their ethnic background as White. Of the remainder, 1.47% ($n = 72$) classified themselves as Other White, 4.35% ($n = 213$) as
Mixed, 11.59% \((n = 568)\) as Asian, 6.51% \((n = 319)\) as Black, 0.31% \((n = 15)\) as Arab, with 11.57% \((n = 567)\) of values missing.

### 2.3.2. Measures

**Subjective Well-Being.** SWB was assessed with a scale initially used in the British Household Panel Survey (BHPS; Taylor, 2010) and adopted by Understanding Society (Waldron, 2010). Whilst this scale has been described as a measure of happiness (e.g., Chan & Koo, 2011), we prefer the more operationalized term SWB. Respondents were required to rate how they felt about six distinct domains of their life, including appearance, schoolwork, friends, family, school and life as a whole on a scale from 1 (“completely happy”) to 7 (“not at all happy”). Pictorial faces with expressions ranging from positive to negative were provided to further explain the response options. Higher scores were therefore indicative of poorer life satisfaction. Other studies using this scale have shown that it correlates with expected determinants of SWB such as parenting style, family structure, relationship with parents and peers, and gender (Chan & Koo, 2011; Jewell & Kambhampati, 2012). A copy of this scale is presented in Appendix I.

**Interpersonal Dispositions.** The self-rated Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) prosocial and conduct problem subscales were used to assess these interpersonal dispositions. These five-item subscales assess the tendency to engage in prosocial (e.g., “I try to be nice to other people. I care about their feelings”) and antisocial behaviours (e.g., “I fight a lot. I can make others do what I want”) over the past 6 months on a three-point scale \((0 = \text{“Not true”}, 2 = \text{“Certainly true”})\). Studies have supported the factor structure and concurrent validity of this scale (Goodman, 1997; 2001). In the current study ordinal alpha coefficients (Gaderman, Guhn & Zumbo, 2012) of \(\alpha = .80\) and \(\alpha = .76\) were obtained for the prosocial and conduct disorder subscales, respectively.
2.3.3. Statistical Analysis

We hypothesised a single SWB factor that would manifest in judgments of satisfaction in the six specific domains covered by the SWB items. We tested this single-factor structure via CFA using Weighted Least Squares estimation to account for non-normally distributed items (StataCorp, 2011a). Acceptable model fit was indicated by a Confirmatory Fit Index (CFI) > .90 (Weston & Gore, 2006), Standardized Root Mean Squared Residual (SRMR) < .09 and Root Mean Squared Error of Approximation (RMSEA) < .06 (Hu & Bentler, 1999). We made an a priori specification that the error terms for the two SWB items concerning school settings would be correlated, accounting for the shared context. A single young person was selected from each household and used in this analysis to avoid inter-dependence within households.

Multiple regression was used to test longitudinal relationships. Baseline scores for the outcome were entered into an initial step so that it was the subsequent change in these outcomes that was being predicted. Analyses were undertaken in STATA 12 (StataCorp, 2011b). In order to account for non-independence due to clustering at the Primary Sampling Unit (PSU) level (in this case, postal sectors in the UK; McFall, 2012), we estimated clustered, robust standard errors (Rogers, 1993). It has been argued that allowing for the highest order clustering (PSU) will also account for clustering at lower levels, such as within households (Horton & Fitzmaurice, 2004). In order to adjust for bias related to attrition at time 2, we calculated a probability weight representing a participant’s inverse probability of completing the SWB variable at time 2, based upon a logistic regression model including study variables at time 1 as predictors (e.g., age, gender, ethnicity, sample geographic location, prosocial behaviour, antisocial behaviour and time 1 SWB). This attrition weight was multiplied by a cross-sectional weight provided by the survey developers, accounting for each participant’s probability of being selected for the study and responding at time 1 (McFall, 2012). Thus, participant’s probability of initially taking
part in the study and then re-completing the study at time 2 was adjusted for within the regression model.

2.4. Results

2.4.1. Data Screening

Logarithmic transformations were applied to SWB at both time points to reduce positive skew. Descriptive statistics for all variables are reported in Table 1. The SWB scale was not completed by 44.70% of participants at time 2. Bivariate correlations are reported in Table 1 (conducted with one selected member from each household in cases of siblings). These revealed a moderate positive relationship between prosocial disposition and SWB, and a moderate negative relationship between antisocial disposition and SWB (Cohen, 1988).

2.4.2. Factor Structure of the SWB Scale

The Factor structure of the SWB scale was tested via CFA upon a sample created by selecting one individual from each household. The model demonstrated excellent fit with the data, $\chi^2 (8) = 51.90, P < .01$, $CFI = .94$, $RMSEA = .04$, $SRMR = .03$. Item loading are reported in Table 1. All loadings were above .49, indicating that a substantive amount of their variance was shared with the latent variable. The scale demonstrated good internal reliability, with ordinal alpha $\alpha = .81$. A single factor SWB was therefore created by summing the six items and used in subsequent analyses.
Table 1: Descriptive Statistics (Provided for Total Sample and Male and Females Separately) and Correlations for Variables Included in the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>CFA loadings</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. SWB (overall sum)^a</td>
<td>2.58 (2.57, 2.59)</td>
<td>0.34 (0.34, 0.35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SWB (school work)</td>
<td>2.63 (2.74, 2.52)</td>
<td>1.29 (1.34, 1.23)</td>
<td>.49</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SWB (appearance)</td>
<td>2.63 (2.43, 2.84)</td>
<td>1.44 (1.31, 1.54)</td>
<td>.57</td>
<td>.68</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SWB (family)</td>
<td>1.66 (1.66, 1.66)</td>
<td>1.07 (1.07, 1.07)</td>
<td>.62</td>
<td>.61</td>
<td>.28</td>
<td>.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. SWB (friends)</td>
<td>1.61 (1.61, 1.59)</td>
<td>0.96 (0.95, 0.96)</td>
<td>.51</td>
<td>.55</td>
<td>.24</td>
<td>.28</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. SWB (school)</td>
<td>2.37 (2.38, 2.36)</td>
<td>1.50 (1.49, 1.51)</td>
<td>.54</td>
<td>.71</td>
<td>.47</td>
<td>.30</td>
<td>.32</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. SWB (life in general)</td>
<td>2.13 (2.09, 2.16)</td>
<td>1.20 (1.19, 1.20)</td>
<td>.80</td>
<td>.73</td>
<td>.38</td>
<td>.46</td>
<td>.53</td>
<td>.39</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Prosocial behaviour</td>
<td>7.62 (7.19, 8.06)</td>
<td>1.87 (1.96, 1.67)</td>
<td>-.29</td>
<td>-.26</td>
<td>-.10</td>
<td>-.20</td>
<td>-.15</td>
<td>-.20</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Antisocial behaviour</td>
<td>2.27 (2.47, 2.08)</td>
<td>1.81 (1.87, 2.08)</td>
<td>.37</td>
<td>.32</td>
<td>.16</td>
<td>.27</td>
<td>.15</td>
<td>.26</td>
<td>.32</td>
<td>-.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. SWB (overall sum)^b</td>
<td>2.60 (2.58, 2.61)</td>
<td>0.34 (0.33, 0.34)</td>
<td></td>
<td>.59</td>
<td>.40</td>
<td>.43</td>
<td>.37</td>
<td>.27</td>
<td>.40</td>
<td>.43</td>
<td>-.25</td>
<td>.29</td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses are for males and then females separately; All $P < .05$; N’s vary due to missing data; SWB = Subjective Well-Being; ^a Statistics provided for transformed variable (original $M = 13.01$, $SD = 5.09$); ^b Statistics provided for transformed variable (original $M = 13.20$, $SD = 4.97$).
2.4.3. Predictors of Change in SWB

A clustered regression analysis (clustered by PSU) was conducted predicting SWB at time 2 whilst controlling for time 1 SWB. In an initial step we also controlled for age and gender. In the second step prosocial and antisocial traits were entered. In a third step we included the interaction term between antisocial behaviour and gender and between prosocial behaviour and gender. The inclusion of prosocial and antisocial dispositions in Step 2 led to an improvement in model fit, \( \Delta R^2 = .01, F = 12.30, P < .001 \). The inclusion of the interaction terms in Steps 3 did not make a significant improvement to the model, \( \Delta R^2 = .00, F = 2.32, P = .10 \). The results of the regression are presented in Table 2. Recalling that greater scores on the SWB scale indicated lower SWB, a decline in SWB was therefore related to older age and higher levels of antisociality. It is notable that whilst Step 3 made no significant improvement to the model in terms of variance explained, there was nonetheless a significant interaction between prosociality and gender. However, when relationships with change in well-being were explored for males and females separately, prosociality remained a non-significant predictor.

2.5. Discussion

The aim of the current study was to explore the relationship between prosocial and antisocial interpersonal dispositions and changes in SWB over time in young people. The current study is consistent with past research which has supported cross-sectional relationships between prosociality or antisociality and SWB (Bartels et al., in press; Froh et al., 2010; Gilman, 2001; MacDonald et al., 2005; Suldo et al., 2011; Sun & Shek, 2010; 2012; Valois et al., 2006) but extends upon these findings by exploring this relationship longitudinally. The results suggest that differences in dispositions towards antisocial behaviour may account for subsequent changes in SWB over time. This may be because antisocial behaviour is typically aversive to others and so may increase the risk of peer
rejection (Hay et al., 2004; Newcomb et al., 1993), leading to greater dissatisfaction in various domains of life.

Table 2: Results of Clustered Regression Analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>ΔR²</th>
<th>B</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.33*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SWB</td>
<td>.57*</td>
<td>.52</td>
<td>.61</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.02*</td>
<td>.01</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.01</td>
<td>-.03</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.01*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SWB</td>
<td>.52*</td>
<td>.47</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.02*</td>
<td>.02</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.02</td>
<td>-.04</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Prosocial</td>
<td>-.00</td>
<td>-.01</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Antisocial</td>
<td>.02*</td>
<td>.01</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SWB</td>
<td>.52*</td>
<td>.47</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.02*</td>
<td>.02</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.02</td>
<td>-.05</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Prosocial</td>
<td>-.02*</td>
<td>-.03</td>
<td>-.00</td>
<td></td>
</tr>
<tr>
<td>Antisocial</td>
<td>.02*</td>
<td>.00</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Gender*Prosocial</td>
<td>.02*</td>
<td>.00</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>Gender*Antisocial</td>
<td>.01</td>
<td>-.01</td>
<td>.02</td>
<td></td>
</tr>
</tbody>
</table>

* P < .05; SWB = Subjective Well-Being.

Alternatively, it is possible that antisocial children come to internalize this often socially undesirable label over time with consequences for self-perception and behaviour that impact upon general well-being (Pfeifer et al., 2009; Sampson & Laub, 2004). The current study also suggested that as young people become older their SWB declines. This finding is consistent with inter-national survey results suggesting a general decline in well-being.
from childhood to adolescence, which have been attributed to the challenges of puberty and social transitions of adolescence (Michel, Bisegger, Fuhr, Abel & The KIDSCREEN group, 2009).

The finding that prosociality does not predict changes in SWB over time is important, as this result runs counter to what might have been concluded based on cross-sectional findings only. This result suggests that the cross-sectional relationship between prosociality and SWB may be better accounted for by prosociality being an epiphenomenon or a consequence of greater SWB. Theories of prosociality in younger children have emphasised the importance of the ability to regulate aversive emotional states (an ability which may be impaired in those with lower SWB) in being able to respond prosocially to others’ distress (e.g., Eisenberg et al., 1996). Likewise, happiness has been linked to greater prosocial behaviour (Lyubomirsky King & Diener, 2005), possibly because those who are happy are motivated to maintain this state and so help rather than ignore others in need (Batson, 1998). In contrast, those experiencing low SWB may be preoccupied with their lack of satisfaction and difficulties in life and so be less driven to behave prosocially. The current study did not explore the reciprocal relationship of SWB upon changes in prosociality as the latter variable was not assessed at follow-up. However, this would be an area for future research.

It is notable that the addition of antisociality only made a small contribution to the regression model in explaining SWB at time 2. There may be several reasons for this. It is likely that SWB is multiply determined and therefore possible that an antisocial disposition is just one of many factors that contribute to levels of SWB (Ahadi & Diener, 1989). It is also notable that SWB was relatively stable over the year follow-up and time 1 SWB was a strong predictor of time 2 SWB. This may have left less unexplained variance for differences in interpersonal disposition to explain. As an initial test of these relationships, the 1-year-follow-up appeared appropriate, capturing those changes occurring across a
term or grade. Understanding Society is an on-going longitudinal survey, providing an opportunity to update these results in the future over longer time periods.

Several limitations of the current study require note. First, within the current study we considered prosociality and antisociality as broad interpersonal dimensions and did not attempt to specify subpopulations within this. However, distinctions have been made between reactive and proactive aggressive, which may define different types of antisocial youth (Card, Stucky, Sawalani & Little, 2008). Likewise, prosociality may have different underlying motivations (Laible, Carlo, Panfile, Eye & Parker, 2010). The SDQ is a widely used and well-validated measure of prosocial and antisocial traits but it may be that other measures which differentiate between subtypes of prosocial and antisocial disposition would have led to different results. Second, the current study also focussed on a specific age range (11-15 years). This captures an important developmental period in young people’s lives. However, the results of the current study may not generalize to other age groups.

The importance of considering SWB as a meaningful clinical outcome in addition to symptom reduction has been emphasised (Pais-Ribeiro, 2004; Park, 2004; Swan et al., 2009). Research has identified the existence of a “vulnerable” group of young people who are asymptomatic but nonetheless experience reduced levels of SWB (Lyons et al., 2012; Suldo et al., 2011). Such individuals may benefit from interventions, particularly since low SWB is a predictor of future dysfunction in young people (Gilman & Huebner, 2003; Park, 2004; Procotor et al., 2009), but may be neglected by more traditional symptom focused approaches to clinical practice. The current study suggests that young people displaying greater levels of antisocial behaviour may be at higher risk of falling into this vulnerable, low SWB group. Furthermore, the current study raises the possibility that interventions designed to reduce antisocial traits, including parent training or cognitive behavioural approaches (McCart, Priester, Davies & Azen, 2006), may contribute to improvements in SWB. In contrast, the current study does not provide evidence to support interventions that
focus on enhancing prosocial traits as a means to improving SWB, although such interventions may have a secondary effect of reducing antisocial traits that could be beneficial in terms of SWB. It is also important to recognise that enhancing prosocial behaviour may have other benefits beyond an individual’s SWB, such as benefiting communities and society in general.
2.6. References


StataCorp. (2011a). *Stata structural equation modelling reference manual*. College Station, TX: StataCorp LP.

StataCorp. (2011b). *Stata Statistical Software: Release 12*. College Station, TX: StataCorp LP.


doi:10.1016/j.cpr.2010.06.003
PAPER 3

3. Psychometric Properties and Development of the Brief Adolescent Prosocial Perception Scales (BAPPS)

Word Count: 9,886

Journal: Journal of Child & Family Studies
3. 1. Abstract

Prosociality represents an important aspect of social functioning in adolescents and is related to the risk of psychological problems. The current paper describes the development and psychometric testing of two new short-form versions of prosocial perceptions named the Brief Adolescent Prosocial Perceptions Scale Self- (BAPPS-S) and Parent-report (BAPPS-P). Parent and child dyads (N = 3976; 89% White; aged 11-17 years) took part in a large cross-sectional survey (the “Mental Health of Children and Young People in Great Britain, 2004” survey). The BAPPS were completed alongside other measures of prosociality, social support and emotional and behavioural problems. Exploratory (n = 1988) and confirmatory (n = 1988) factor analysis supported a single factor solution that is related to, although separate from, conduct disorders. The scales showed good internal consistency and concurrent validity. Moreover, the BAPPS demonstrated incremental validity by accounting for significant variance in clinical outcome measures over and above that explained by existing measures of prosociality. The study demonstrated that the BAPPS have good initial psychometric properties. Potential clinical uses are discussed, including providing valuable information on young people’s strengths and resiliencies that can inform clinical formulation and intervention.
3.2. Introduction

The Positive Clinical Psychology movement has drawn attention to the importance of developing measures of positive traits in the prediction and treatment of psychological problems (Joseph & Wood, 2010; Tedeschi & Kilmer, 2005; Wood & Tarrier, 2010). Prosociality (the disposition towards social behaviours that benefit others; e.g., Chen, Li, Li, Li & Liu, 2000; Eisenberg et al., 1996; Eisenberg & Fabes, 1998) may represent such a positive trait for adolescents (defined here as young people aged 11-17 years; e.g., Steinhauser, Bösiger & Metzke, 2006). It is regarded as a core dimension of a young person’s social behaviour and competence (Chen, Li, Li, Li & Liu, 2000; Gresham, Cook, Crews & Kern, 2004; Wentzel, Filisetti & Looney 2007) and an important factor in determining subsequent adjustment (Carlo, Padilla-Walker & Day, 2011; Ladd & Profilet, 1996; Scourfeld, John, Martin, & McGuffin, 2004). The importance of measuring this construct has been underscored by research demonstrating an inverse relationship with internalizing and externalizing psychopathology in young people (Bandura, Pastorelli, Barbaranelli & Caprara, 1999; Goodman, 2001; Hay & Pawlby, 2003; Wentzel et al., 2007; Zimmer-Gembeck, Hunter & Pronk, 2007), and its positive relationship with peer acceptance (Bandura et al, 1999; Crick, 1996; Zimmer-Gembeck et al., 2007). The current paper therefore focuses on the development of two brief scales of prosociality.

