UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL, HUMAN AND MATHEMATICAL SCIENCES

School of Psychology

Sense of school belonging: How can schools make a difference?

by

Ashleigh Lauren Shuttleworth

Thesis for the degree of Doctorate in Educational Psychology

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ABSTRACT

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SENSE OF SCHOOL BELONGING: HOW CAN SCHOOLS MAKE A DIFFERENCE?

Ashleigh Lauren Shuttleworth

The review investigated what school based interventions currently exist for supporting pupils sense of school belonging (SoSB). The search yielded 20 articles to be included in the review, and from these studies, 21 different intervention programmes were identified. Whilst all interventions aimed to increase SoSB, they were variable in many other aspects. To support synthesis of results, interventions were categorised as universal or targeted programmes and further divided based on common themes. Twelve studies reported a positive and significant effect of experimental condition on SoSB scores and one study reported a negative effect of experimental condition. Results support the notion that SoSB is malleable and can be enhanced through intervention support. All studies appear to incorporate aspects of teacher support and/ or personal characteristics, identified as having the largest effects with SoSB within Allen and colleagues' meta-analysis (2016). In addition, the data presents a trend towards targeted interventions being more effective than universal interventions, presenting particularly positive effects of SoSB for 'at-risk' students. Implications are discussed in regards to the utility and effectiveness of having SoSB interventions being led by members of the school community, and in regards to the potential negative effect of peer contagion when running a group intervention with 'at-risk' youth.

The empirical paper examined the effectiveness of two experimental school-based diary conditions (gratitude diary and appreciation diary) on the promotion of SoSB and positive affect (PA), in comparison to a control condition (event diary). Participants aged 7 to 11 years (M = 8.76) were recruited from five primary schools in the South of England (N = 287). The intervention was carried out as a class, with pupils randomly allocated to either the gratitude, appreciation or event diary condition. Participants completed the diaries daily for three weeks, leading to 15 possible diary entries. Measures of gratitude, SoSB and PA were obtained at pre-intervention, post-intervention and at a three-week follow-up, in addition to a pre-intervention measure of nostalgia proneness. Findings revealed that the intervention had been unsuccessful in manipulating

gratitude, and ANOVAs for SoSB and PA revealed no significant effect of condition. However, a moderate positive correlation between gratitude, SoSB and PA change scores was noted, suggesting the existence of a relationship between change in gratitude and change in SoSB and PA. Possible explanations for the lack of condition effect in the current study are presented, in addition to limitations of the study in regards to the validity of the gratitude measures used and fidelity to intervention conditions.

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Academic Thesis: Declaration Of Authorship

I, Ashleigh Lauren Shuttleworth declare that this thesis entitled **"Sense of school belonging: How can schools make a difference?"** and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signed: .....

Date: .....

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Finally, a huge thank you to Dan for his love and unfailing patience (even when severely tested)! I am looking forward to being more present (physically and emotionally) in the future, and continuing life plans which were made before starting the course but have been put on hold, such as finally organising a wedding!

Definitions and Abbreviations

α	Cronbach's index of internal consistency
β	Population values of regression coefficients
χ^2	Chi-squared
η_p^2	Partial-eta squared
ABPS	Anti-Bullying Pledge Scheme
AMOS	Statistical software
AMP	Achievement Mentoring Program
ANOVA	Analysis Of Variance
APA	American Psychological Association
B (or b)	Unstandardized regression coefficients
C	Control/ comparison group
CDC	Centres for Disease Control and Prevention
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
d	Cohen's d
df	Degrees of Freedom
DV	Dependent Variable
EP	Educational Psychologist
ERIC	Education Resources Information Center
E_x	Experimental group
f	Cohen's f
F	Test statistic for ANOVA
g	Hedges' measure of effect size
GPA	Grade Point Average

GQ-6	Gratitude Questionnaire 6
GRAT	Gratitude Resentment and Appreciation Test
IV	Independent Variable
M	Mean
M_{age}	Mean age of participants
ML	Maximum Likelihood
n	Number of cases (generally in a subsample)
N	Total number of participants/ studies
NA	Negative Affect
ns	Not statistically significant
OECD	Organisation for Economic Co-operation and Development)
p	Probability level
PA	Positive Affect
PANAS	Positive and Negative Affect Scale
PANAS-C	Positive and Negative Affect Scale for Children
PGC	Peer Group Connection
PIR	Peer Interpersonal Relatedness program
PPG	Positive Peer Group initiative
PROCESS	Statistical software
Project EXCEL	Ensuring Excellence through Communalism program
Project REAL	Rural Early Adolescent Learning program
PSSM	The Psychological Sense of School Membership scale
r	Pearson's product-moment correlation coefficient
R^2	Multiple correlation squared
RAP	Resourceful Adolescent Program
RBI	Relationship Building Intervention

RCT	Randomised Controlled Trial
RMSEA	Root Mean-Square Error of Approximation
RY	Reconnecting Youth
s	Statistically significant
SD	Standard Deviation
SENCo	Special Educational Needs Coordinator
S-GRAT	Gratitude Resentment and Appreciation Test Short Form
SLAQ	School Liking and Avoidance Questionnaire
SNS-C	Southampton Nostalgia Scale for Children
SoSB	Sense of School Belonging
SPIY	Skills for Preventing Injury in Youth
SPSS	Statistical software
SQRT	Square Root Transformation
t	Test statistic for t-test
T1	Time 1 (pre-intervention)
T2	Time 2 (post-intervention)
T3	Time 3 (follow-up)
USA	United States of America
YLP	Youth-Led Aggression Prevention Program
ΔF	Difference in F value
ΔR^2	Difference in multiple correlation squared

Chapter 1 Review Paper: What is the Evidence Base for School Belonging Interventions?

1.1 Introduction

The belongingness hypothesis (Baumeister & Leary, 1995) suggests that human beings have a pervasive need to form and maintain positive, frequent and meaningful relationships with others. This need for belongingness is reported to be innate and universal, transcending cultures (Baumeister & Leary, 1995). A sense of belonging is derived from a feeling of being an indispensable and integral part of that social system (Anant, 1966), whereby one feels one has a meaningful part within the social group (Maslow, 1943) and that there is reciprocal care and concern for one another (Baumeister & Leary, 1995). Individuals can obtain a sense of belonging from a range of social systems, such as feeling a part of and connected to family, peers, school, community, ethnic groups and the workplace (Allen & Kern, 2017).

1.1.1 Theoretical Perspectives of Belonging

Various theoretical perspectives support the notion of belonging being a fundamental human need, and that the gratification of such a need will lead to positive social, emotional and behavioural outcomes (e.g., Baumeister & Leary, 1995; Bowlby, 1969; Maslow, 1943; Ryan & Deci, 2000). Within Maslow's theory of motivation, once physiological and safety needs have been fairly well met, the need for love, affection and belongingness is proposed to then occupy the individual's focus: "he will hunger for affectionate relations with people in general, namely, for a place in his group, and he will strive with great intensity to achieve this goal" (Maslow, 1943, p. 381). Belonging is therefore defined by Maslow's theoretical perspective as a need to feel connected and accepted by others.

The need to feel connected to others also features within self-determination theory (Ryan & Deci, 2000), which identifies the three needs of competence, autonomy and relatedness as being necessary for intrinsic motivation (the inherent tendency to seek novelty, challenges, exploration and learning in the absence of external rewards). Relatedness is defined as the "emotional and personal bonds and attachments between persons" (Ryan, 1991, p. 210), and reflects the individual's striving for connections with others.

Drawing upon and expanding on these theories, Baumeister and Leary (1995) developed the belongingness hypothesis, presented as human beings' "pervasive drive to form and maintain

at least a minimum quantity of lasting, positive, and significant interpersonal relationships" (1995, p. 497). There is a need for frequent, non-aversive interaction with other people, and a need for these interactions to take place in the context of a reciprocal caring relationship that is persistent over time. The authors suggest that the need to be belong can be directed towards any person and that the loss of relationships can be replaced by others. They propose the belongingness hypothesis as having broad applicability to human motivation and behaviour, citing that, "much of what human beings do is done in the service of belongingness" (p. 498).

Whilst the aforementioned theories focus on the individual and their pursuit for belonging, Bronfenbrenner's (1994) bioecological framework provides a more holistic understanding of human development, specifically detailing the important influence of environment. Bronfenbrenner posits that the individual belongs to a wider network of groups and systems, which each have a significant influence on their development. The ecological environment is presented as a set of nested structures, with the individual at the centre of this (Figure 1).

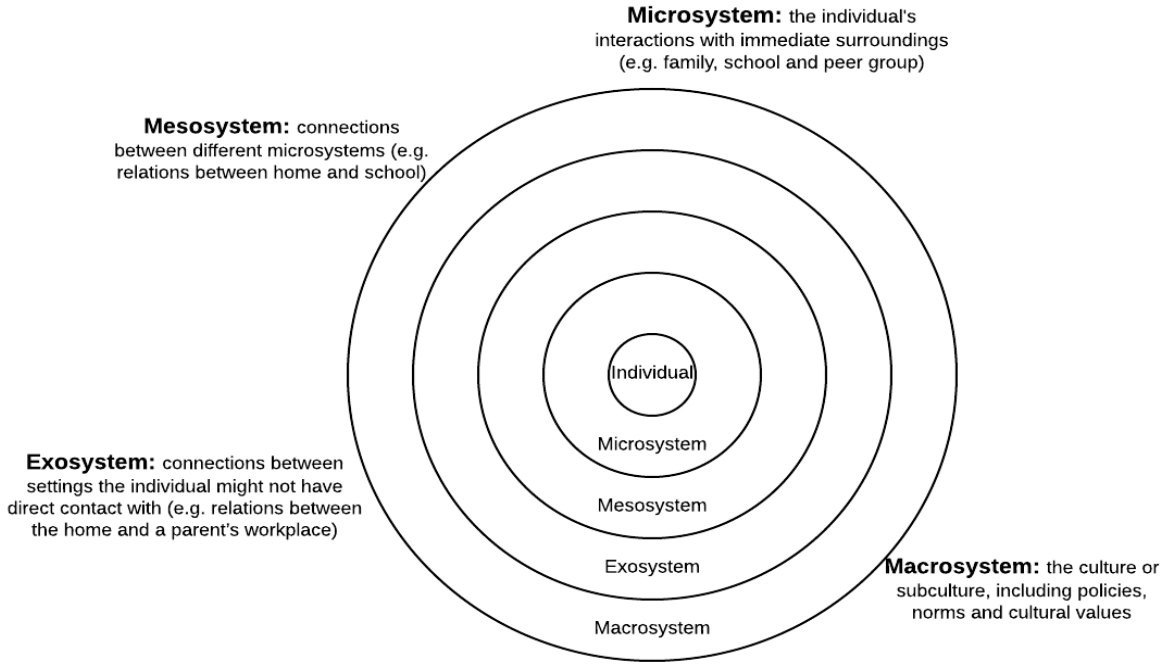


Figure 1: Representation of Bronfenbrenner's bioecological model

1.1.2 Definition of School Belonging

As aforementioned, a sense of belonging can be derived from a range of social systems, including school. Within the literature, the construct of school belonging has been defined in a multitude of ways, including terms such as *school membership, school connectedness, school attachment and school bonding*. 'School belonging' is one of the most commonly used terms