The two brief scales of prosociality were adapted from two non-validated sets of items regarding “personal strengths” that were included in the “Mental Health of Children and Young People in Great Britain, 2004” survey (Green, McGinnity, Meltzer, Ford & Goodman, 2005) to provide information on areas of positive functioning in young people. Specifically there were 19 self-report items, which were derived from adolescents’ (aged 11-16 years) responses to open-ended questions regarding their strengths in an earlier survey of young people and their families. Similarly, 24 parent-report items were derived from parents’ reports of their children’s’ strengths (aged 4-16 years). These existing sets of
items were relatively long and have not previously been psychometrically evaluated. Brief scales are advantageous in routine clinical practice because they (a) limit the burden to the respondent and clinician, (b) can be more readily used on a session-by-session basis to track changes, (c) can be incorporated into assessment batteries measuring a range of constructs, and (d) be readily completed in a clinic waiting room and quickly scored by a clinician during an initial assessment appointment to yield clinically meaningful data. We have named these scales the Brief Adolescent Prosocial Perception Scales (BAPPS), comprising the self-rated BAPPS-S and parent-rated BAPPS-P.

Prosociality appears to be a trait-like construct (Eisenberg & Mussen, 1989; Hay, 1994) representing a general disposition towards a variety of specific prosocial acts and behaviours. The BAPPS assess prosociality at this higher-order characterological level (e.g., items concern being “generous”, rather than asking about particular sharing/giving-type behaviours), similar to the concept of prosocial character used by Oberle, Schonert-Reichl and Thomson (2010). We also refer to prosocial “perceptions” to emphasise the socially-defined and subjective nature of judgments of prosocial character, so that an adolescent’s self-perceptions may not necessarily reflect parental perceptions. Indeed, discrepancies in parent and child reports are often the rule rather than the exception (see review by De Los Reyes & Kazdin, 2005). Specifically in regards to prosociality, Van Roy, Groholt, Heyerdahl and Clench-Aas (2010) report only small differences between parents and children in mean ratings of prosociality and low inter-rater correlations ($r = .24$), suggesting a lack of substantial systematic differences in reporting but poor overall consistency.

Behaviours traditionally defined as prosocial include those involving helping, sharing with, or supporting others (Hay, 1994; Pastorelli et al., 1997; Weir & Duveen., 1981). However, another facet of prosociality includes affiliative behaviours demonstrating interpersonal warmth, social cooperation, or inclusiveness (qualities such as being polite, friendly, or easy-going; Bailey, 1998; Greener, 2000; Scourfeld et al., 2004). A further
facet of prosocial behaviour may involve a consistency with prosocial expectations (e.g., being ‘well-behaved’, working hard at school; Chen et al., 2000; Wentzel et al., 2007). This final form of ‘normative’ prosocial behaviour may be more relevant in interactions with adults (Greener, 2000). Prosociality has been distinguished from various related factors, including self-efficacy (Bandura et al., 1999), empathy and moral reasoning (Culotta & Goldstein, 2008; Fabes et al., 1999), and sociability (Chen et al., 2000).

Focussing on areas of positive functioning like prosociality is valuable because concentrating on psychopathology alone provides only a limited picture of an individual’s well-being (Lyons, Huebner, Hills & Shinkareva, 2012; Park, 2004; Suldo, Thalji & Ferron, 2011). Individuals with no symptoms of psychopathology, whose well-being is still impaired in other ways, could be excluded if areas of positive functioning are ignored. Prosociality has been recognised as an important area of a young person’s social competence, which may play a central role in the development of their peer relationships and the navigation of their social world (Hay, Payne & Chadwick, 2004; Zimmer-Gembeck et al., 2007). Low levels of prosociality may therefore be an important indicator of impaired overall well-being.

The importance of considering positive functioning is also apparent in the growing interest in resilience, which focuses on those factors which may protect or buffer individuals against the impact of stressful or aversive experiences (Johnson, Wood, Gooding, Taylor & Tarrier, 2011; Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003). There is evidence that considering positive protective factors can explain additional variance in outcomes over and above what is accounted for by considering areas of impaired functioning alone (Wood & Joseph, 2010). Prosociality likely interacts with the stressors young people face (Bleichman & Culhane, 1993; Fabes et al., 1999). For example, prosociality is associated with greater use of more active coping styles (Tam, 2008) and prosocial responding may itself provide a means of coping with some stressors (Bleichman & Culhane, 1993), such as resolving social conflict and maintaining supportive
relationships. As such, prosociality may provide a buffer against aversive or stressful experiences, thus representing a source of resilience (Haroz, Murray, Bolton, Betancourt & Bass, 2013). It has been suggested that greater prosociality may buffer against worsening symptoms in young people facing psychological difficulties (Chen et al., 2000, Haroz, et al., 2013). Consequently, the assessment of prosociality may be valuable in providing information concerning resilience.

Assessing this construct is particularly relevant in adolescence. This is a time of numerous transitions (biological, social and academic) and challenges (Blechman & Culhane, 1993; Fabes, Carlo, Kupanoff, & Laible, 1999; Wentzel et al., 2007) where for some young people emotional problems may have their first onset (Zahn-Waxler, Shirtcliff & Marceau, 2008). The ability to assess and monitor positive traits in those individuals who struggle during this period is likely to be helpful, and validated instruments of such traits are necessary. With regards to cognitive development, adolescence is also a time where young peoples’ self-concepts become increasingly abstract and open to self-reflection (Harter, 1999). This is therefore a time when young people may be more able to reflect upon themselves as having or lacking prosocial characteristics, and so the assessment of perceptions of prosociality becomes pertinent at this age. Adolescence is also a time when peer-relationships are of increasing significance (Harter, 1999), and these new pressures may interact with young people’s prosociality. Indeed, there is some suggestion that the more affiliative forms of prosocial behaviour become more salient as children reach early adolescence (12 years old), and these prosocial behaviours may serve a particular function in building social relationships (Greener, 2000). For example, it has been shown that inter-personally affiliative behaviours, such as asking questions about the other person, become more a part of prosocial behaviour as children become older (from ages 8-12 years; Greener & Crick, 1999). In light of the significance of prosociality during adolescence, the BAPPS have been developed for this age group.
The BAPPS has several advantages over existing measures of prosociality. Scales, including the Children’s Social Behavior Scale (CSBS; Crick, 1996), the Child Behavior Scale (CBS; Ladd & Profilet, 1996), the Social Behaviour Questionnaire (SBQ; Tremblay et al., 1991), and the Prosocial Behaviour Questionnaire (PBS; Weir & Duveen, 1981), are all limited in more than one of the following ways: 1) They were developed for a school setting (e.g., relying on teacher ratings), limiting applicability to other contexts as items may not reflect the presence (or absence) of prosociality outside of school (e.g., interactions with parents, older and younger siblings, and peers outside of the classroom), which may nonetheless be important to consider in mental health settings. 2) They lack a self-report version. 3) They have not been developed for use with adolescents or older adolescents (the CBS has been validated in ages up to 13 years; Ladd, Herald-Brown & Andrews, 2009). The Social Skills Rating System (SSRS; Gresham & Elliot, 1990) lacks a specific prosocial factor (although the cooperation factor may relate to this construct) and there have been recent failures to replicate its factor structure (Whiteside, McCarthy & Miller, 2007). The prosocial subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) has been validated in adolescents, but its item content appears to exclude elements of prosociality, including affiliative or co-operative behaviours (e.g., “Polite”, “Nice personality”), and conformity with prosocial expectations (“Reliable and responsible”), which are covered by the BAPPS’ initial items. In the current study we use the SDQ prosocial scale as a comparison measure due to its suitability in adolescents and its wide use both in research and in clinical settings (e.g., Ford, Tingay, Wolpert & the CORC steering group, 2006). Moreover, in a review of the literature on prosociality and well-being we found the SDQ prosocial scale to be the most widely used questionnaire measure of prosociality (Taylor, Wood & Horan, in preparation).

In addition to the SDQ prosocial subscale, we considered various other outcomes against which the BAPPS could be validated. Concurrent validity was assessed in terms of the relationship with emotional and behavioural problems, behavioural indicators of
adjustment (school exclusion and self-harm), and positive areas of functioning (social support and peer relationships). Relationships between the BAPPS and these variables were expected considering the relationship between prosociality, well-being and social functioning (Bandura et al., 1999; Goodman, 2001; Hay & Pawlby, 2003; Wentzel et al., 2007; Zimmer-Gembeck et al., 2007). Incremental validity (Haynes & Lench, 2003) was assessed by exploring relationships between the BAPPS and psychiatric disorders (where a relationship is also expected based on past research, Goodman, 2001), whilst controlling for the SDQ prosocial subscale. We focussed on clinically meaningful outcomes, including the presence of psychiatric disorders based upon ICD-10 diagnoses (for tests of predictive and incremental validity) and school exclusion and self-harm for concurrent validity. The latter two variables were included as proxy indicators of psychosocial adjustment. School exclusion represents an outcome that can be reliably assessed and has consequences for a young person’s emotional well-being (e.g., McCrystal, Percy & Higgins, 2007). Similarly, self-harm is a pertinent issue for young people that can occur as a manifestation of emotional distress (e.g., Laye-Gindhu & Schonert-Reichl, 2005).

3.3. Summary and Hypotheses

In summary, the aim of the current study was to develop and test the psychometric properties of two new brief measures of prosocial perceptions. We conceptualised the construct of prosocial perceptions as a uni-dimensional continuum, capturing the extent to which young people view themselves (or parents view their children for the parent-report version) as being disposed towards prosocial behaviour and acts. The first part of this paper focuses on the development of these scales from the non-validated, pre-existing “personal strengths” items and establishes the factor structure of these scales. The second part of this paper then focuses on testing the reliability and validity of these measures. This study represents a secondary analysis of the “Mental Health of Children and Young People in Great Britain, 2004” survey (Office of National Statistic, 2004). This had numerous
advantages including efficiency of effort, more precise parameter estimates obtained due to smaller standard errors, enabling a large sample allowing both exploratory and confirmatory tests of factor structure and access to a range of relevant positive and negative outcome variable.

Concerning concurrent validity, the BAPPS were expected to be strongly correlated with the SDQ prosocial subscales \( r \geq .50 \), because these measures assess the same construct, albeit with definitional differences. Similarly, mild-to-moderate relationships (e.g., \( r \geq .20 \leq .50 \)) were expected with social support (a positive relationship), peer relationships (a positive relationship), emotional and behavioural problems (a negative relationship), and school exclusion and self-harm (a negative relationship), because these are related but theoretically distinct constructs that are multiple determined rather than assessing the same construct (Ahadi & Diener, 1989). We expected the BAPPS to demonstrate incremental validity over the SDQ prosocial subscale in predicting psychiatric problems, supporting its need beyond this more commonly used existing scale.

3.4. Method

3.4.1. Participants

Participants were parent-child dyads recruited as part of the “Mental Health of Children and Young People in Great Britain, 2004” survey (Office of National Statistic, 2004). This was a cross-sectional survey assessing a range of psychosocial variables in children and adolescents through a combination of self-report and interview methods conducted with both the young person and their parent (used in reference to any legally recognised parent, including non-biological parents). Details of the survey sampling procedure, variables, and goals are outlined in the survey technical manual (Green et al., 2005). The study protocol involved seeking consent from all participants. Interviews were conducted by trained interviewers employed to work on the survey. The current sample
focused on English speaking children aged 11 years or over \( (n = 3976) \). At the analytic stage, the sample was randomly split into exploratory (E; aged \( M = 13.49 \) years, \( SD = 1.70 \)) and confirmatory (C; aged \( M = 13.36 \) years, \( SD = 1.67 \)) samples \( (n = 1988 \) each). Demographic information is reported in Table 1. The median household income category was £25,000 to £29,999 for both samples. The two groups did not differ in terms of gender, \( \chi^2 (1) = 0.12, p = 0.73 \), ethnicity, \( \chi^2 (4) = 5.51, p = 0.24 \), family economic status, \( \chi^2 (2) = 4.66, p = 0.10 \), family type, \( \chi^2 (2) = 1.81, p = 0.40 \), or the prevalence of emotional and conduct disorder, \( \chi^2 (1) = 0.16, p > 0.69 \). There was a marginal difference in age, \( p = 0.01, d = 0.08 \).

3.4.2. Measures

**Brief Adolescent Prosocial Perceptions Scale (BAPPS).** Items for the BAPPS were generated from responses to open-ended questions featured in the 1999 version of the survey (for details see Green et al., 2005), asking parents and children to describe their (the child’s) strengths. Adolescents’ (11-16 years) most frequently self-reported strengths formed the basis of the set of self-report items, whilst parents’ most frequently reported strengths for their children (4-16 years) formed the basis of the parental-report items (Goodman, personal communication). These items from the personal strengths scale were then used as the basis for developing the self-report (BAPPS-S) and parent-report (BAPPS-P) scales. Respondents were asked to rate a series of adjectives or descriptions (e.g., Caring/kind-hearted) in terms of their applicability to the adolescent on a three-point scale \((0 = ‘no’, 1 = ‘a little’, 2 = ‘a lot’)\). Item content varied with substantial overlap between the BAPPS-P and BAPPS-S, with the former having 24 items and the latter 19 items. Initial items are listed in Appendix II.
Table 1: Demographic Information for the Exploratory and Confirmatory Samples (both $n = 1988$)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Exploratory sample $n$ (%)</th>
<th>Confirmatory sample $n$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender (female)</strong></td>
<td>951 (47.84%)</td>
<td>962 (48.39%)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1763 (88.68%)</td>
<td>1775 (89.29%)</td>
</tr>
<tr>
<td>Black</td>
<td>45 (2.26%)</td>
<td>30 (1.51%)</td>
</tr>
<tr>
<td>South Asian</td>
<td>93 (4.68%)</td>
<td>94 (4.73%)</td>
</tr>
<tr>
<td>Mixed</td>
<td>55 (2.77%)</td>
<td>46 (2.31%)</td>
</tr>
<tr>
<td>Other</td>
<td>31 (1.56%)</td>
<td>42 (2.11%)</td>
</tr>
<tr>
<td><strong>Family economic status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two parents working</td>
<td>1390 (69.92%)</td>
<td>1367 (68.76%)</td>
</tr>
<tr>
<td>One parent working</td>
<td>319 (16.05%)</td>
<td>293 (14.74%)</td>
</tr>
<tr>
<td>No parents working</td>
<td>265 (13.33%)</td>
<td>309 (15.54%)</td>
</tr>
<tr>
<td><strong>Family type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>1319 (66.35%)</td>
<td>1322 (66.50%)</td>
</tr>
<tr>
<td>Cohabiting</td>
<td>178 (8.95%)</td>
<td>156 (7.85%)</td>
</tr>
<tr>
<td>Lone parent</td>
<td>491 (24.70%)</td>
<td>510 (25.65%)</td>
</tr>
<tr>
<td><strong>Psychiatric Diagnoses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional disorder</td>
<td>99 (4.98%)</td>
<td>100 (5.03%)</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>125 (6.29%)</td>
<td>119 (5.99%)</td>
</tr>
</tbody>
</table>

*Note:* Ethnicity information was missing for one individual in both samples. Family economic status information was missing for $n = 14 - 19$ cases across the samples.
**Strengths and Difficulties Questionnaire (SDQ).** The SDQ is a widely used self-report scale with both self-report (for young people aged 11-16 years) and parent-rated versions, which assess emotional and behavioural problems and strengths in young people (Goodman, 2001). The 5-item prosocial subscale (concurrent validity; “I am kind to younger children”), 20-item total score (concurrent validity), and 5-item conduct disorder subscale (discriminant validity; “I fight a lot. I can make other people do what I want”) were used in this study. The factor structure of the SDQ has been supported by exploratory (Goodman, 2001) and well-fitting confirmatory factor analysis (Van Roy, Veenstra & Clench-Aas, 2008). However, it is important to note that this factor structure has not been replicated elsewhere (e.g., Dickey & Blumberg, 2004). Scores on the SDQ are predictive of psychiatric diagnoses (specificity = 85%; sensitivity = 80%; from Goodman, Ford, Corbin & Meltzer, 2004). Internal reliabilities for the current confirmatory sample were between $\alpha = .67$ and $\alpha = .70$ for the prosocial subscale and between $\alpha = .79$ and $\alpha = .85$ for the total scale score.