within the literature, and the term which will be used within this review. It has been defined as "the extent to which they [students] feel personally accepted, respected, included and supported by others – especially teachers and other adults in the school social environment" (Goodenow & Grady, 1993, p. 60-61). Whilst 'school belonging' is used throughout the remainder of the review, this does also incorporate related terms. The paper will next consider outcomes associated specifically with a sense of school belonging (SoSB).

1.1.3 Relationships to Social and Emotional Outcomes

Research has highlighted a positive association between SoSB and psychological well-being (e.g., Jose, Ryan, & Pryor, 2012). For example, within O'Rourke and Cooper's (2010) study of primary school students, SoSB was found to be closely associated with self-reported feelings of happiness. SoSB has also been found to have a strong association with school adjustment (measured as *well-being, ego resiliency and self-esteem*) (Law, Cuskelly, & Carroll, 2013).

In addition to focussing on positive well-being, research has suggested an inverse relationship between SoSB and maladaptive outcomes such as depression and anxiety (Anderman, 2002; Shochet, Dadds, Ham, & Montague, 2006). Shochet et al.'s (2006) longitudinal study found low SoSB to be predictive of depressive symptoms one year later for males and females, and anxiety symptoms for females, after controlling for prior levels of anxious/depressive symptoms.

Lower SoSB has been found to be associated with higher levels of bullying behaviour and victimisation in middle- and high-school students (Goldweber, Waasdorp, & Bradshaw, 2013) and higher levels of aggression (Wilson, 2004). Within Murray and Greenberg's (2000) study, the authors categorised pupils into groups based on the relationship they had with their teachers and their SoSB. Overall, findings suggested that positive pupil-teacher relationships and SoSB scores were associated with positive social (e.g., social competence, peer relations and school competence) and behavioural outcomes (e.g., fewer internalising and externalising behaviours).

Higher SoSB has been associated with decreased risk-taking behaviour. For example, Chapman and colleagues (2011) found that SoSB was associated with reduced participation in risk-taking behaviours associated with transport (e.g., drink driving) and reduced reports of related injuries. Furthermore, SoSB has been found to be associated to significantly less student substance use and 'delinquent' behaviour (e.g., running away from home, truanting from school, damaging property and stealing money) (Battistich & Hom, 1997).

1.1.4 Relationships to Academic Outcomes

SoSB is positively related to a range of academic outcomes. For example, Goodenow and Grady (1993) present findings showing that students with a higher SoSB are more likely to be academically motivated and engaged than peers with a lower SoSB. Those with a higher SoSB also exhibit greater expectancy for academic success, value their work more, and are more effortful and persistent (Goodenow & Grady, 1993). These findings have been corroborated by others, such as Neel and Fuligni (2013) and Sánchez, Colón, and Esparza (2005), who found that students with a high SoSB were more likely to think that school was enjoyable, useful and intrinsically valuable.

1.1.5 SoSB Interventions

As presented above, there have been ample studies conducted that detail the importance of SoSB on a range of social, emotional and academic outcomes. At school, children and young people are afforded opportunities for connections and social interactions with others (Allen & Kern, 2017), however, not all children and young people feel that they belong. For example, within Schall, Wallace and Chhuon's (2016) study, more than a third of participants (38.2%) were categorised as having a low SoSB. In addition, a large scale survey completed by the OECD (Organisation for Economic Co-operation and Development) with over 500,000 15-16 year olds in 65 countries found that almost a fifth of their participants (19%) did not feel that they belonged to their school (OECD, 2013).

As some children and young people are identified as having a low SoSB, and with research presenting the relationship between SoSB and a range of positive outcomes, there would appear to be strong justification for schools to employ interventions aimed at promoting SoSB. Indeed, research into factors influencing SoSB have been presented by several authors in the hope of enabling clearer guidance on how to promote this construct (e.g., Allen, Kern, Vella-Brodrick, Hattie, & Waters, 2016; Centers for Disease Control and Prevention [CDC], 2009; Libbey, 2004; The Wingspread Declaration, 2004). The Wingspread Declaration (2004) and CDC (2009) findings have been criticised for their lack of methodological rigour (Allen & Bowles, 2012), however, both Libbey (2004) and Allen et al. (2016) provide a more scientifically sound analysis of the data.

Libbey (2004) analysed various measures of student and school relationships, and identified nine constructs which related to ‘school connectedness’. These included: engagement in current and future academic progress, belonging (and being a part of the school), fair and effective discipline, participation in extracurricular activities, whether students liked school, student voice, presence of good friends in school, safety, and level of teacher supportiveness and caring.

Allen et al. (2016) conducted a meta-analysis of 51 studies involving over 67,000 participants, analysing associations between ten different factors and SoSB. The authors concluded that eight of the ten factors were significantly related to SoSB. These included: academic motivation, parent support, teacher support, emotional stability, peer support, gender, personal characteristics and school environment. The authors found the largest effects for teacher support and personal characteristics (e.g., conscientiousness, optimism and self-esteem).

Whilst research has attempted to provide clearer guidance on how to promote SoSB, there is a reported disparity between the understanding of SoSB within research and the transfer of this knowledge into everyday practice (Allen & Bowles, 2012). As such, this review aims to consider what interventions currently exist for supporting SoSB, and whether the identified interventions are effective at doing this.

1.2 Review Methodology

1.2.1 Search Strategy

Studies included in this review were obtained through a systematic search of the published literature. Searches were conducted in three electronic databases: PsycINFO via EBSCO, Web of Science via Web of Knowledge and the Educational Research Information Centre (ERIC). Search terms (Appendix A) were generated using the key terms from the review question and considered using school belonging terms used within a recent literature review (Chapman, Buckley, Sheehan, & Shochet, 2013).

1.2.2 Inclusion and Exclusion Criteria

All studies retrieved from the systematic literature review search were screened and subjected to the inclusion and exclusion criteria related to the review question (Table 1). Appendix B contains details about the applicability of each study at the full-text screening stage.

Table 1

Inclusion and Exclusion Criteria Used for the Screening of Studies

Screening stage	Study item	Inclusion criteria	Exclusion criteria
Title and abstracts	Participants	School age participants (4-18 years).	Participants aged 18 years+. Non-English speaking, non-Western cultures.

		Participants from English speaking, Western cultures.	
	Location of intervention	Interventions carried out in school environment.	Interventions carried out outside school environment.
Full text	Type of research	Empirical papers using primary data. Published in a peer-reviewed journal.	Review articles. Articles not peer-reviewed.
	School belonging measure	Pre- and post-intervention measure of school belonging.	Single time measurement of school belonging.
	Comparison condition	Experimental condition is compared to an active, passive or alternative intervention.	Within-subject designs with no comparison condition.

The systematic search yielded 20 results. The procedure of the systematic search is illustrated in the following PRISMA (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009) flow diagram (Figure 2).

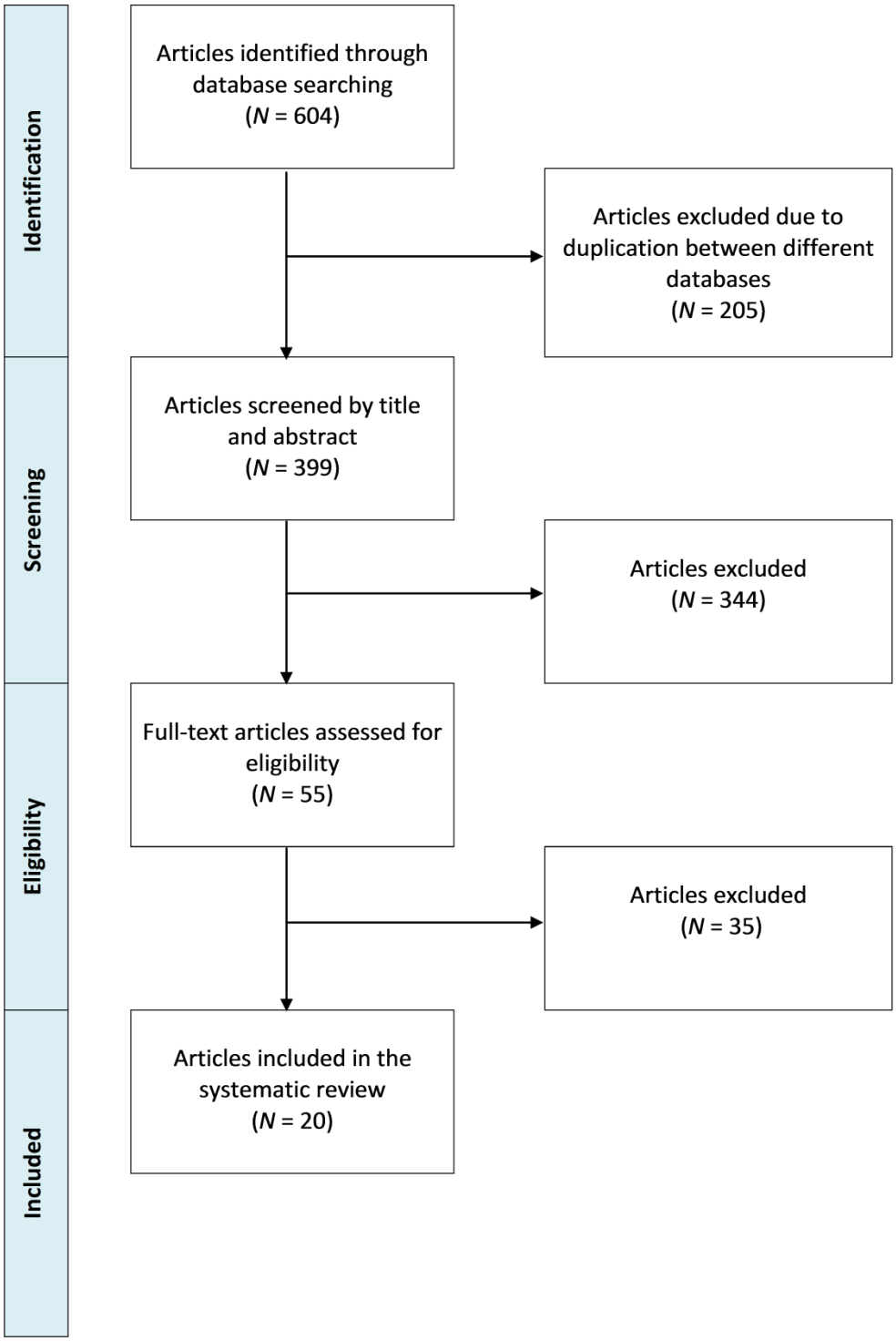


Figure 2: Flow diagram showing the results of the systematic search process, using inclusion and exclusion criteria