**Development and Well-Being Assessment (DAWBA).** The DAWBA is a structured interview that assesses the presence of behavioural and emotional problems in young people (Goodman, Richards, Gatward & Meltzer, 2000). This measure combines closed (e.g., “How often does his/her fear of social situations result in him/her becoming upset like this?”) and open questions (e.g., “What else has s/he worried about?”) across parent and young person informants. Psychiatric diagnoses (ICD-10) are provided by clinically-trained raters with the assistance of a computer algorithm. DAWBA diagnoses converge with other independent clinical judgments and can distinguish young people involved in mental health services from those who are not (specificity = 89%; sensitivity = 92%; from Goodman et al., 2000).

**Social Support Scale (SSS).** The SSS was employed in the survey as a measure of social support availability completed by the young person (Green et al., 2005). This scale consists of ten items (“There are people I know who accept me just as I am”) which are
rated on a scale from 0 ("Not true"/"None") to 2 ("Certainly true"/"Two or more"). The items are summed to produce a total score, with higher scores indicating greater availability of social support. Children with lower scores on this scale had higher rates of emotional and behavioural problems (Green et al., 2005). The scale had an internal reliability of $\alpha = .68$ in the current confirmatory sample. A copy of this scale is presented in Appendix III.

**Behavioural Outcomes.** Two behavioural outcomes linked to emotional dysfunction were used to determine concurrent validity. The first was school exclusion, based upon a single dichotomous parent-rated item “has your child ever been excluded from school?” The second was lifetime self-harm. This variable was scored positive if parents responded affirmatively to any of four items regarding self-harm that were included in the survey (e.g., “Over the whole of (child’s) lifetime, has (child) ever tried to harm or kill him/herself?”). Two parent-rated items assessed peer relationships. Parents rated whether their child found making friends (“What is X like at making friends?”) and keeping friends (“What is X like at keeping the friends he/she has made?”) “Harder than average”, “About average” or “Easier than average”.

**3.4.3. Psychometric Procedure**

Scale development involved four steps. First, items from the full length scales were reviewed by independent judges and items deemed unrelated to prosociality were excluded. Second, we examined the structure of responses to the items using Exploratory Factor Analysis (EFA; using a randomly selected half of the sample). The scale items were selected based on loadings. Third, the structure of these scales was tested through Confirmatory Factor Analysis (CFA; using the second half of the sample). The progression from exploratory to confirmatory factor analysis represents best practice in scale development (Worthington & Whittaker, 2006). Conducting the factor analyses on different samples is important. The EFA may fit the particular idiosyncrasies (e.g., random error) of one dataset but not generalise to others. The CFA in a separate sample helps test if
the model can generalise to a different dataset (Howell, 2007). Fourth, we then tested the validity and reliability of these scales. We assessed discriminant validity by testing whether our prosocial scale items exist on the same continuum as items representing conduct problems, or whether it formed a separate although correlated factor (McCullough, Emmons & Tsang, 2002).

Analyses were undertaken via SPSS version 20.0 (IBM/SPSS, Chicago, USA), unless otherwise stated. Missing data were handled using multiple imputation (five imputed datasets; Schafer & Graham, 2002), except for Confirmatory Factor Analysis (CFA) where Maximum Likelihood with Missing Values (MLMV) was used (StataCorp, 2011a). As the Exploratory Factor Analysis (EFA) command in SPSS does not support the pooling of multiple imputed datasets, this analysis was undertaken separately on each imputed dataset, and discrepancies were explored. The proportion of missing data per variable in the exploratory sample was ≤ 1.4% and ≤ 16.2%, for the BAPPS-P and BAPPS-S data, respectively. The proportion of missing data per variable in the confirmatory sample was ≤ 1.9% and ≤ 17.9%, for the BAPPS-P and BAPPS-S data, respectively. The discrepancy in missing data for the BAPPS-P versus BAPPS-C was due to young people showing greater rates of missing data than parents. Examination of missing data patterns revealed that this missingness was largely due to young people not completing any of the self-report variables used in the study, rather than being due to any systematic non-completion of certain variables (Non-completion of all self-report items represented the largest pattern of missing data in both samples involving 300-323 cases). This may have been attributable to factors such as young people not being home at times when the interviewers visited or not wishing to complete measures at the time.

The exploratory sample correlation matrix was analysed via principle axis Exploratory Factor Analysis (EFA). The principal axis method was therefore used as this allows covariance matrices as input and often gives comparable results to maximum likelihood methods but with a lower risk of improper solutions (Fabrigar, Wegener,
MacCallum & Strahan, 1999). Velicer’s Minimum Average Partial (MAP) test was employed to determine how many factors to extract, as this has been shown in simulation studies to more accurately identify correct factors solutions than other approaches such as the scree plot or Kaiser criterion (Zwick & Velicer, 1986). This analysis employs an incremental approach, exploring how partialing out successive components in the data affects inter-correlations between variables. Through this process, the number of factors extracted is decided based on whether or not there is systematic variance remaining in the data, with no further factors being extracted at the point where only non-systematic variance remains. Promax rotation was employed to allow for inter-correlated factors.

These analyses were undertaken using the syntax developed by O’Connor (2000). CFA was conducted in Stata version 12 (StataCorp, 2011b). Adequate fit was associated with Residual (SRMR) \( \leq .10 \), Comparative Fit Index (CFI) \( \geq .90 \) (Weston & Gore, 2006), and Root Mean Square Error of Approximation (RMSEA) \( \leq .08 \) (this was not available with MLMV estimation)(Byrne, 2001). Good fit was therefore associated with CFI \( \geq .95 \), SRMR < .09, and RMSEA < .06 (Hu & Bentler, 1999). The change in the \( \chi^2 \) statistic was used as a means of comparing nested models. A significant reduction in \( \chi^2 \) favours the more complex model.

3.5. Results

3.5.1. Item Screening

Items were initially screened to exclude those that were unrelated to the concept of prosocial perceptions. Three judges independently reviewed items. Two had achieved PhD level qualifications in psychology, with over 12 and 3 years previous experience working with young people, both within clinical and research contexts. The third judge had a masters-level qualification relating to research involving scale development with children and had received specific training in the use of parenting interventions. One judge was also parent to an adolescent boy. Judges were provided with a brief definition of prosociality (see Appendix IV), and asked to identify items from the BAPPS that they believed were
unrelated to this concept. Items were excluded if two or more judges agreed it was unrelated to prosociality. This led to the exclusion of five items from the BAPPS-S and six items from the BAPPS-P (Excluded items indicated in Appendix II).

3.5.2. Exploratory Factor Analysis

The BAPPS-S and BAPPS-P items were subjected to separate EFAs. Bartlett’s test \((p < .01)\) and the Kaiser-Meyer-Olkin statistic \((\geq .88)\) indicated that the data were appropriate for factor analysis in both cases. For the BAPPS-P items (initial eigenvalues = 5.61, 1.57, 1.28, 1.05, 0.92, 0.78, 0.77, 0.68, 0.66, 0.63) the MAP test supported a two-factor-solution (smallest average squared correlation = 0.01), explaining 27.66\% and 5.76\% of the variance. For the BAPPS-S items (initial eigenvalues = 4.21, 1.42, 1.04, 0.96, 0.82, 0.79, 0.73, 0.66, 0.66, 0.60), the MAP test supported a single factor solution (smallest average squared correlation = 0.01), explaining 25.01\% of the variance. These results were replicated across all five imputed datasets. The factor loadings for the BAPPS items are reported in Table 2. A review of factor loadings for the BAPPS-P suggested that the first factor represented general prosocial perceptions, with items reflecting an inclusive and supportive interpersonal style (e.g., “Affectionate”, “Easy-going”) and consideration of others (e.g., “Generous”, “Caring/ kind hearted”). In contrast, the second factor appeared to represent consistency with expectations around school (e.g., “Good at school”, “Keen to learn”). Consequently, whilst these items may have some relation to the concept of prosociality, as they were not screened out by the independent judges, they also appeared to load onto a second factor, distinct from the initial, more general, prosociality factor. It was not an aim of the research to develop a measure specific to a school context, and for this reason we decided to focus on the first factor only in developing the BAPPS-P. Following the same reasoning, the item “Good at school work” was also excluded from the BAPPS-S.
### Table 2: Factor Loadings from Exploratory Factor Analysis of BAPPS Items

<table>
<thead>
<tr>
<th>Item</th>
<th>BAPPS-S</th>
<th>BAPPS-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EFA Loading</td>
<td>CFA Loading</td>
</tr>
<tr>
<td>Caring/ kind hearted</td>
<td>.65</td>
<td>.64</td>
</tr>
<tr>
<td>Nice personality</td>
<td>.63</td>
<td>.55</td>
</tr>
<tr>
<td>Polite</td>
<td>.59</td>
<td>.64</td>
</tr>
<tr>
<td>Generous</td>
<td>.58</td>
<td>.58</td>
</tr>
<tr>
<td>Well behaved</td>
<td>.55</td>
<td>.57</td>
</tr>
<tr>
<td>Reliable and responsible</td>
<td>.54</td>
<td>.56</td>
</tr>
<tr>
<td>Good at school work</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>Good with friends</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>Easy-going</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>Good fun/ good sense of humour</td>
<td>.44</td>
<td></td>
</tr>
<tr>
<td>Trait</td>
<td>BAPPS-S</td>
<td>BAPPS-P</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Out-going/ sociable</td>
<td>.44</td>
<td></td>
</tr>
<tr>
<td>Reliable and responsible</td>
<td>.43</td>
<td>.33</td>
</tr>
<tr>
<td>Raising money for charity/ helping others</td>
<td>.38</td>
<td></td>
</tr>
<tr>
<td>Good with friends</td>
<td>.39</td>
<td>.12</td>
</tr>
<tr>
<td>Helpful at home</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>Helps around the home</td>
<td>.27</td>
<td>.11</td>
</tr>
<tr>
<td>Independent</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>Good at school work</td>
<td>-.15</td>
<td>.89</td>
</tr>
<tr>
<td>Does homework without needing to be reminded</td>
<td>-.11</td>
<td>.69</td>
</tr>
<tr>
<td>Keen to learn</td>
<td>.11</td>
<td>.60</td>
</tr>
<tr>
<td>Independent</td>
<td>.19</td>
<td>.25</td>
</tr>
<tr>
<td>Keeps his/her bedroom tidy</td>
<td>.08</td>
<td>.18</td>
</tr>
</tbody>
</table>

Note: BAPPS-S = self-rated; BAPPS-P = parent-rated; EFA = Exploratory Factor Analysis; CFA = Confirmatory Factor Analysis; Factor loadings are standardized; Loadings for EFA reported for first imputed dataset; Equivalent loadings replicated across four remaining imputed datasets.
3.5.3. BAPPS Development

The aim of the study was to develop a brief measure of prosocial perceptions. Only items with factor loadings ≥ .50, equating to ≥ 25% overlapping variance with the construct, were included in the scale (≥ 10% overlapping variance has been recommended in the context of longer scales; Costello & Osborne, 2005). This led to the six highest loading items being chosen (excluding the school-specific item) for the BAPPS-S. This six-item format was also employed for the BAPPS-P. Items included in the final measure are indicated by bold type in Table 2. The skewness for these items is also reported in Table 2. Ordinal alpha coefficients (Gaderman, Guhn & Zumbo, 2012; computed with n = 1665-1961 as could not be conducted on the multiply imputed dataset) for the scales were respectively α = .85, and, α = .88, for the BAPPS-S and BAPPS-P indicating good internal consistency reliability. Moreover, the inclusion of a further item to the scales made only a trivial difference to the internal consistency, Δ α < .02, suggesting the improvement in reliability did not justify the increased response burden. Cronbach’s alpha coefficients were similar, at α = .77, and, α = .75, for the BAPPS-S and BAPPS-P. On the basis of this, total scores for both the BAPPS-S and BAPPS-P were formed through summing the relevant items. Final versions of the BAPPS are provided in Appendix V.

3.5.4. Confirmatory Factor Analysis (CFA)

The selected items were modelled as indicators of two separate but correlated BAPPS-P and BAPPS-S factors using MLMV estimation. These two factors were estimated within the same model to allow a calculation of their latent correlation. Twenty-two all-missing cases were excluded because this degree of missingness cannot be handled by MLMV. This model fit the data well; \( \chi^2 (53, n = 1966) = 241.14, p < .01, CFI = .96, RMSEA = .04 \). The BAPPS-P and BAPPS-S were correlated at \( r = .44 \). The associated
path coefficients for the final model are reported in Table 2. All path coefficients were significant ($p < .05$).

The MLMV estimation method, whilst suitable for managing missing values, also makes assumptions about normality that may not be tenable with the ordinal-type items of the BAPPS. Therefore, we repeated the CFA using Weighted Least Squares (WLS) estimation on the non-imputed data. This method is a form of asymptotic distribution free estimation that makes less restrictive distributional assumptions and so is more appropriate where normality assumptions are not met (StataCorp, 2011a). This model fell slightly below our criteria for good fit. $\chi^2 (53, n = 1620) = 157.31$, $p < .01$, $CFI = .89$, $RMSEA = .04$, $SRMR = .06$. Modification indices suggested that allowing the error-term for the BAPPS-S item “Well-behaved” to covary with the error terms for the BAPPS-S items “Polite” and “Reliable and responsible”, and with the error term for the BAPPS-P item “Generous”. These items all appear to share a common theme of compliance with prosocial (and likely authority-orientated) expectations, accounting for their inter-correlation. Allowing these error terms to covary (3 fewer parameters), led to a well-fitting model $\chi^2 (50, n = 1620) = 99.39$, $p < .01$, $CFI = .95$, $RMSEA = .03$, $SRMR = .05$.\textsuperscript{1}

3.5.5. Concurrent Validity

Planned correlations, performed to test the concurrent validity of the BAPPS, are reported in Table 3. Concurrent validity was shown through the large correlations (Cohen, 1988) between the child-rated prosocial subscale of the SDQ and the BAPPS-S ($r = .57$), and between the parent-rated SDQ prosocial subscale and BAPPS-P ($r = .57$), showing that the BAPPS correlated with existing scales assessing a similar construct. Further concurrent validity was shown with the theoretically related construct of social support, which correlated with the BAPPS-S ($r = .34$) and BAPPS-P ($r = .17$), and emotional and behavioural problems (SDQ total), which correlated negatively with the BAPPS-S (child-rated SDQ: $r = -.43$) and BAPPS-P (parent-rated SDQ: $r = -.39$).
Table 3: Results of Correlations between BAPPS-S, BAPPS-P and SDQ Subscale Score

<table>
<thead>
<tr>
<th></th>
<th>BAPPS-S</th>
<th>BABBS-P</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SDQ prosocial score – self-rated</td>
<td>.57</td>
<td>.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SDQ prosocial score – parent-rated</td>
<td>.34</td>
<td>.57</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Social support – self-rated</td>
<td>.34</td>
<td>.17</td>
<td>.31</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SDQ total score – self-rated</td>
<td>-.32</td>
<td>-.39 ( -.24b)</td>
<td>-.29</td>
<td>-.21</td>
<td>-.32</td>
<td></td>
</tr>
<tr>
<td>5. SDQ total score – parent-rated</td>
<td>-.32</td>
<td>-.39 ( -.24b)</td>
<td>-.19</td>
<td>-.39</td>
<td>-.30</td>
<td>.49</td>
</tr>
</tbody>
</table>