1.2.3 **Data Extraction and Synthesis**

The data extracted from the eligible papers included: (a) Descriptive information about the sample, (b) Interventions used, (c) Study design, (d) Outcome measures used, and (e) Significant results/interactions. Appendix C contains the completed extracted data results. Each study has

been assigned a number, which is provided alongside the authors' names within Appendix C. Any reference to studies will therefore be given as a numerical form (in brackets) throughout the rest of the report.

1.2.4 Quality Assessment

Studies eligible for inclusion in the review were quality assessed using elements of the Downs and Black (1998) checklist (please see Appendix D for questions used and for the completed quality assessment table). Whilst this checklist was designed to quality assess health interventions, it has also been used within the area of social science as a strong quality assessment tool for randomised and non-randomised studies. The checklist contains 27 items evaluating five subscales: reporting, external validity, internal validity (bias), internal validity (confounding) and power. Three questions were removed from this checklist, as they did not appear relevant for this review, appearing to align with questions that may be more helpful for health studies. In addition, scoring was limited to only two options for all questions (Yes=1; No=0). The adapted scale included 24-items in total, providing an overall score range from 0 to 24 points, with higher scores indicating better methodological quality of the study. The following cut-off points have been used to categorise studies by quality: excellent (21-24), good (17-20), fair (13-16) and poor ($\leqslant$12).

1.3 Description of Data Extraction

1.3.1 Study Characteristics

The 20 studies had a collective sample size of 5,236 students, 112 school staff and 24 parents. Students were aged between seven years and 17 years, and were drawn from a range of primary (including 'elementary' and 'middle' schools: *n* = 9 studies) and secondary (including 'high-schools': *n* = 7 studies) settings. Three studies included both primary and secondary students. One study did not report age (14). Studies were conducted across five different countries, including: USA (*n* = 13), Australia (*n* = 2), Canada (*n* = 2), England (*n* = 2) and Ireland (*n* = 1). Ten studies drew from the whole student population (at the whole school/class level), nine studies targeted a particular group within the population and one study did not report this (17). The mean percentage of males in 16 of the studies (with two removed, as they did not report gender figures, and two removed as they focused solely on females) was 52.9%. Not all studies reported data on dropout or missing data. For those that did, the mean percentage of dropout or missing data was 13.33%.

1.3.2 **Interventions**

From the 20 eligible studies, 21 different intervention programmes were used. These interventions can be classified as to whether they were universal (supporting the whole population: whole class or school) or targeted (supporting an identified group within the population) programmes (Table 2). Of the 21 programmes, 13 were universal and 8 were targeted interventions (for full details see Appendix E).

Table 2

Intervention Details: Name, Type of Intervention and Target Population

Type of intervention	Name of intervention	Target population
Universal	YouthFriends mentoring (17)	Individual
	Skills for Preventing Injury in Youth (SPIY) (1) Connectedness component of SPIY (1) Youth-Led Aggression Prevention Program (YLP) (3) Gratitude diary (6) Second Step (7) Project REAL (Rural Early Adolescent Learning) Program (9) Relationship Building Intervention (RBI) (16) Resourceful Adolescent Program (RAP) (19) Peer Interpersonal Relatedness (PIR) program (19) FRIENDS for Life (20) Peer Group Connection (PGC) (11)	Whole class
	Anti-Bullying Pledge Scheme (ABPS) (18)	Whole school
Targeted	Reconnecting Youth (RY) (2)	At-risk students who are already experimenting with drugs or who exhibit other risk-related behaviour.
	School-based mentoring (4)	At-risk students who have high numbers of office disciplinary referrals and unexcused absences.

Wiz Kidz mentoring (5)	Students experiencing significant instability at home.
Project Wings Girls' Group (8)	Female Latina adolescents.
Achievement Mentoring Program (AMP) (10)	Students at risk of academic failure.
Emancipatory Education Course (Project EXCEL – Ensuring Excellence through Communalism) (12)	Students of African descent.
REAL Girls (13)	Females with highest rate of school related problem behaviours, low academic performance and truancy.
Positive Peer Group (PPG) initiative (14 & 15)	Students identified as matching one of four leadership qualities

Interventions were varied across the studies. Whilst all aimed to increase SoSB, the majority of the studies had other aims too, such as to increase safer behaviours and reduce risk-injury behaviour (1), decrease school deviance/ truancy (2 and 4), decrease substance involvement (2 and 17), support emotional well-being (2, 8, 13, 19 and 20), promote anti-bullying and non-violent behaviour (3 and 18), increase social skill development (7, 14 and 15) and increase cultural identity (12). The majority of the studies used a control group (80% of studies), whereby participants continued with curriculum-as-usual, and four studies employed a comparison group, whereby the experimental condition was compared to an alternative intervention (an event diary [6], Stories of Us [7], attention control group [8], and other anti-bullying work/interventions [18]).