Note: BAPPS-S = self-rated; BAPPS-P = parent-rated; SDQ = Strength & Difficulties Questionnaire; Spearman’s correlations used; All correlations significant, p < .001; a Partial correlation controlling for self-rated SDQ prosocial score; b Partial correlation controlling for parent-rated SDQ prosocial score.
Table 4: Descriptive Statistics and Pairwise Comparisons

<table>
<thead>
<tr>
<th></th>
<th>BAPPS-P</th>
<th></th>
<th>BAPPS-S</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Descriptives</td>
<td>Pairwise comparisons</td>
<td>Descriptives</td>
<td>Pairwise comparisons</td>
</tr>
<tr>
<td></td>
<td>Means</td>
<td>SD</td>
<td>Comparison</td>
<td>t</td>
</tr>
<tr>
<td>Ability to make friendships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Harder than average (n = 226)</td>
<td>9.35</td>
<td>2.46</td>
<td>1 vs. 2</td>
<td>4.76*</td>
</tr>
<tr>
<td>2. About Average (n = 741)</td>
<td>10.23</td>
<td>2.05</td>
<td>1 vs. 3</td>
<td>7.40*</td>
</tr>
<tr>
<td>3. Easier than average (n = 1021)</td>
<td>10.65</td>
<td>1.72</td>
<td>2 vs. 3</td>
<td>4.53*</td>
</tr>
<tr>
<td>Ability to maintain friendships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Harder than average (n = 118)</td>
<td>8.24</td>
<td>2.59</td>
<td>1 vs. 2</td>
<td>7.67*</td>
</tr>
<tr>
<td>2. About Average (n = 692)</td>
<td>10.15</td>
<td>2.05</td>
<td>1 vs. 3</td>
<td>10.03*</td>
</tr>
<tr>
<td>3. Easier than average (n = 1178)</td>
<td>10.67</td>
<td>1.71</td>
<td>2 vs. 3</td>
<td>5.61*</td>
</tr>
</tbody>
</table>

Note: Descriptives based on single imputed dataset, t values based on pooled imputed datasets; * p < .017.
Moreover, meaningful correlations remained between the BAPPS and SDQ total scores even after adjusting for the shared relationship with SDQ prosocial score, providing initial evidence of incremental validity.

Concurrent validity was also assessed by comparing scores on the BAPPS between young people displaying self-harm at some point in their lifetime, and who have previously been excluded from school. Young people who had been excluded (n = 155; BAPPS-S: \( M = 7.53, SD = 2.13; \) BAPPS-P: \( M = 8.74, SD = 2.82 \)) had significantly lower scores on the BAPPS than those who had not been excluded (BAPPS-S: \( M = 9.41, SD = 2.06; t = 10.48, p < .01, d = 0.91; \) BAPPS-P: \( M = 10.48, SD = 1.83; t = 7.23, p < .01, d = 0.92 \)). Young people who had self-harmed (n = 65; BAPPS-S: \( M = 8.61, SD = 2.14; \) BAPPS-P: \( M = 9.72, SD = 2.15 \)) had significantly lower scores on the BAPPS than those who had not self-harmed (BAPPS-S: \( M = 9.28, SD = 2.12; t = 2.24, p = .04, d = 0.32; \) BAPPS-P: \( M = 10.37, SD = 1.97; t = 2.07, p = .05, d = 0.33 \)). Effect sizes were small for self-harm and large for school exclusion (Cohen, 1988). Whilst t-tests are based on pooled imputed datasets, descriptive statistics are reported from the first imputed dataset, since standard deviations cannot be estimated for the pooled dataset.

Finally, concurrent validity was assessed by comparing scores on the BAPPS between young people who differed in terms of their ability to make and maintain friendships. Descriptive statistics relating to this analysis are reported in Table 4. Kruskall-Wallis tests revealed significant differences in both BAPPS-S and BAPPS-P scores for ability to make and maintain friendships (all \( p < .01 \)). The results of pairwise comparisons using Bonferroni-corrected (\( p = .017 \)) t-tests are reported in Table 4. Young people classified as finding, making and maintaining friendships easier than average scored significantly higher on the BAPPS than those who found making and maintaining friendships harder than average, with moderate to large effect sizes emerging for the BAPPS-P and small to moderate effect sizes for the BAPPS-S.
3.5.6. Discriminant Validity

We tested whether prosocial perceptions existed on the same factor as conduct problems, or whether prosocial perceptions were a separate, although correlated factor. Following McCullough and colleagues (2002), the latter possibility would be taken as evidence of the discriminant validity of the scale. A CFA model (MLMV estimation) whereby the BAPPS and SDQ conduct problems subscale loaded onto a single common factor was compared with a model where the SDQ and BAPPS items loaded onto two distinct but correlated factors. The child-rated SDQ items were used in conjunction with the BAPPS-S, and parent-rated SDQ items used in conjunction with the BAPPS-P. The two-factor-model demonstrated a better fit for both the BAPPS-S ($\Delta \chi^2 (1) = 176.96$, $p < .01$) and the BAPPS-P ($\Delta \chi^2 (1) = 492.40$, $p < .01$). In both cases the two factors were correlated ($r = -.70$ and $r = -.66$, for the BAPPS-S and BAPPS-P, respectively) suggesting the factors are strongly associated but distinct. Equivalent findings emerged with WLS estimation.

3.5.7. Incremental Validity

Incremental validity was determined by assessing whether BAPPS scores could significantly predict the presence of psychiatric diagnoses (ICD-10) when controlling for SDQ prosocial score, via logistic regression. The BAPPS-P demonstrated a bivariate relationship with diagnoses, $OR = .67$ (95% CI = .62 - .71), that remained when adjusting for parent-rated SDQ prosocial score, $OR = .72$ (95% CI = .66 - .78). Likewise, the BAPPS-S demonstrated a bivariate relationship with diagnoses, $OR = .74$ (95% CI = .69 - .80), that remained when adjusting for self-rated SDQ prosocial score, $OR = .73$ (95% CI = .66 - .80). Both measures therefore demonstrated incremental validity. The unadjusted odds ratios indicated that there was a 33% or 26% reduction in the odds of receiving a psychiatric diagnosis per unit change in the BAPPS-P or BAPPS-S, respectively.
3.6. Discussion

The current study described the development and psychometric testing of two brief clinical tools for assessing prosocial perceptions in adolescents. A single factor structure was supported for both scales through exploratory and confirmatory factor analysis in two separate large samples of adolescent-parent dyads. The scales were also determined to load onto a separate factor to conduct problems. Concurrent validity was supported via the pattern of correlations between the BAPPS and existing measures of prosociality, social support, peer relationships and emotional and behavioural problems. Concurrent validity was also demonstrated by significantly lower BAPPS scores in adolescents who had been excluded from school or self-harmed. The size of these effects was in the large range for school exclusion, suggesting a particularly strong relationship here. Large effect sizes have been described as “grossly perceptible” (equivalent to the height difference between 13 and 18 year old girls; pp. 26-27, Cohen, 1988). The BAPPS were associated with psychiatric diagnoses over and above an existing measure of prosociality, the widely used SDQ. As such the added clinical value of the BAPPS in providing information untapped by existing measures was supported.

The BAPPS provide an assessment both of young peoples’ self-perceptions and their parents’ perceptions of the extent to which they are disposed towards prosocial behaviour and acts. Consistent with previous research into prosociality, greater scores on these measures were associated with better social functioning and peer relationships (e.g., Bandura et al, 1999; Crick, 1996; Hay et al., 2004; Zimmer-Gembeck et al., 2007) and a lower risk of psychological or behavioural problems (Bandura et al., 1999; Goodman, 2001; Hay & Pawlby, 2003; Wentzel et al., 2007; Zimmer-Gembeck et al., 2007). The relationship between prosociality and psychological difficulties may be mediated by the role prosociality plays in the development of social relationships (Greener, 2000; Hay et al., 2004; Zimmer-Gembeck et al., 2007) and coping with difficult experiences (Blechman
& Culhane, 1993; Tam, 2008). In the current study, prosociality had a particularly strong relationship with school exclusion. This may be due to young people low in prosociality being at a higher risk of behavioural problems that could contribute to the likelihood of school exclusion.

The medium sized association observed between the BAPPS-S and BAPPS-P is consistent with the wider literature on informant discrepancies (De Los Reyes & Kazdin, 2005). Research into such discrepancies has suggested they may be clinically meaningful phenomena, as opposed to methodological nuisances (e.g., Kim & Chiu, 2011; Taylor & Wood, in press). Consequently, the provision of both parent and self-rated forms of the BAPPS is important. The difference in item content between the scales reflects the likelihood that parental and adolescent perceptions of what is prosocial vary in subtle but potentially meaningful ways, which may have been picked up in the initial generation of items and subsequent item inter-correlations. Forcing the scales to have matching item content may therefore have impaired their individual validity. It was also notable that whilst the results indicated that prosocial perceptions and conduct problems lay on two distinct continuums, the correlation between these factors was very high. Such high correlations between separate factors have been known to occur between other positive psychological constructs, and therefore do not necessarily challenge the conceptualisation of prosocial perceptions and conduct problems as distinct factors (Linley, Maltby, Wood, Osborne & Hurling, 2009). Moreover, the presence of distinct prosocial and externalizing factors parallels the factor structure of other measures (e.g., Goodman, 2001).

A number of limitations of the present study require mention. The data were cross-sectional and for this reason it was not possible to obtain test re-test reliability statistics. Further prospective research would be needed to address this issue. The current study also employed a single existing scale of prosocial behaviour against which to assess concurrent validity. The SDQ prosocial subscale was suited for this purpose due to its established psychometric properties and common use as a clinical tool. Other measures of prosocial
behaviour, such as the Social Behaviour Questionnaire (Tremblay et al., 1991) or Prosocial Behaviour Questionnaire (Weir & Duveen, 1981) were inappropriate for the current study because they were developed for younger children and lack self-report versions. Further research is needed contrasting the BAPPS with other measures of prosocial behaviour and related constructs (e.g., empathy, moral development). The current study only included young people aged 11-17 years old. The suitability of using the BAPPS outside this age range will need to be determined via future research. Similarly, the suitability of using the BAPPS within different cultures and with ethnic minority groups requires further exploration. The parental version of the original “Personal Strengths” items from which the BAPPS-P was developed (Green et al., 2005) was based on parents’ responses concerning their child’s strengths. This included children aged between 4 and 16 years and so these original items were not developed specifically in regards to adolescence. Whilst this may have limited the specificity of BAPPS-P items to an adolescent population, the psychometric testing undertaken in the current paper supports the reliability and validity of the BAPPS-P for use with adolescents. The current paper focuses on a dispositional measure of prosocial perceptions. A potential limitation of this measure is that it relies on subjective ratings, which may be confounded by various forms of personal bias and so provide an unclear picture of an individual’s actual levels of prosociality. This is different from a measure that attempts to assess actual observed prosocial behaviours; for example, via behavioural observation by trained raters. However, such measures may also be criticised by being overly influenced by situational and contextual factors (e.g., Eisenberg et al., 1996) and so may say little about an individual’s overall disposition towards prosociality. Moreover, it is important to recognise that prosocial behaviour is socially defined and that even situational observations rely on someone’s (e.g., the raters’) interpretational frame.

The BAPPS were designed to be quick to complete, allowing them to be readily incorporated into clinical research and practice. Possible uses include incorporation into
screening batteries in health and educational settings, to provide additional information concerning the risk of emotional and behavioural problems in young people. The BAPPS may improve the prediction of disorder in this context because they may explain variance in emotional problems untapped by existing, deficit-focussed measures (Wood & Joseph, 2010; Wood & Tarrier, 2010). Despite their brevity, the BAPPS appear to have good psychometric properties (e.g., good internal reliability) and so they could also be employed in future research as a means of assessing prosocial traits in young people with minimal participant burden.

The BAPPS could be used in clinical assessments of adolescents with identified psychological problems, where they may provide information on social functioning and resilience, which may become pertinent for formulation and subsequent interventions with that individual (Padesky & Mooney, 2012; Tedeschi & Kilmer, 2005). For example, where prosociality appears low, this may represent a target for intervention, particularly where this absence of prosociality appears to contribute to other problems, such as peer rejection and conflict. Brief interventions that involve the modification of prosocial behaviour have shown benefits in increasing peer acceptance and well-being in pre-adolescents (9-11 years; Layous, Nelson, Oberle, Schonert-Reichl & Lyubomirsky, 2012). Alternatively, for some young people, prosocial behaviour may be present in spite of their other difficulties and thus represent an important resource and resilience factor that could be drawn upon in therapy, for example, by developing coping strategies based around using prosocial behaviour. It has also been noted that positively orientated assessment instruments may generally foster a more positive and productive relationship between clients and clinicians, which may aid therapy (Tedeschi & Kilmer, 2005). Various interventions have been developed with the goal of developing positive social behaviours including prosociality (Gresham et al., 2004; Kim & Leve, 2011). The brief nature of the BAPPS allows them to be used on a session-by-session nature in these contexts. Ideally, BAPPS scores should be interpreted in the context of a wider clinical assessment.
In conclusion, this initial test of validity and reliability of the BAPPS suggests that these measures have good psychometric properties. The BAPPS may therefore provide a brief and effective means of assessing prosociality in young people and thus provide valuable information about this area of positive functioning in young people.

3.7. Footnote

1 This model was also analysed using Maximum Likelihood estimation and a polychoric correlation matrix as input as this approach is also recommended for ordinal-type data (Halgado-Tello, Chacón-Moscoso, Barbero-García & Vila-Abad, 2010). Results were similar with fit remaining adequate, $\chi^2 (50, n = 1620) = 424.70, p < .01$, $CFI = .96$, $RMSEA = .07$, $SRMR = .04$. 
3.8. References


StataCorp. (2011). *Stata structural equation modelling reference manual*. College Station, TX: StataCorp LP.


doi:10.1037/0033-2909.99.3.43
PAPER 4

Discrepancies in Parental and Self-Appraisals of Prosocial Characteristics predict Emotional Problems in Adolescents

Word Count: 7,364 (4,882 excluding abstract, references and tables)

Journal: British Journal of Clinical Psychology
4.1. Abstract

Objectives: Parental appraisals of an adolescent may have an effect upon the adolescent’s well-being and likelihood of emotional problems. However, the impact of these parental appraisals is likely to be partly determined by the young person’s self-appraisal. It was predicted that a discrepancy in self and parent-appraisals of positive, prosocial qualities would be associated with an increased risk of emotional problems.

Design: The study employed a cross-sectional design within a large sample of adolescent and caregiver dyads (N = 3976, aged 11-17 years), drawn from the “Mental health of children and young people in Great Britain, 2004” survey.

Method: Two separate measures of prosociality were used to ensure effects were not specific to one measure. The analysis explored the discrepancy in parent and self-ratings on these measures via interactions within a logistic regression framework. Potential confounds, including gender, parental mental health, conduct and hyperkinetic problems were controlled for in analyses.

Results: The logistic regression analyses demonstrated significant interactions between self and parent-ratings of prosocial qualities in predicting the odds of emotional disorder (i.e., depression and anxiety). This effect occurred across both measures of prosocial qualities whilst controlling for confounds. The pattern of the interactions suggested that low parental appraisals had a more detrimental effect on well-being when self-appraisals were highly positive.

Conclusions: The results suggest that moderately high self-appraised positive traits may carry a cost of leaving young people more vulnerable to discrepant, negative parental appraisals. This has important implications for the meaning attributed to self-appraised positive traits in clinical contexts.
4.2. Introduction

There is evidence that the way young people are perceived and appraised by significant others can shape their emotional well-being (Jacquez, Cole, & Searle, 2004; Thomaes et al., 2010). The perceptions of parents, representing key attachment figures in a young person’s life, are likely to be particularly influential (Rutter, 1995). It is likely the impact of parental appraisals will partly depend on a young person’s existing self-concept. The way in which self-appraisals and parental appraisals diverge from one another may be an important determinant of emotional disorder (i.e., anxiety, depression). Research supports the clinical significance of parent child discrepancies, demonstrating that discrepancies in ratings of psychopathology are common and predict subsequent adjustment difficulties (Ferdinand, Van der Ende, & Verhulst, 2004; Los Reyes & Kazdin, 2005), whilst greater agreement over treatment goals predicts greater engagement in therapy (Brookman-Frazee, Haine, Gabayan & Garland, 2008), and disagreement in perceived relationship quality predicts subsequent internalizing problems (Pelton & Forehand, 2001). The current study explores whether such discrepancies in an area of positive functioning, prosociality, also has meaningful consequences for a young person’s well-being.