1.3.3 **Research Design**

Five studies utilised an experimental design, with participants randomly allocated to conditions (2, 4, 6, 8 and 10). Fourteen used a quasi-experimental design, either allocating participants to condition by school (1, 3, 7, 9 and 20) or by class (11, 12 and 19), allocating all participants that met the inclusion criteria to the experimental condition (5, 14, 15 and 17) or allocating schools interested in taking part to the experimental condition (16 and 18). Finally, one study used a crossover design, with participants receiving the experimental condition at different times (13). All studies employed pre- and post-intervention measurement. However, only six studies employed follow-up measurements (2-weeks [13], 3-months [8 and 20], 6-months [2, and

10] and 9-months [8 and 19]). The length and frequency varied for interventions, with the shortest length of time being a three-day intervention (13), to content being delivered over three school years (7). The shortest intervention frequency was daily (6), with the majority of interventions being carried out weekly (with 60% of studies employing this). Some studies implemented a whole-school commitment and focus, with no explicit details about regular scheduled times for the intervention (9 and 18). This appeared to be focused on changes within the environmental context.

1.3.4 Measures

All studies used some form of self-report measure for SoSB. The most popular measure was The Psychological Sense of School Membership (PSSM) scale (Goodenow, 1993), with 10 studies using the full scale (1, 3, 7, 9, 10, 11, 12, 15, 17 and 19), one study using an adapted version of one of the subscales (16), and two studies using the anglicised and simplified version, The Belonging Scale (Frederickson & Cameron, 1999) (18 and 6). Four studies used other published SoSB measures: School Connectedness Scales (Harris, 2009 [8]; McNeely, Nonnemaker, & Blum, 2002 [13]; Resnick et al., 1997 [20]) and the School Liking subscale from School Liking and Avoidance Questionnaire (SLAQ; Ladd & Price, 1987) (16). Two studies used adapted versions of other published SoSB measures: School Connectedness subscale (King, Vidourek, Davis, & McClellan, 2002) (4), and the Hemingway Measure of Pre-Adolescent and Adolescent Connectedness (Karcher, 2011) (5). Three studies used their own measure of SoSB (2, 14 and 15).

1.3.5 Significant Results/ Interactions for SoSB

Of the 19 studies (with one [14] removed due to the lack of statistical information provided), 13 studies (3, 4, 5, 6, 9, 10, 12, 13, 15, 16, 17, 19 and 20) found a significant effect of intervention condition on SoSB. Of these 13, six studies involved universal interventions and seven studies involved targeted interventions. All but one of the studies (apart from 6) involved experimental conditions being compared to a control group.

Twelve of the 13 studies that found a significant effect reported a positive effect of the experimental condition on SoSB scores, with scores for the control group often declining from pre- to post-intervention, and scores for the experimental group either maintaining or increasing. The remaining study reported a negative effect of the experimental condition on SoSB scores, with a significant decrease for participants completing one of the experimental conditions (RAP condition in 19) from pre- to post-intervention. Eight of these studies reported effect sizes. These ranged from negligible ($d = 0.19$) (3) to large ($d = 2.43$; $\eta_p^2 = 0.46$) (4; 13).

Within the studies, there were some correlations noted between SoSB scores and other outcome measures. SoSB scores negatively correlated with pro-bullying attitudes, pro-sexual harassment attitudes, pro-dating aggression attitudes, bullying victimisation and sexual harassment victimisation (3), and positively correlated with gratitude scores (6), teacher attunement (9) and availability of support and intimacy (10).

Four of the studies that found a significant effect had also included a follow-up measurement in their design (10, 13, 19 and 20). Study 10 reported Grade Point Average (GPA) scores, absences and number of discipline referrals at follow-up, however, no SoSB measure was taken at this time point. Study 19 had shown a significant decrease in school connectedness from pre- to post-intervention; however, this was not significant at follow-up. Study 13 employed a paired samples t-test for within-group change between pre-intervention and follow-up, and found a positive and significant change for school connectedness scores. Finally, whilst study 20 reported that the increase in school connectedness was maintained by the intervention group at follow-up, no statistical analyses were reported.

1.3.6 Quality Assessment

Of the 20 studies, zero received a quality rating of 'excellent', 11 received a quality rating of 'good' (2, 3, 4, 6, 8, 9, 10, 11, 16, 19 and 20), six received a quality rating of 'fair' (1, 5, 7, 12, 17 and 18) and three of 'poor' (13, 14 and 15).

1.3.6.1 Reporting

Questions 1 to 9 (Appendix D) were used to consider the quality of the reporting in the studies. From a total score of nine, the lowest score was one (14) and the highest score was nine (2, 9 and 10). Seventy-five percent of the studies obtained a score of seven and higher. The majority of studies were reported clearly, providing clear descriptions of the aims and objectives, outcomes to be measured, characteristics of the participants, interventions used, study findings and, reference to estimates of the random variability in the data. However, scores for questions 5, 8 and 9 were more variable: 25% of the studies did not report actual probability values for the main outcomes, 60% of the studies did not clearly describe the distributions of principal confounders and 60% of the studies did not report on the characteristics of participants lost to follow-up. Two studies were not reported very clearly (14 and 15) and this is reflected in the low score each received (obtaining a score of one and three, respectively).

1.3.6.2 External Validity

Questions 10 to 12 were used to consider the external validity of the studies. From a total score of three, 30% of studies received a score of zero (8, 12, 13, 14, 15 and 17), 30% received a score of one (2, 4, 5, 7, 10 and 19), 35% received a score of two (1, 3, 6, 9, 16, 18 and 20) and 5% received a score of three (11). Questions 10 and 11 enquire about the participants' representation of the population from which they derive, which the author considered to be the school class from which the participant originates. Several studies used certain inclusion and exclusion criteria to consider students' eligibility for the study, which meant the sample was then not representative of the class as a whole. In addition, many studies did not report on the sample's representation, and this was therefore marked as unable to determine (score of 0). This meant that 55% of the studies received a score of zero for question 10, and 95% of the studies received a score of zero for question 11. The majority of studies (65%) used staff, places and facilities which could be considered representative of the type of support the majority of school students could receive (e.g., interventions carried out by school personnel or students, in the school environment and without excessive additional facilities).

1.3.6.3 Internal Validity – Bias

Questions 13 to 17 were used to consider the internal validity, in relation to bias, of the studies. From a total score of five, 35% of studies received a score of three (3, 4, 6, 12, 14, 15 and 17), 35% received a score of four (1, 5, 7, 8, 10, 13 and 18) and 30% received a score of five (2, 9, 11, 16, 19 and 20). All studies ensured the time between the intervention and outcome was the same for all conditions, and utilised appropriate statistical tests to analyse their main outcomes. The majority of studies did not report results based on 'data dredging', or if they did, made this clear that this had been the case (apart from study 3, which introduced ethnicity analyses, and study 17, which introduced an 'at-risk' subcategory within their sample). Scores for questions 16 and 17 were variable: 35% of the studies did not use accurate outcome measures, with some studies using adapted versions of published measures, or creating their own measures, but not reporting on their validity and reliability; and, 60% did not have reliable compliance with the intervention. Some studies used fidelity checks, such as self-report measures and observations from others. However, others did not put any fidelity measures in place, or if they did, compliance was not always reliable.

1.3.6.4 Internal Validity – Confounding

Questions 18 to 23 were used to consider the internal validity, in relation to confounding bias, of the studies. From a total score of six, the lowest score was one (1, 13 and 18) and the

highest score was six (6). Seventy percent of the studies obtained a score of three or lower. All studies recruited experimental and control/comparison participants over the same period. The majority of studies (70%) reported on the loss of participants to follow-up. Half of the studies identified where group differences had occurred at pre-intervention, and made adequate adjustments to analyses. The other 50% of studies either did not report whether pre-intervention differences were considered, or did not adequately adjust their analyses. As aforementioned in 'external validity', the author considered the population to be based on the school class from which participants originate. As such, only nine studies were considered to have recruited from the same population. The other studies had often allocated participants to conditions as whole classes or schools. In addition, randomisation of participants was considered to be qualified if it had been carried out at an individual level. As many studies randomly allocated whole classes or schools to the different conditions, they were not considered to have truly randomly allocated participants. As such, only 25% of studies met this criteria. Finally, only one study (6) ensured randomised intervention assignment was concealed from participants and school staff until recruitment was complete. Most studies did not report on this, thus leading to a score of unable to determine (score of 0).

1.3.6.5 Power

Question 24 was used to consider whether the studies had sufficient power to detect any differences. This was investigated using a sample size calculation on G*Power (version 3) (Faul, Erdfelder, Lang, & Buchner, 2007) for each study, with the following data inputted: medium effect size (f = 0.25), α error probability of 0.05 and power at 0.95. Studies obtained a score of one (n = 12) if their smallest group size adhered to the requirements of the sample size calculation.

1.4 Results

The 20 studies reviewed evaluated a wide range of intervention programmes. Whilst there was some commonality in regards to having an aim of increasing SoSB, the studies varied significantly in terms of their other aims, sample characteristics, design and outcome measures. Due to the wide range of programmes, the results have been presented according to whether they are universal or targeted interventions (Table 2). Within these categories, the interventions have been further subdivided (Figure 3). Full study details have only been provided for studies that received a 'fair' or 'good' quality rating. Three of the studies received a 'poor' quality rating (Study 13, 14 and 15) and have therefore not been discussed (although further details about these interventions can be found within Appendix E).