Adolescence (defined here as 11 – 17 years) is characterised by developments in self-concept and an increasing cognisance of how you are perceived by others (Harter, 1999). Emotional problems also often have their onset in adolescence, indicating this may be a time of vulnerability for some young people (Zahn-Waxler, Shirtcliff, & Marceau, 2008). Adolescents may therefore be especially sensitive to their parents’ perceptions of them. Parents’ appraisals of their children may be communicated to these young people in the form of evaluative feedback and behaviour that can subsequently contribute to emotional problems (Jacquez et al., 2004). It is possible that parents’ appraisals of their child are most deleterious when they are substantively discrepant with the young person’s own view of him or herself.
The idea that emotional problems can develop from exposure to information that is discrepant or in conflict with aspects of an individual’s self-concept is implicit in multiple models of psychopathology (Higginson, Mansell, & Wood, 2011), including psychodynamic (Hobson, 1985; Messer, 2001), cybernetic (Mansell, 2005), and cognitive models (Higgins, 1987). Self-discrpeancy theory, for example, indicates that discrepancies in mental representations of the self may contribute to negative affective states (Higgins, 1987). This may include discrepancies between representations from “personal” and “other” standpoints (i.e., the individual’s view of themselves versus the internalised sense of how others view them). Such discrepancies may also challenge a young person’s sense of authenticity, a factor that is important to well-being (Wood, Linley, Maltby, Baliousis, & Joseph, 2008). A bias towards self-enhancement may reflect a defensive mechanism but may ultimately lead to psychological problems (Baumeister, Campbell, Krueger & Vohs, 2003; Colvin, Block & Funder, 1995).

One domain where discrepant parent-child appraisals may emerge and impact upon emotional well-being is prosociality (e.g., Caprara, Steca, Zelli & Capanna, 2005; Hay, 1994; Weir & Duveen., 1981). In the present paper we employ a broad definition of prosociality, reflecting a general positive orientation to one’s social context. This may include interpersonal acts involving caring for, assisting or supporting others (Caprara et al., 2005; Weir & Duveen., 1981), affiliative and co-operative social behaviours (Greener, 2000; Scourfield, John, Martin & McGuffin, 2004), and behaviours indicating compliance with social expectations (Chen et al., 2000; Wentzel, Filisetti & Looney, 2007). As prosocial acts are socially defined and valued (Eisenberg & Mussen, 1989; Hay, 1994), they represent a domain where young people are likely to be evaluated. Discrepancies in appraisals of prosociality would therefore be expected. Moreover, the social value placed upon prosocial behaviours may mean that the perception of these qualities constitutes an important facet of a young person’s self-concept. Indeed, there is evidence that during infancy prosociality can be reflected upon, and becomes linked into a moral-evaluative
framework, with behaviours labelled as “naughty” or “good” (Hay & Cook, 2010). Evidence also supports the notion that prosocial acts are guided by a desire to adhere to societal norms, personal standards and maintain self-worth (Batson, 1998). There is evidence in children and adolescents that greater prosociality is related to improved psychological health, including a lower likelihood of psychiatric diagnoses and lower levels of internalizing disorders (Bandura, Pastorelli, Barbaranelli & Caprara, 1999; Goodman, 2001; Wentzel et al., 2007; Zimmer-Gembeck, Hunter & Pronk, 2007).

We explore the parent-child discrepancy by looking at the interaction between self and parental appraisals. Parental appraisals may contribute to emotional problems when they are discrepantly lower than self-appraisals, thus representing a source of threat to self-concept, which may be difficult to assimilate. It could be said that such young people are more at risk of their personal inadequacies becoming exposed (Kim & Chiu, 2011). Evolutionary models of depression suggest that it is the inability to accept and adapt to failure that creates problems (Sloman, 2008; Taylor, Gooding, Wood & Tarrier, 2011). Hence, even where parental appraisals of prosociality are low but consistent with self-appraisals they may be less threatening and more readily assimilated. Such a young person may be able to move on to and achieve alternative social goals and derive their self-worth from these areas instead (e.g., the non-cooperative, unhelpful child who nonetheless excels academically). There is evidence that a propensity to overestimate personal positive qualities relative to others’ ratings is associated with poor adjustment (e.g., ego-resiliency, depression, self-esteem) in undergraduate samples (Colvin et al., 1995; Kim & Chiu, 2011; Kurt & Paulhus, 2008). A recent review also highlights the tendency for children with Hyperkinetic disorders to generate self-appraisals of their competencies that exceed those appraisals made by others (Owens, Goldfine, Evanelista, Hoza & Kaiser, 2007).

An alternative hypothesis is that low self-appraisals and high parental appraisals represent the situation most likely to produce emotional disorder. The competency-based model of depression suggests that depression emerges from low self-appraisals of
competence, and a tendency to underestimate one’s competence may be signalled by this form of discrepancy (Cole, Martin & Powers, 1997; Hoffman, Cole, Martin, Tram & Seroczynski, 2000). However, the competency-based model seems to imply that it would be the absolute level of an adolescent’s self-appraised prosociality that counts (i.e., a main effect of low self-appraisals on adjustment), rather than the discrepancy, per se. Otherwise, following the logic that it is the discrepancy in appraisals that counts leads to the strange conclusion that a parent who agrees with the young person’s low self-appraised competence would be more adaptive than a parent making more positive evaluations. Research in preadolescent children suggests that a tendency for individuals to underestimate their competence, compared to others’ ratings, predicts the development of depressive symptoms (Cole, Martin, Peeke, Seroczynski & Hoffman, 1998; Hoffman et al., 2000). However, these studies estimate the discrepancy based on a residual difference rather than an interaction, which can obscure interpretation (see below).

The majority of previous research has explored discrepancy effects using a collection of methods that rely on forming a new variable representing the discrepancy, for example, based on the simple or residual difference in raters’ scores (see review by Los Reyes & Kazdin, 2004). This approach has been criticised as the new variable is a linear product of its underlying components (the self and informant ratings) and it is impossible to separate out the effect of the discrepancy from the effect of its constituent parts, making interpretation difficult (Los Reyes & Kazdin, 2004; Owens et al., 2007; Zuckerman, Gagne, Nafshi, Knee & Kieffer, 2002; Zuckerman & Knee, 1996). Laird and Weims (2011) have outlined these difficulties more recently. Exploring the discrepancy as an interaction effect has been recommended as a more informative and conceptually sound alternative (Zuckerman et al., 2002).

The aim of the study was to explore the effect of discrepancies between self-rated and parent-rated prosocial traits on the likelihood of receiving a diagnosis of an emotional disorder (i.e., ICD-10 diagnoses of depression or anxiety disorders) in adolescents. We
obtained the data for this study from an existing large dataset produced by the “Mental health of children and young people in Great Britain, 2004” survey (Green et al., 2005). We used two separate measures of prosociality, 1) the prosocial subscale of the Strengths and Difficulties Questionnaire (Goodman, 2001), and 2) via a personal strengths assessment developed for the survey (Green et al., 2005). The former provides a specific measure of prosocial behaviour. The latter provides a more general measure of positive prosocial functioning, which reflects various prosocial traits including supportive and affiliative behaviours alongside compliance with social expectations (e.g., working hard at school). By including both measures the sensitivity of findings to a particular definition of prosociality could be explored.

We controlled for four main confounds in our analyses. First, we controlled for gender, since both prosocial behaviour and rates of psychopathology vary between males and females (Hay, 1994; Zahn-Waxler et al., 2008). Second, parental mental health was adjusted for, since this may differentially impact on child and parent-ratings of prosocial qualities and produce discrepant ratings in other areas (Hay & Pawlby, 2003; Los Reyes & Kazdin, 2005). Third and fourth, we controlled for co-morbid conduct disorders and hyperkinetic disorders as these different diagnoses are known to occur co-morbidly with emotional difficulties in young people (Essex et al., 2006; Owens et al., 2007; Zahn-Waxler et al., 2008), and have been linked to discrepant parent-child ratings of social behaviour (Owens et al., 2007).

It was hypothesised that:

1) There would be a significant interaction effect between parent-rated and self-rated prosociality in predicting emotional problems.

2) The interaction effect would be such that parents’ ratings of their child’s prosociality would have a stronger association with the likelihood of emotional problems when adolescents rate themselves highly on these traits, compared to adolescents who make lower self-ratings.
4.3. Method

4.3.1. Participants

The data used in this study came from the “Mental health of children and young people in Great Britain, 2004” survey (Office of National Statistic, 2004). This was a national survey investigating the mental health of children and adolescents in England, Scotland and Wales, looking at prevalence and risk factors (Green et al., 2005). A previous, related survey was conducted in 1999. The survey involved a combination of face-to-face interviews and self-completed questionnaires with the parent (including non-biological parents or caregivers) and child. A parent was chosen to complete the survey based on availability and appropriateness (e.g., in some cases one parent had insufficient English to complete the survey). Further information on the survey aims and sampling procedure can be obtained from the technical report (Green et al., 2005).

The 1999 survey data were not included in the current study since it did not sample young people aged over 15 and did not include some measures featured in the 2004 survey. In the 2004 survey, of those initially sampled, \( n = 7977 \) participants feature in the final dataset (Green et al., 2005). Additional exclusion criteria were applied: a) Participants aged under 11 years did not have the opportunity to provide self-report data and were, therefore, excluded, b) We excluded a subset of individuals completing non-English versions of study questionnaires because the meaning of items may vary in subtle ways across languages and this could impact on the nature of the effects identified. This resulted in a final sample of \( n = 3976 \), aged 11 to 17 years. Sample characteristics are reported in Table 1.

4.3.2. Measures

Emotional and behavioural problem. Emotional (depression and anxiety), conduct and hyperkinetic disorders were diagnosed using the Development and Well-Being Assessment (DAWBA; Goodman, Ford, Richards, Gatward & Meltzer, 2000). This
measure combines structured interview (e.g., “How often does his/her fear of social situations result in him/her becoming upset like this?”) with open-ended questions (e.g., “What else has s/he worried about?”) across multiple informants (parent, child, teacher) to identify psychological problems in children and adolescents. The scale was developed to be administered by lay interviewers. Clinical raters, assisted by computer, then review the information and apply ICD-10 diagnoses for a range of non-psychotic emotional and behavioural problems, including depressive, anxiety and conduct disorders. Diagnoses obtained via DAWBA are not mutually exclusive, allowing for co-morbidity. This measure has been shown to effectively discriminate between community and a mixed clinical sample, recruited from child and adolescent mental health clinics in the UK (specificity = 89%; sensitivity = 92%; Goodman et al., 2000).
Table 1: Sample Characteristics

<table>
<thead>
<tr>
<th>Sample characteristic</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescent characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>$M = 13.43$ years, $SD = 1.69$</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>$n = 1913$, 48.10%</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>$n = 3538$, 88.98%</td>
</tr>
<tr>
<td>Black African</td>
<td>$n = 37$, 0.93%</td>
</tr>
<tr>
<td>Black Caribbean</td>
<td>$n = 38$, 0.96%</td>
</tr>
<tr>
<td>Indian</td>
<td>$n = 91$, 2.29%</td>
</tr>
<tr>
<td>Pakistani</td>
<td>$n = 81$, 2.04%</td>
</tr>
<tr>
<td>Bangladeshi</td>
<td>$n = 15$, 0.38%</td>
</tr>
<tr>
<td>Mixed</td>
<td>$n = 101$, 2.54%</td>
</tr>
<tr>
<td>Other</td>
<td>$n = 73$, 1.84%</td>
</tr>
<tr>
<td><strong>Parent characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>$M = 41.48$ years, $SD = 5.80$</td>
</tr>
<tr>
<td>Gender</td>
<td>$n = 3723$, 93.64%</td>
</tr>
<tr>
<td>Median gross personal annual income</td>
<td>£10,000-£10,999</td>
</tr>
</tbody>
</table>

*Note: This is similar to the ethnic composition of the UK obtained in recent census data (Owen, 2006).*
**Prosociality.** Prosocial characteristics were assessed using the prosocial subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). This is a widely use questionnaire assessing a range a problems and positive behaviours in children and adolescents. The presence of both a self-report (for adolescents aged 11 years and over) and parent-rated versions, with equivalent item content, allowed the comparison of these ratings. The prosocial subscale consists of 5 items concerning sharing, kindness and volunteering. Parents and young people are asked to rate each item (e.g., “I try to be nice to other people. I care about their feelings”) on a scale from 0 (“Not true”) to 2 (“Certainly true”) for the past 6 months. Scores are summed to produce a total score. The structure of this subscale has been supported by factor analysis and is related to the prevalence of psychiatric diagnosis (Goodman, 2001). Internal reliability in the current sample was $\alpha = .66$ and $\alpha = .69$, for the self-report and parent versions of the subscale, respectively.

A second, more general measure of positive prosocial functioning was provided by a separate, ‘personal strengths’ assessment (Green at al., 2005). Parent and self-rated versions of this assessment vary in item content although with substantial overlap. This measure captures a broader definition of prosociality than the SDQ, including items capturing aspects of prosociality such as helping and assisting (e.g., “Generous”, “Helpful at home”) that also feature in the SDQ, but also covers aspects of prosociality such as affiliative and co-operative behaviours (e.g., “Affectionate”, “Polite”) and compliance with social expectations regarding behaviour (e.g., “Honest”, “Reliable and responsible”) and engagement in activities (e.g., “Good at school work”, “good at art”). Parents and young people are asked to rate the applicability of a series of descriptors on a scale from 0 (“no”) to 2 (“a lot”). There are 24 items for parents and 19 for young people. Scores are summed to produce a total score. This scale was correlated with the SDQ prosocial subscale with a large effect size (within-rater correlations between, $r = .55$, and, $r = .60$, for self and parent-rating, respectively; Cohen, 1988) supporting the concurrent validity of this
measure. Internal reliability in the current sample was $\alpha = .76$ and $\alpha = .85$, for the young person and parent versions of the scale, respectively.

**Parent mental health.** Parental mental health was assessed with the 12-item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988). This is a widely used questionnaire that assesses the severity of anxious and depressive symptoms over the past week. Items (e.g., “have you recently felt constantly under strain”) are rated on a 4-point scale, although the specific label assigned to each point varies across items (e.g., 1 = “not at all” or “more so than usual”). Responses are assigned a score of 1 if symptoms have been more of a problem than usual, and 0 if not, and are summed to produce a total score. The GHQ-12 has been shown to be effective in predicting clinical caseness across multiple inter-national sites (overall specificity = 83.4; overall sensitivity = 76.3; Goldberg et al., 1997). Internal reliability in the current sample was $\alpha = .88$.

4.3.3. Statistical Analysis

All analyses were conducted using SPSS version 16. We tested for the hypothesis that the interaction between parent and self-rated prosociality would predict the probability of emotional disorder using logistic regression. The outcome variable was the presence (1 = present) or absence of an emotional disorder (i.e., meeting criteria for any depressive or anxiety disorder as determined by the DAWBA). We conducted two sets of regressions using either the SDQ prosocial subscales or the personal strengths variables as predictors. In all cases control variables, namely young person gender, parental mental health, conduct disorder and hyperkinetic disorder diagnosis were included in the initial step to control for these variables. Dichotomous variables were dummy coded. For gender, 1 = male, whilst for conduct disorder diagnosis and hyperkinetic disorder diagnosis, 1 = present. In the second step parent-rated prosociality and self-rated prosociality were entered. The interaction term between the parent and self-rated prosocial variables was then entered in the third step (Aiken & West, 1991). All continuous variables were mean centred prior to inclusion in the model to limit multicollinearity (Aiken & West, 1991).
Where the third step makes a significant contribution to the predictive power of the model, as assessed via the change in log-likelihood, this indicates that there is a significant interaction between parent and self-rated prosociality in predicting the probability of emotional disorder.

Significant interaction effects were plotted graphically to explore the effect. We also used the MODPROBE script (Hayes & Matthes, 2009) for SPSS to conduct a simple slopes analysis for significant interaction effects. This analysis explores the significance of the relation between parental appraisals and outcome at moderately high ($M + 1 \, SD$), medium ($M$) and moderately low levels ($M - 1 \, SD$) of self-appraisals. We have not adjusted the data with sample weights since our focus was upon the relation between variables, and sample weights were not a function of the dependent variable (Winship & Radbull, 1994).

4.4. Results

4.4.1. Missing Data

The largest proportion of missing data occurred for the young person completed SDQ prosocial score (15.6%) and personal strengths score (17.3%). Missing data for other variables was minimal (< 3% of total data for that variable in all cases). Little’s MCAR test was significant, $\chi^2 (233) = 439.66, p < .01$, indicating that missing data were not missing completely at random (MCAR). Subsequent $\chi^2$ tests suggested that children with emotional disorders had higher rates of missing data for both prosocial variables ($p < .05$). This suggests the data may be missing at random (MAR) where missingness may be dependent on other observed variables in the dataset (Schafer & Graham, 2002).

Following the recommendations of Schafer and Graham (2002), we used the Maximum Likelihood based Expectation-Maximisation (EM) algorithm to impute the missing data prior to analyses. This was achieved via the EM algorithm available in SPSS 16.0. Prior to the imputation we applied square root transformations (reflecting the variable
before and afterwards to maintain direction) to the prosocial variables to reduce negative
skew, and a logarithmic transformation to the parental mental health variable to reduce
positive skew. The EM approach is robust to departures from its assumptions and functions
better in larger samples (Schafer & Graham, 2002), increasing confidence in its use for this
study.

4.4.2. Sample Characteristics

Table 2 displays descriptive statistics and correlations for continuous variables
included in the analysis. All correlations were significant ($p < .05$), as would be expected
due to the large sample size. However, parental mental health showed only marginal
correlations with other variables (between $r = -.06$, and, $r = -.17$). Parental and self-ratings
of prosociality were correlated with a moderate effect size ($r = .37$, and, $r = .46$; Cohen,
1988) suggesting that there was a substantive amount of unique variability in these ratings.
Of the sample, 11.19% ($n = 445$) met criteria for psychiatric diagnoses. Of these, 5.00% ($n = 199$) received a diagnosis (ICD-10) of an emotional disorder. In addition, 6.14% ($n = 244$) were classified as having a conduct disorder (18.03%, $n = 44$, co-morbid with an
emotional disorder) and 1.31% ($n = 52$) were classified as having a hyperkinetic disorder
(11.54%, $n = 6$, co-morbid with an emotional disorder).

4.4.3. Predicting the Probability of Emotional Disorder

Two logistic regressions were conducted to predict the probability of emotional
disorder. In the first the interaction in SDQ prosocial scores was explored. In the second
the interaction in personal strengths scores was explored. The results of both analyses, with
odds ratios and associated 95% confidence intervals, are reported in Table 3. For both
analyses, in the second step greater odds of emotional problems were associated with
female gender, greater parental mental health problems, conduct disorder diagnosis and
lower parent-rated prosociality. These effects were qualified by significant interaction
effects in the third step of the model.
Table 2: Descriptive Statistics and Correlations for Variables Included in the Analysis

<table>
<thead>
<tr>
<th></th>
<th>Raw Mean</th>
<th>Raw SD</th>
<th>Adjusted Mean</th>
<th>Adjusted SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parental mental health (GHQ-12)</td>
<td>1.74</td>
<td>2.74</td>
<td>0.65</td>
<td>0.78</td>
<td>-.06</td>
<td>-.08</td>
<td>-.10</td>
<td>-.17</td>
</tr>
<tr>
<td>2. Self-rated SDQ prosocial scale</td>
<td>7.94</td>
<td>1.67</td>
<td>2.47</td>
<td>0.45</td>
<td>.55</td>
<td>.37</td>
<td>.36</td>
<td></td>
</tr>
<tr>
<td>3. Self-rated personal strengths</td>
<td>27.15</td>
<td>4.93</td>
<td>3.86</td>
<td>0.70</td>
<td>.34</td>
<td></td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>4. Parent-rated SDQ prosocial scale</td>
<td>8.79</td>
<td>1.58</td>
<td>2.91</td>
<td>0.47</td>
<td></td>
<td>.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Parent-rated personal strengths</td>
<td>38.76</td>
<td>6.40</td>
<td>4.94</td>
<td>0.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All correlations significant, p < .05, correlations based upon adjusted and centred variables; 
Adjusted variables follow transformations and data imputation; GHQ-12 = General Health Questionnaire-12; SDQ = Strengths and Difficulties Questionnaire.
Table 3: Results of Logistic Regressions Predicting the Odds of Emotional Disorder with either SDQ or Personal Strength Prosocial Variables

<table>
<thead>
<tr>
<th>step</th>
<th>Variable</th>
<th>SDQ prosocial variables</th>
<th></th>
<th></th>
<th></th>
<th>Personal strengths variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$\chi^2$</td>
<td>OR</td>
<td>Lower</td>
<td>Upper</td>
<td>$\chi^2$</td>
<td>OR</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>1</td>
<td>Child gender</td>
<td>136.12*</td>
<td>0.59*</td>
<td>0.43</td>
<td>0.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parental mental health</td>
<td>2.00*</td>
<td>1.69</td>
<td>2.37</td>
<td></td>
<td>1.99*</td>
<td>1.68</td>
<td>2.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conduct disorder</td>
<td>3.93*</td>
<td>2.64</td>
<td>5.85</td>
<td></td>
<td>3.36*</td>
<td>2.19</td>
<td>5.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperkinetic disorder</td>
<td>0.91</td>
<td>0.35</td>
<td>2.33</td>
<td></td>
<td>0.85</td>
<td>0.33</td>
<td>2.18</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Child gender</td>
<td>141.38*</td>
<td>0.58*</td>
<td>0.42</td>
<td>0.79</td>
<td>196.41*</td>
<td>0.50*</td>
<td>0.37</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>Parental mental health</td>
<td>1.99*</td>
<td>1.68</td>
<td>2.36</td>
<td></td>
<td>1.83*</td>
<td>1.54</td>
<td>2.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conduct disorder</td>
<td>3.36*</td>
<td>2.19</td>
<td>5.14</td>
<td></td>
<td>1.76*</td>
<td>1.12</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperkinetic disorder</td>
<td>0.85</td>
<td>0.33</td>
<td>2.18</td>
<td></td>
<td>0.71</td>
<td>0.27</td>
<td>1.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parent-rated prosocial</td>
<td>0.69*</td>
<td>0.50</td>
<td>0.95</td>
<td></td>
<td>0.55*</td>
<td>0.46</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>Predictor</td>
<td>OR</td>
<td>95% CI</td>
<td>p-value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated prosocial</td>
<td>1.11</td>
<td>0.77</td>
<td>1.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental mental health</td>
<td>1.99*</td>
<td>1.68</td>
<td>2.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>3.46*</td>
<td>2.26</td>
<td>5.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperkinetic disorder</td>
<td>0.92</td>
<td>0.36</td>
<td>2.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent-rated prosocial</td>
<td>0.62*</td>
<td>0.45</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated prosocial</td>
<td>1.01</td>
<td>0.69</td>
<td>1.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated x parent-rated prosocial</td>
<td>0.49*</td>
<td>0.27</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Odds Ratios (OR) indicate the change in the odds of having an emotional problem for each unit increase in the predictor; 1.5 therefore indicates a 50% increase in the odds of emotional problems for each unit increase in predictor. CI = Confidence Intervals; SDQ = Strengths and Difficulties Questionnaire; * p < .05.
The interaction effects are displayed graphically in Figure 1. With the SDQ prosocial scale, when self-rated characteristics were moderately high (1 SD above the mean), the relation between parent-rated prosociality and the odds of emotional problems was strongest, $B = -.80, p < .01$. However, when self-rated characteristics were medium (mean), the relation was weaker, $B = -.48, p < .01$. When self-rated characteristics were moderately low (1 SD below the mean), there was no significant relation between parent-rated prosociality and the odds of emotional problems, $B = -.16, p = .40$.

A similar pattern was observed with the personal strengths scale. When self-rated characteristics were moderately high (1 SD above the mean), the relation between parent-rated prosociality and the odds of emotional problems was strongest, $B = -1.04, p < .01$. However, when self-rated characteristics were medium (mean), the relation became weaker, $B = -.75, p < .01$. When self-rated characteristics were moderately low (1 SD below the mean), the relation between parent-rated prosociality and the odds of emotional problems was weaker still, $B = -.46, p < .01$. Consequently, parent-ratings of prosociality had a stronger relation with emotional disorder in young people who self-reported moderately high levels of these characteristics, compared to those who self-rated moderately low levels.

A secondary analysis was undertaken to determine if any of the above findings were moderated by gender. The logistic regression analyses were repeated with additional 2-way interaction effects between prosociality (self or parent rated) and gender, and a 3-way interaction term between self-rated prosociality, parent-rated prosociality and gender, included in the model. None of these additional 2-way or 3-way interaction effects were significant, indicating that findings did not vary across gender.
Figure 1: Graphs displaying the association between parent-rated prosociality and probability of emotional disorder at moderately low \((M - 1 \, SD)\), medium \((M)\) and moderately high \((M + 1 \, SD)\) levels of self-rated prosociality. The upper graph is with the SDQ prosocial scale and the lower graph is with the personal strengths scale.
4.5. Discussion

The current study is the first we are aware of that explores whether parent-adolescent discrepancies in a core area of positive functioning, prosociality, predicted the likelihood of having a diagnosed emotional disorders (i.e., ICD-10 diagnoses of depression or anxiety disorders) in adolescents. Self and parent-rated prosocial traits interacted to significantly predict emotional problems, supporting the first hypothesis. The interaction effect indicated that parental appraisals had a stronger relation with the likelihood of emotional problems when this occurred in the context of moderately high self-appraisals, supporting hypothesis two. This means that the young people most at risk of emotional disorder were those who rated themselves highly on the prosocial variables, but whose parents rated them as having few such qualities. These effects occurred across two different measures of prosocial characteristics, and whilst controlling for gender, parental mental health, conduct and hyperkinetic disorders.

The results of this study are consistent with past research demonstrating that a similar pattern of discrepancy in self and other-appraisals contributes to psychological dysfunction (Colvin et al., 1995; Kurt & Paulhus, 2008). However, other research conflicts with the present study by suggesting that it is the tendency to underestimate personal positive qualities relative to significant others’ perceptions that contribute to problems like depression (Cole et al., 1998; Hoffman et al., 2000). These studies employed the residual difference method of calculating discrepancy effects which may confound discrepancy and absolute effects. These studies were also undertaken in preadolescent children. It could be hypothesised that discrepant, high self-appraisals only become a psychological burden in older children or adolescents as greater demands are placed upon them to maintain a coherent and authentic self-concept.

Examining the main effects of self and parental appraisals, it may seem counterintuitive that parental perceptions appear to be more relevant to adolescent
adjustment than their own perceptions of prosocial behaviour. However, considering the importance of others’ evaluations to personal well-being (Thomaes et al., 2010), particularly parents’ views, as main attachment figures, and the nature of prosociality as an observable and socially defined construct, it is perhaps not so surprising that parental appraisals have a greater influence upon adjustment than self-appraisals. It may also appear counterintuitive that the risk of emotional disorder was not greatest for young people making low self-appraisals alongside congruently low parental appraisals. However, this is consistent with our hypothesis that it is the threat associated with conflicting parental information that leads to difficulties. Congruent, low parent-child appraisals of prosociality may be a sign that the young person is able to accept and assimilate these parental representations, and may thus move on to alternative social goals (e.g., Sloman, 2008; Taylor et al., 2011).

Discrepant situations may involve young people who are unable to accept and adapt to this discrepant information, perhaps due to inflexible and excessive internalized rules regarding expected behaviour. An example of the formation of this discrepant dyad would be in the context of parents who fail to attend to a child’s attempts at prosociality, due to an excessively corrective focus on what the child does not achieve, and yet advocate high and inflexible standards of behaviour (including prosociality) which the child internalises as inflexible personal rules. Parenting styles that are authoritarian (Carr, 2006) or controlling but unresponsive (Chorpita & Barlow, 1998) may be liable to produce similar scenarios. The resulting discrepancy in appraisals may be experienced as an intrusive awareness (Stiles et al., 1990), which may be linked to a sense of helplessness regarding evaluation by others (Chorpita & Barlow, 1998), conflict (Higginson et al., 2011), entrapment (Taylor et al., 2011) and inauthenticity (Wood et al., 2008), factors key in the formation of emotional disorder. Conflictual parental information may also take on a hostile and aversive quality, similar to that described in the expressed emotion literature, where such interactions predict the risk of relapse (Buzlaff & Hooley, 1998).
The emergence of a discrepant dynamic may have its routes in infancy, being traced back to parents’ initial responses to emerging prosociality, such as attempts to engage others in play or demonstrating an interest when others appear hurt. Some parents may be disposed to misinterpret this behaviour (e.g., viewing it as manipulative or a sign of vulnerability) or simply fail to attend to these acts as a consequence of their own beliefs and fears relating to prosociality (e.g., the expectation that others will respond negatively to prosocial acts).

Whilst the current study focusses on prosociality specifically, it is unclear if the observed effect is reflective of more general discrepancies in the appraisal of the general competence or likeability of the young person. Similar results were observed across a specific measure of prosocial behaviour and a more general assessment of positive prosocial functioning, raising the possibility that these findings may extend to perceptions of positive social functioning in general.

Several limitations require consideration. The study was cross-sectional, so that the direction of identified effects cannot be inferred. Consequently, the possibility that emotional problems are a cause, rather than a consequence of discrepant appraisals in the parent-child dyad cannot be ruled out. Nonetheless, the clinical significance of understanding the correlates of such parent-child discrepancies remain, irrespective of the direction of the effect. Prospective research would be beneficial in further exploring the direction of these effects. Past discrepancy research has attempted to compare self-perceptions against an ‘objective’ criterion (e.g., Hoffman et al., 2000, Kurt & Paulhus, 2008). In contrast, the current study compared two subjective perspectives (parent and child), viewing any discrepancy as a characteristic of that particular interpersonal relationship. Whilst this approach makes it impossible to link the discrepancy to biases in any one individual (e.g., parent or adolescent), it has clinical utility as clinicians may often only have access to the views of the young person and parent. Understanding the clinical correlates of discrepancies in these perspectives is therefore valuable. The current study
did not explore the extent to which these appraisals were communicated to the young people (e.g., in the form of feedback or criticism). This study also relied on predominantly female caregiver appraisals (94%) so that results may not generalise to male caregivers. Further research is clearly needed to extend on the current study and clarify these issues.

The results of this study carry implications for clinical practice. Within the context of a clinical assessment, self-appraisals of prosociality might traditionally be viewed a strength or resilience factor (Tedeschi & Kilmer, 2005). However, the current study indicates that when these self-appraisals co-occur in combination with discrepant parental appraisals, this may be indicative of emotional difficulties. Consequently, the present results indicate that further investigation of such discrepant situations is warranted. Such information may be helpful in the development of clinical formulation, particular where systemic factors are being considered. In regards to treatment, if emotional problems are linked to an underlying perceptual discrepancy in the parent-child relationship regarding youth prosocial qualities, specific interventions focussed on increasing congruence in this relationship may be beneficial. It may be that a systemic approach to intervention, which aims to create an awareness of the discrepancy and collaboratively encourage greater congruence in the parent-child dyad, may be more effective than work focussed on adjusting the views of any one individual (e.g., parent or child). For example, narrative and solution-focussed interventions involve an exploration of the relational dynamic and discrepant perspectives, with a view to re-scripting dominant maladaptive themes and issues (e.g., Cottrell & Boston, 2002).
4.6. References


Owen, D. (2006, January). *Profile of black and minority ethnic groups in the UK.*

Background paper presented at the ESRC Seminar Series ‘Understanding and tackling ethnic inequalities in health: Migration, transnational links and life-course influences on health. Retrieved from

http://www2.warwick.ac.uk/fac/cross_fac/healthatwarwick/publications/occasional/ethnicprofile.pdf


http://www.springerlink.com/index/PQ3715205145W761.pdf


5. Critical Evaluation

5.1. Overview

5.1.1. Paper Outline

The overarching goal of the current research programme was to explore the relationship between prosocial traits in young people and well-being. This goal was motivated by the awareness that prosociality is often viewed as an important aspect of a young person’s social functioning (Chen, Li, Li, Li & Liu, 2000; Hay, Payne & Chadwick, 2004), reflected in its presence in clinical measures (Crick, 1996; Goodman, 2001; Ladd, Herald-Brown & Andrews, 2009) and as a target for interventions (Goldstein, Sherman, Gershaw, Sprafkin & Glick, 1978; Kim & Leve, 2011; Smith, Leve & Chamberlain, 2011; Solantaus, Paavonen, Toikka & Punamäki, 2010), yet the question of whether prosociality has any further benefits for a young person’s well-being is often unaddressed. This occurrence may in part be attributable to the tendency for researchers to see prosociality as an outcome variable, and not to explore the subsequent relationship this variable has with well-being in young people.

In exploring the link between prosociality and well-being, an initial step was to conduct a systematic review and summarise the existing research literature concerning this relationship. Meta-analysis provided a systematic and comprehensive means of summarising the extant literature (see point 5.2.2 below). Forty-one studies were identified that met inclusion criteria. The results of the meta-analysis suggested that prosociality did have a significant relationship with well-being, operationalized in this study as self-esteem and internalizing disorder. However, the effect sizes of these relationships were small suggesting that prosociality was not a major determinant of well-being. The meta-analysis also provided evidence, albeit based on a small number of studies, of a relationship between prosociality and depressive symptoms, but not anxiety symptoms. The meta-analysis highlighted how the choice of respondent could influence the size of the effect
observed. A caveat apparent from the meta-analysis was the lack of longitudinal studies. This was problematic, as it left substantial uncertainty regarding the direction of the relationship between prosociality and well-being. If prosociality is solely an epiphenomenon or consequence of improved well-being, then this construct may be of limited clinical relevance.

The next step was therefore to explore the relationship between prosociality and well-being longitudinally. This was achieved in Paper 2, a 1-year longitudinal study making use the recently released “Understanding Society” dataset to obtain a large sample of young people. A further strength of this Paper was the consideration of the shared variance between prosocial and antisocial traits, which allowed a more conservative test of the relationships with well-being. The results of this Paper failed to demonstrate any relationship between prosociality and well-being, although an antisocial interpersonal disposition did predict reductions in well-being over time.

Combined, the results of Papers 1 and 2 raised doubts concerning the importance of prosociality in determining young people’s well-being, suggesting that prosociality had a small to moderate cross-sectional relationship with measures of well-being and did not predict changes in well-being over time. This led to the question of whether there would be circumstances under which prosociality would play a greater role in determining well-being in young people. We considered the possibility that the measures used to assess prosociality may also contribute to the limited findings. Paper 1 suggested that the Strengths and Difficulties Questionnaire (SDQ) was the most widely-used self-report measure of prosociality. However, this scale appeared to be limited by a small item content ($n = 5$) that presents a narrow-band conceptualisation of prosociality. A further consideration of existing measures of prosociality (see Paper 3 Introduction) suggested potential gaps in terms of suitable and clinically practical measures of prosociality designed for use by adolescents. We noted existing items concerning personal strengths, featured in The Survey of Mental Health of Children and Young People in Great Britain,
had potential in forming a measure of prosocial disposition. In Paper 3 I therefore aimed to develop these items into two short-form scales of prosocial disposition, named the Brief Adolescent Prosocial Perceptions Scales (BAPPS). The results of Paper 3 supported the factor structure, internal reliability, concurrent validity of the BAPPS. A particularly important finding was that the BAPPS accounted for additional variance in outcomes over and above what the widely used SDQ could explain, supporting the incremental validity of the BAPPS and thus suggesting that this scale may have added value over existing measures of prosociality and so provide additional information concerning an individual’s well-being (Haynes & Lench, 2003).

The results of Papers 1 and 2 also raised the possibility that other factors moderated the size of the relationship between prosociality and well-being. I decided to explore this possibility in Paper 4. In particular, this study drew upon 1) the observations in Paper 1 that different informants may vary in their rating or appraisal of prosocial traits and that these different ratings may differ in the strength of relationship with well-being, and 2) theoretical considerations made in Paper 1 considering the link between prosociality and self-concept (Hay & Cook, 2010), and influences from Symbolic Interactionism (e.g., Matseuda, 1992), suggesting that internalizing the label of being prosocial may have consequences for self-concept and well-being. This led to the idea that the interaction between self-appraisals of prosocial disposition and appraisals made by others may be related to well-being. Paper 4 therefore explored whether the interaction between self and parental appraisals of prosociality predicted emotional disorder. The results supported our hypotheses and suggested an effect whereby parental appraisals of prosociality would have a greater negative relationship (greater appraisals of prosociality equal lower risk) with the probability of emotional disorder when occurring in the context of positive self-appraisals of prosociality. In other words, those young people with high self-appraisals of their level of prosociality that were discrepant with their parents’ views were most at risk. This study outlined the importance of considering the subjective perception of prosociality and the
inter-personal context within which this occurs, rather than focussing on an objective rating of prosocial behaviour.

5.1.2. Theoretical Implications

The main theoretical contribution of the current research is not only in determining whether or not prosociality is related to well-being in young people but in establishing those conditions and factors that influence the strength and character of this relationship. Specific theoretical implications are outlined in more detail below:

- The observed cross-sectional relationships between prosociality and areas of positive functioning and psychopathology provided partial support for the theory that prosociality may represent a protective or resilience factor in young people (Blechman & Culhane, 1993; Haroz, Murray, Bolton, Betancourt & Bass, 2013) that may lower the risk of psychological difficulties, possibly through the positive influences of prosociality on social functioning and peer acceptance (Hay et al., 2004; Newcomb, Bukowski & Pattee, 1993; Zimmer-Gembeck, Hunter & Pronk, 2007). Of course, longitudinal evidence supporting this theory is still wanting.

- The current research suggested that where prosociality was related to psychopathology and well-being, effect sizes were often in the small to moderate range. This result implies that prosociality is not a major determinant of well-being in young people and is more likely one factor amongst many that contributes to the risk of impaired well-being.

- The results of Paper 1 suggested that stronger effect sizes emerge between prosociality and well-being when the assessment of prosociality is based on aggregated information from multiple raters. This finding could be taken as evidence that individual ratings of prosociality tend to be prone to bias or only capture particular elements of this construct. Parent and teacher ratings, for example, may be more influenced by prosocial acts exhibited at home or in the
classroom, respectively. Ratings based upon multiple informants may provide a
more holistic assessment of prosociality leading to stronger observed relationships.

- The results of Paper 3 supported the notion that prosociality can be conceptualised
  as a uni-dimension construct that is highly correlated with, but distinct from
  conduct problems/antisociality. This is consistent with the observations of others
  that prosocial and antisocial behaviours may co-occur (Hawley, 2006; Hay &
  Pawlby, 2003). This result emphasises the importance of not combining measures
  of prosociality and antisociality into a single scale but treating these as separate
  constructs. The observation that these constructs substantially overlap also means
  that it may be important when exploring relationships between prosociality and
  other outcomes to consider the variance shared with antisociality (as was done in
  Paper 2).

- Paper 4 supported the assertion apparent in various theories of psychopathology
  that an individual’s experience of conflict in their self-concept may underlie the
  development of emotional problems (e.g., Hobson, 1985; Mansell, 2005; Messer,
  2001). In particular, circumstances where parental perceptions of prosociality are
  negatively discrepant with the young person’s self-perceptions (i.e., parents’ view
  the young person as less prosocial than the young person views themselves) they
  may increase the risk of developing emotional problems. From the perspective of
  conflict-based theories of psychopathology, this may be due to parental perceptions
  carrying greater threat in this situation as they challenge an individual’s self-
  perception. These threateningly discrepant perspectives may be communicated to
  the young person in words and actions that could lead to the formation of emotional
  problems over time.

5.1.3. Clinical Implications

Study specific clinical implications are discussed in the papers themselves. The
main clinical implications have been drawn out below:
• The limited evidence of a longitudinal relationship between prosociality and changes in well-being or psychopathology means that it is currently unclear if there would be any value in including measures of prosociality as part of screening assessments aimed at identifying future risk of impaired well-being. The lack of longitudinal findings in the current programme of research may be attributable to the measure used, namely the SDQ. The BAPPS arguably provide a more holistic assessment of prosociality, focusing on this trait at a characterological level (see Paper 3), and so may have advantages over the SDQ in predicting changes in functioning over time. Further research is needed to clarify this (see section 5.3. below). Moreover, the presence of meaningful bivariate relationships between prosociality and well-being suggests there may still be a clinical utility in including an assessment of prosociality in order to establish a young person’s current state of well-being and functioning. Lower levels of prosociality may be suggestive of difficulties in other areas.

• The current research suggests that in undertaking an assessment of prosociality it may be beneficial to collect and combine assessments from multiple individuals, as these aggregated scores appear to have a stronger relationship with well-being than scores based on any single individual. In clinical practice, obtaining information from several family members and other relevant individuals (e.g., teachers) may therefore be more advantageous. However, in collecting information regarding prosociality from multiple sources it may also be important to be mindful of discrepancies in the ratings provided. Paper 4 suggests that such discrepancies may themselves be meaningful and provide additional information regarding a young person’s risk of psychopathology over and above what is apparent from the individual ratings. Where substantial parent-child discrepancies emerge in an assessment, these may reflect an important underlying mechanism that is
contributing to the young person’s difficulties, which may become a target for intervention.

- Prosociality had a small-to-moderate relationship with well-being and psychopathology. It is likely that prosociality is one amongst several factors that determine a young person’s well-being, and so interventions focussed specifically on increasing prosociality as a means of reducing emotional disorder or improve well-being may be of limited efficacy. Nonetheless, there is preliminary evidence that specific prosociality interventions can lead to benefits in social function and well-being (Layous, Nelson, Oberle, Schonert-Reichl & Lyubomirsky, 2012). Moreover, interventions focused on enhancing positive traits like prosociality may have further advantages, such as increasing engagement (Geraghty, Wood & Hyland, 2010; Tedeschi & Kilmer, 2005). Interventions aimed at enhancing prosociality may therefore provide a beneficial addition to existing therapies focused on reducing maladaptive processes and psychopathology.

5.1.4. Overlap with Altruism and Attachment

Prosociality overlaps conceptually with a number of other constructs. In particular altruism and prosociality appear inter-related. Nonetheless, an important distinction has been made between these constructs (Batson, 1998; Eisenberg & Mussen, 1989). Altruism refers to a selfless motivation to engage in behaviours that help others. This construct therefore has an important motivational component at its core. In contrast, prosociality very much describes a behavioural trait or disposition. That is, it describes the tendency to engage in behaviours that support of benefit others. Whilst it is likely that prosocial behaviour is often driven by altruism, and research supports this claim (Batson, 1998; Batson & Powell., 2003), it is also possible to be highly prosocial without altruistic motives. Prosocial behaviour may be advantageous to the individual in terms of building mutually supportive relationships and so does not need to be driven by selfless motives. Prosociality may also be driven by a need to meet internalized expectations rather than
being externally driven by the needs of others (Eisenberg, Cumberland, Guthrie, Murphy & Shepard, 2005). Some authors have even suggested a positive relationship between prosocial behaviour and indirect aggression, since both represent behavioural dispositions that can help an individual achieve social goals through the effects upon others (Culotto & Goldstein, 2008).

Attachment represents another construct that may overlap to some extent with prosociality. The attachment system is conceptualised as a psychobiological system which governs how an individual relates to and seeks care or support from others (Bowlby, 1969). It is believed that underlying attachment security is the formation of internal working models that carry an individual’s expectations regarding their relationships with others, which in turn guides their behaviour (Bretherton & Munholland, 1999). It seems likely that the attachment system would therefore also influence an individual’s level of prosociality. A young person’s level of security in regards to interpersonal relationships could readily modulate their capacity to engage in prosocial acts. For example, an individual with a very avoidant attachment style may rarely feel close enough to others to engage in any prosocial behaviour. Moreover, attachment security is believed to contribute to the regulation of difficult feelings, particularly those emerging in interpersonal contexts (e.g., Cassidy, 1994), and these emotion-regulation skills are in turn seen as important in the development of prosociality (Eisenberg et al., 1996; Laible, 2007). Nonetheless, prosociality and attachment refer to different levels of behaviour. Prosociality specifically involves behaviours that concern benefitting or supporting others, whereas attachment involves a broader array of behaviours associated with seeking or avoiding proximity, contact and support. Behavioural indicators of attachment style in infants, such as distress at separation and difficulties in being soothed by a caregiver would not be regarded as prosocial behaviours, at least when adopting the definition of prosociality used in the current thesis. It is likely that attachment style is one more distal factor which contributes to and determines prosociality. There is evidence that a more secure attachment is related
to engagement in prosocial behaviour in adolescents, although these relationships are only moderate in size (Laible, 2007; Maekiewicz, Doyle & Brendgen, 2001; Thompson & Gullone, 2008). Further research in this area, for example, exploring how changes in attachment style impact on levels of prosociality, would be beneficial in better understanding the relationship between attachment and prosociality.

5.1.5. Prosocial Development and Transition into Adulthood

It has been noted within this thesis that adolescence is a time of change and transition. The process of transition into adulthood is arguably an important developmental step, during which changes in how prosociality develops and manifests might also be expected. Longitudinal research exploring the development of prosociality through adolescence and into adulthood suggests that there is a not simple linear progression but a complex non-linear trend, whereby prosociality increases up to the age of 17-18 years, declines after this into the early twenties before rising again up to the age of 25-26 years (Eisenberg et al., 2005). In parallel, other variables believed to underlie prosocial development also change. There is evidence of a linear increase in perspective taking (i.e., the capacity to adopt the perspective of others) from adolescence into early adulthood whilst different forms of moral reasoning appear to show more complex non-linear patterns of change (Eisenberg, Carlo, Murphy & Court, 1995; Eisenberg et al., 2005). It is unclear how these developments impact on the relationship between prosociality and well-being. The current thesis suggests that prosociality is just one of many likely factors that influence well-being and so these patterns of change in prosociality may only have a limited influence upon individuals’ well-being as they transition into adulthood. However, it is also possible that the importance or impact of prosociality varies across this period. Across adolescence and into early adulthood there are changes in peer relationships and friendships, for example with peer relationships often giving way to closer friendships, which are followed by romantic relationships (Collins & Laursen, 2004). The value and consequences of prosocial behaviour (or lack of it) may vary across these periods, and this
in turn may mean that prosociality has greater importance to an individual’s well-being at some developmental periods than at others. Longitudinal research is needed to fully explore these relationships over time.

5.2. Methodological and Conceptual Decisions

5.2.1. Choice of Outcomes

Within the current research project I have used a variety of specific outcomes, which can be nested under the more general umbrella term of well-being. Well-being can be viewed here as encompassing both psychopathology and areas of positive functioning. The variety of different outcomes across studies could be viewed as a potentially limitation, since selecting a single, well-defined outcome may have enhanced comparability between studies. Nonetheless, the different outcomes were necessary and motivated by the particular aims of the individual studies. In Paper 1, the focus was to produce a meta-analysis that would explore the link between prosociality and outcomes that were both widely studied and of clear clinical relevance. Internalizing and self-esteem appeared suitable here. Whilst a small number of longitudinal studies have looked at the relationship between prosociality and psychopathology, no studies could be identified that had looked at the relationships between prosociality and Subjective Well-Being (SWB) over time. Moreover, SWB had the advantage of providing a more holistic outcome, where change over time might be more likely, than if psychopathology (e.g., onset of depression) was the chosen outcome. Consequently, this outcome was adopted for Paper 2. In Paper 3, because the goal was to provide a psychometric evaluation of a new measure of prosociality, incorporating a wide range of different outcomes, both negative (e.g., Psychiatric disorders and school exclusion) and positive (e.g., peer relationships and social support) was necessary to allow a comprehensive test of validity. The nature of Paper 4 made it important to have an outcome that did not depend on a single informant who was also contributing to the predictor variables because this has been a criticism of prior work.
focussing on discrepancy effects where it has been argued that the similarity in predictors
and outcome may distort effects (Zuckerman & Knee, 1995). Consequently, self-report
measures of well-being were not ideal here, and a multi-informant based assessment of
emotional disorders was used.

5.2.2. Meta-Analysis vs. Narrative Review

One dilemma that emerged during the course of this research was whether or not to
adopt a narrative literature review or meta-analysis approach for Paper 1. Both approaches
have their strengths and limitations. A narrative review may allow a broad overview of a
particular research domain (Garg, Hackman & Tonelli, 2008) and provides an opportunity
to discuss individual studies in greater depth than might be achievable within a meta-
analysis. However, narrative reviews are limited in their ability to synthesize findings
across multiple studies and provide conclusions because they rely on subjective and bias-
prone methods of summarising results, such as vote-counting (which may occur explicitly
or implicitly; Borenstein, Hedges, Higgins & Rothstein, 2009; Stanley, 2001). Narrative
reviews can also lack transparency, with conclusions emerging from a reviewer’s
subjective interpretations of the data, that may be driven by the reviewer’s own clinical and
research experiences as well as the research data outlined in the review (Garg et al., 2008;
Rosenthal & DiMatteo, 2001). In contrast, meta-analysis is well suited to the synthesis of
findings across multiple studies, providing summary statistics that can give a better
population estimate of an effect than those obtained by an individual study, and facilitates
a transparency in the methods used to reach this synthesis (Borenstein et al., 2009). Meta-
analysis has been criticised, predominantly around the issues of combining dissimilar
studies (the “apples and oranges” issue), and not adequately addressing publication bias
(the “file drawer problem”; Sharp, 1997). However, these problems are equally pertinent to
narrative reviews as the possible impact of drawing conclusions based on fundamentally
dissimilar studies and ignoring relevant, unpublished research remain (Rosenthal &
Dimatteo, 2001). Moreover, meta-analysis provides tools for exploring these issues, such
as providing an estimate of heterogeneity and allowing the exploration of systematic factors that contribute to this heterogeneity via techniques like meta-regression, or via the use of funnel plots and specific tests to assess the extent of publication bias (Borenstein et al., 2009; Sharp, 1997). In contrast narrative reviews do not tend to utilise these methods and often ignore or inadequately address these problems. In the case of Paper 1, heterogeneity was high. An awareness of this was important in exercising due caution in the interpretation of the results. Had a narrative approach been adopted, the extent of heterogeneity would likely have been underestimated. Consequently, in light of the benefits of meta-analysis in providing a more transparent means of reviewer, this approach was selected over a narrative review.

5.2.3. Secondary Analysis of Survey Data

The current research largely relied on secondary analyses of large survey datasets. There were several advantages to this approach to research. Firstly, it has been argued that there is an ethical imperative for researchers to re-use data in order to maximise the benefits obtained from participants’ commitment of time and energy (Rosenthal, 1994). Where existing datasets contain variables of interest, secondary analyses of these data as an alternative to new data collection prevents an unnecessary duplication of effort, both on the part of the researcher and the participants involved. Second, the large sample sizes contained in such data allow for analyses that could be problematically under-powered in smaller samples. For example, the issue of low power in moderation analysis of naturalistic data has been highlighted (McClelland & Judd, 1993) and may have been an issue in Paper 4, had the sample size been smaller. Third, the larger sample size also results in smaller standard errors and so more precise parameter estimates than would be obtained in smaller samples.

Some challenges of adopting this method of research should also be noted. Developing a familiarity with the dataset is a necessary process but can be time consuming. This was especially the case for the “Understanding Society” data, where data
are stored across multiple, different datasets that need to be understood and appropriately combined before analysis can begin. Using existing data also presents a challenge in requiring the researcher to search for and identify existing data that best fits with their research aims. In the current project, the UK data archive provided a valuable resource for identifying appropriate datasets. Relying on existing datasets can also impose limits regarding available variables. For example, in designing a new programme of research, it is possible to incorporate a variety of different measures of key constructs of interest. In contrast, large datasets may only include a single measure of a construct of interest, since the focus is often on assessing a broad range of variables, rather than focussing in on a few key variables.

A further issue relating to the use of existing data concerns the level of work this approach requires. For a more conventional thesis for the degree of doctor of clinical psychology a trainee would typically recruit participants and run the study themselves in order to obtain the data they need. These steps are often time consuming. Undertaking the thesis research using existing data avoids these steps. However, using existing data does require additional work in other areas of the research process, including the initially search and identification of appropriate datasets, the building of familiarity with a suitable dataset and the survey that produced this data, and the screening and aggregation of datasets. The decision to use existing datasets for the present thesis was partly motivated by my own learning needs, as I was aware I lacked experience in conducting research using large survey datasets and wished to develop my expertise in this area. In order to ensure the workload involved in this thesis was at the level expected for the degree of doctor of clinical psychology I produced three empirical papers alongside a review paper. This is in contrast to what is usually done when trainees have recruited their own participants, where a single empirical paper and single review paper is usually produced.
5.2.4. Difficulties in the Progression between Studies

Within the current research there was a theoretical and conceptual progression whereby earlier emerging findings informed the later elements of the research. There were two instances, however, where this progression from earlier findings to later study design was not possible. The first instance regards the findings of Paper 1, that prosociality may be related to depressive but not anxiety symptoms. Despite this finding, Papers 3 and 4 did not explore depression and anxiety separately, but focussed on the higher-order construct of internalizing disorder. There were multiple reasons for this. First, as general community samples were used in Papers 3 and 4, where rates of psychiatric disorders were low, breaking the psychiatric disorders outcomes in Papers 3 and 4 down into different subtypes would have led to much smaller numbers of affected cases and would have limited power to identify significant effects (particularly in regards to the interaction effects in Paper 4). Second, time pressures required that studies were undertaken partly in tandem, and so as this finding emerged in Paper 1, there was little time to adjust the analyses of Papers 3 and 4. Third, this moderation effect in Paper 1 was based on a small number of studies and so the conclusion that prosociality was linked specifically to depression but not anxiety was made only tentatively.

The second instance of a clear progression from earlier to later studies within the thesis being blocked occurred in the gap between Papers 3 and 4. Paper 3 led to the development of the BAPPS, which appeared to represent a psychometrically sound measure of prosociality. Paper 4 was based upon the same dataset as Paper 3, and so could have also employed the BAPPS as a measure of prosociality. However, the non-validated “personal strengths” scales (based on summing all the personal strengths items) were instead used in Paper 4. These scales provided a much broader assessment of prosocial and positive functioning than what is captured by the BAPPS. There were two reasons for using the personal strengths measure over the BAPPS. First, Paper 4 already included a specific measure of prosocial behaviour (the SDQ) and it was therefore useful to examine
if findings would be replicated with a much broader measure of positive functioning. Second, there are a number of reasons for exercising caution in implementing newer measures. Whilst data on some psychometric properties may exist, other psychometric properties may not yet have been explored. For example, the stability and test re-test reliability of the BAPPS is yet to be tested. Similarly, it would be important to consider (as noted in Paper 3) how the BAPPS relates to other measures of positive and prosocial functioning in young people, to further establish the concurrent validity of the BAPPS. In addition, for measures whose psychometric properties have only been established in a single sample even seemingly impressive psychometric properties may reflect idiosyncrasies of that particular dataset and not generalise to other samples (Pitt & Yung, 2002). In establishing the psychometrics of a new measure it is important that the validity and reliability of this measure is replicated across different samples. Consequently, there were reasons for using the existing scale provided by the survey, rather than the newly developed BAPPS.

5.3. Future Research

There are several avenues where future research could expand on the findings of the current research. Specific areas for future research are outlined below:

**Further BAPPS Psychometric Testing.** The BAPPS demonstrated good psychometric properties in Paper 3. However, if these scales are to be used within clinical settings, further validation is warranted. In particular, confirmation of the psychometric properties of these scales (e.g., factor structure, concurrent and predictive validity) in other populations, including vulnerable or clinical populations where prosociality may be impaired (e.g., young people with a history of maltreatment; Kaufman & Cicchetti, 1989; Stern, Lynch, Oates, O’Toole & Cooney, 1995). Paper 3 only had data from a single time point. Consequently, longitudinal data allowing for tests of predictive validity and test re-test reliability would be beneficial. It would also be useful to further explore the
relationship between the BAPPS and other areas of resilience and positive functioning (e.g., gratitude; Wood, Froh & Geraghty, 2010).

**Exploring Prosociality as a Resilience Factor.** The present research suggested that whilst prosociality was related to well-being, effect sizes were only in the small to moderate range, and no prospective relationships were supported. However, it has been suggested that prosociality may become more important as a protective factor in young people who are already struggling with impaired well-being or emotional disorder, and so act as a resilience factor (Chen et al., 2001; Haroz et al., 2013). Consequently, a future research project could explore whether prosociality operates as a resilience factor, using the approach outlined by Johnson, Wood, Gooding, Taylor and Tarrier (2011) whereby the focus would be on the interaction between prosociality and various risk factors in predicting well-being. Important risk factors may include experiences of earlier adversity or maltreatment, since these are well recognised predictors of future disorder (Gilbert et al., 2009). A longitudinal design would also be beneficial in clarifying the direction of effect in these relationships.

**Discrepancy Effects in Self-Appraised Prosociality Over Time.**

Building on the results of Paper 4, future research could examine how discrepancies in self-appraised and other-appraised prosociality emerge over time and contribute to the onset of emotional problems. This could be achieved by recruiting parent-child dyads during childhood and conducting follow-up assessments throughout childhood and adolescence. As with Paper 4, interactions in self-appraised and other-appraised prosociality could then be examined as predictors of subsequent changes in the risk of emotional disorder. This research would help clarify the direction of effect in this relationship and determine whether discrepancies lead to the development of emotional problems or vice versa. This research could also help establish how discrepancies in parent-child appraisals develop and are maintained over time. It is possible that systemic factors such as family communication style, and individual factors such as parenting style
or attachment pattern are related to the divergence of parental and child-appraisals of positive traits like prosociality. Advanced statistical methods such as latent growth curve modelling could even be used to determine the stability and course of distinct trajectories of parent-child discrepancy over time (e.g., Carlo, Crckett, Randall & Roesch, 2007).
5.4. References


doi:10.1007/s00787-010-0135-3


APPENDIX I: SUBJECTIVE WELL-BEING SCALE

The next few questions are about how you feel about different aspects of your life. The faces express various types of feelings. Below each face is a number where ‘1’ is completely happy and ‘7’ is not at all happy. Please tick the box which comes closest to expressing how you feel about each of the following things....

A. Your School work?
B. Your appearance?
C. Your family?
D. Your friends?
E. The school you go to?
F. Which best describes how you feel about your life as a whole?

Items available from
https://www.understandingsociety.ac.uk/documentation/mainstage/questionnaires
**APPENDIX II: INITIAL BAPPS ITEM SET**

<table>
<thead>
<tr>
<th>BAPPS-S</th>
<th>BAPPS-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caring/ kind hearted</td>
<td>Reliable and responsible</td>
</tr>
<tr>
<td>Nice personality</td>
<td>Well behaved</td>
</tr>
<tr>
<td>Generous</td>
<td>Keen to learn</td>
</tr>
<tr>
<td>Well behaved</td>
<td>Grateful/ appreciative</td>
</tr>
<tr>
<td>Polite</td>
<td>Good at school work</td>
</tr>
<tr>
<td>Good at school work</td>
<td>Interested in many things*</td>
</tr>
<tr>
<td>Reliable and responsible</td>
<td>Polite</td>
</tr>
<tr>
<td>Raising money for charity/ helping</td>
<td>Caring/ kind hearted</td>
</tr>
<tr>
<td>others</td>
<td></td>
</tr>
<tr>
<td>Good with friends</td>
<td>Gets on well with rest of family</td>
</tr>
<tr>
<td>Good fun/ good sense of humour</td>
<td>Good fun/ good sense of humour</td>
</tr>
<tr>
<td>Easy-going</td>
<td>Likes family activities</td>
</tr>
<tr>
<td>Out-going/ sociable</td>
<td>Easy-going</td>
</tr>
<tr>
<td>Helpful at home</td>
<td>Affectionate</td>
</tr>
<tr>
<td>Good at music*</td>
<td>Does homework without needing to be reminded</td>
</tr>
<tr>
<td>Good at drama/ acting*</td>
<td>Good with friends</td>
</tr>
<tr>
<td>Independent</td>
<td>Generous</td>
</tr>
<tr>
<td>Good at art/ making things*</td>
<td>Independent</td>
</tr>
<tr>
<td>Good with computers*</td>
<td>Bounces back quickly after set-backs*</td>
</tr>
<tr>
<td>Good at sport*</td>
<td>Takes care of appearance*</td>
</tr>
<tr>
<td></td>
<td>Helps around the home</td>
</tr>
<tr>
<td></td>
<td>Creative activities: Art, acting, music, making</td>
</tr>
<tr>
<td></td>
<td>things*</td>
</tr>
<tr>
<td></td>
<td>Keeps his/her bedroom tidy</td>
</tr>
</tbody>
</table>
Lively*

Good at sport*

* Items excluded by judges from analysis
APPENDIX III: SOCIAL SUPPORT SCALE

How many relatives in same household do you feel close to?
(0) None
(1) One
(2) Two or more

How many other relatives do you feel close to?
(0) None
(1) One
(2) Two or more

How many friends would you describe as close or good friends?
(0) None
(1) One
(2) Two or more

There are people I know who do things to make me feel happy.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who make me feel loved.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who can be relied on no matter what happens.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who would see that I am taken care of if I need to be.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who accept me just as I am.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who make me feel an important part of their lives.
(0) Not true
(1) Partly true
(2) Certainly true

There are people I know who give me support and encouragement.
(0) Not true
(1) Partly true
(2) Certainly true

*Information taken from McFall, 2012*
APPENDIX IV: DEFINITION OF PROSOCIALITY

Prosociality can be generally understood as a positive orientation towards one's social context. Prosociality involves a number of facets, representing dispositions towards particular patterns of behaviour. These include the following:

a) Behaviours involving helping, caring for, sharing with or supporting others.

b) Affiliative behaviours demonstrating interpersonal warmth, social co-operation or inclusiveness. These may include adopting a pleasant, warm or friendly demeanour, or adopting a supportive style of interaction with others.

c) In some ways, prosocial behaviour can be seen as the opposite of anti-social behaviour. Anti-social behaviour can involve acts that are not directed at a specific individual, but jar against societal norms and values, for example, the young person who is untidy and disorganized, or uninterested and disruptive at school. Therefore, a further facet of prosocial behaviour may involve a consistency with ‘prosocial expectations’. This involves the extent to which young people meet the expectations and norms that are set by their parents, caregivers or other authority figures (e.g., teachers).
APPENDIX V: BRIEF ADOLESCENT PROSOCIAL PERCEPTIONS SCALES (BAPPS)

BAPPS-S

Instructions: you will see some things which other young people have said about themselves. Please say whether they apply to you by choosing 0 for ‘No’, 1 for ‘A little’ or 2 for ‘A lot’

1. Caring, kind-hearted
2. Nice personality
3. Generous
4. Well behaved
5. Polite
6. Reliable and responsible

BAPPS-P

Instructions: I now want to ask you about ….. (child’s name) good points or strengths. Below is a list of descriptions and I would like you to tell me whether or not they apply to ….. (child’s name) by choosing 0 for ‘No’, 1 for ‘A little’ or 2 for ‘A lot’.

1. Affectionate
2. Gets on well with the rest of the family
3. Generous
4. Grateful, appreciative
5. Easy-going
6. Caring, kind-hearted
APPENDIX VI: JOURNAL GUIDELINES FOR EMPIRICAL PAPERS (Papers 2, 3 & 4)

Clinical Psychology Review (Paper 1):
Word limit: Manuscripts should ordinarily not exceed 50 pages, including references and tabular material.
References: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition.

Journal of Positive Psychology (Paper 2):
Word limit: 7500 words including, main text, tables, references, and any additional material. An abstract, not exceeding 150 words should constitute the first page of the article.
References: References should be prepared using the Publication Manual of the American Psychological Association for style.

Word limit: Thirty Pages in 10 point font.
References: In general, the journal follows the recommendations of the 2010 Publication Manual of the American Psychological Association (Sixth Edition).

British Journal of Clinical Psychology (Paper 4):
Word limit: 5000 words excluding abstract, reference list, tables and figures.
References: For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.