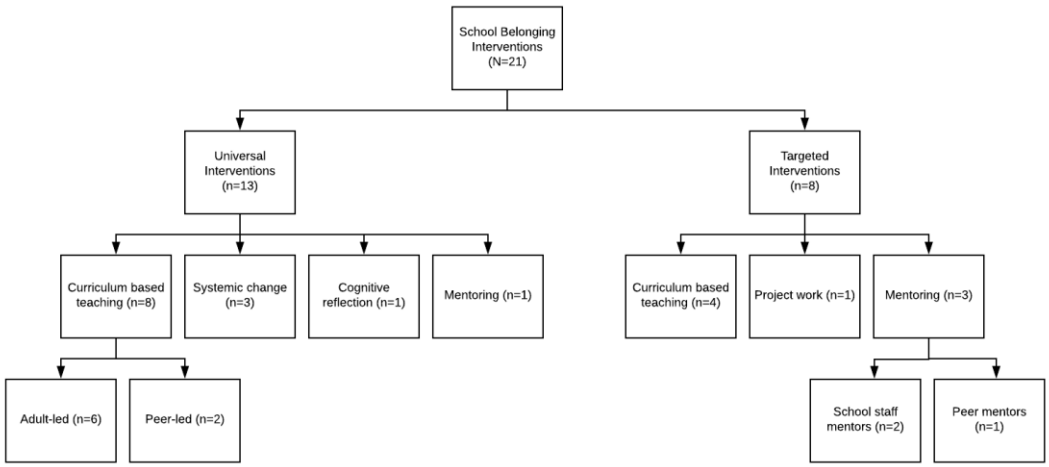


Figure 3: Flow diagram depicting organisation of interventions

1.4.1 **Universal SoSB Interventions**

1.4.1.1 Curriculum Based Teaching

The majority of the universal interventions focused on curriculum-based components, employing manualised programmes intended to develop students' social and emotional knowledge and skills. Four of the interventions were run by school staff (SPIY, Second Step, RBI and FRIENDS for Life), two by graduate students (RAP and PIR) and two by peers (YLP and PGC).

1.4.1.1.1 Adult-led

1.4.1.1.1.1 Intervention details

For the adult-led interventions, leaders all received initial training on the intervention and underlying theories; either as a half-day (SPIY, Second Step and RBI), whole-day (RAP and PIR) or two-day (FRIENDS for Life)training session. All adult-led interventions involved manualised programmes, incorporating social and emotional teaching, such as empathy, communication skills, problem solving, friendship skills, emotion regulation, cognitive restructuring of thoughts and conflict resolution. It was considered that by promoting key social and emotional competencies through the curriculum teaching, participants would then have the necessary skills for positive socio-emotional adjustment, enabling the development of positive peer relationships, and in turn, to feelings of school belongingness. Furthermore, the authors of the RBI study posit that the universal focus of such interventions would enable a sense of classroom unity. Some of the interventions presented the promotion of SoSB as a medium through which participants' well-being could be enhanced (RAP, PIR & FRIENDS for Life) and risk-taking behaviours reduced (SPIY).

1.4.1.1.1.2 Findings

SPIY, Second Step and PIR all reported non-significant differences between the interventions and control/ comparison conditions for SoSB. SPIY (1) aims to increase safer behaviours and reduce risk-taking, however, the authors suggest there may have been a nonresponse bias, with students who participate in greater number of risk-taking behaviours being less likely to participate in research requiring active parental consent, leading to an unrepresentative sample of students.

Study 7 (Second Step) focused on a subsample of students from a larger RCT; specifically, students with disabilities. There was some uncertainty about students' understanding of the questions within the self-report questionnaires, which raises uncertainty about the validity of some of their measures.

Finally, PIR (19) was designed to be used alongside RAP as an intervention to prevent adolescent depression. There were few adolescents reporting elevated depressive symptoms at the start, suggesting the possibility that this might have benefited from study as a targeted, rather than universal, intervention. The study (19) had two different experimental conditions (E_1: RAP-PIR and E_2: RAP-placebo), which enabled some consideration as to the effect of adding the PIR intervention to RAP. However, as PIR was not compared to a placebo, any results obtained mean that it is difficult to tell if the PIR itself or the RAP-PIR interaction was responsible for any effects. Study 19 (RAP & PIR) was also conducted in independent single sex schools (which were reported to potentially have a higher socio-economic status and resourcing compared to other schools) which limits the generalisation of any effects.

There was a negative effect of the RAP intervention (19) on SoSB scores, with scores having decreased from pre- to post-intervention for the RAP condition and having increased for the control condition (d = -0.27). Whilst not directly considering this reduction in their write-up, the authors make suggestions about why there may have been a general lack of intervention effect for RAP, citing differences in effectiveness of delivery by the RAP therapists, and lack of validity of the post-intervention time-point (considering this would actually be a follow-up point, occurring several weeks post-RAP intervention). Study 19 is the only study from the universal interventions that was not led by school members and I wonder whether this may have influenced the results obtained. Research has highlighted teacher and peer support as a factor associated with SoSB (Allen et al., 2016) and therefore by having external adults delivering the intervention, connections with school staff are reduced. In consideration of this, it would appear that interventions led by those within the school (e.g., school staff) would be most supportive and possibly more effective, although further research is warranted.

RBI (16) and FRIENDS for Life (20) reported significant differences between the conditions for SoSB, with scores for the control group declining and scores for the experimental group maintaining/ increasing. The aim of RBI is to foster positive, meaningful and respectful peer interactions. There are a range of experiential exercises to help promote this, focussing on skills such as empathy, communication, problem solving, diversity appreciation, and friendship formation and support. The study was conducted with two separate cohorts of fifth-grade students from six elementary schools (*N* = 627). The study used two measures for SoSB: school liking (SLAQ; Ladd & Price, 1987) and classroom identification and inclusion (adapted version of a subscale from the PSSM; Goodenow, 1993). In addition, the study looked at two other outcomes: social behaviours and academic achievement.

The authors found a significant condition effect for all but one of the outcome measures, with aggression decreasing for the experimental group, and school liking (*d* = 0.42), classroom identification and inclusion (*d* = 0.61) and academic achievement increasing for the experimental group. Allocation to condition occurred at the school level, with schools either implementing the RBI or continuing with curriculum-as-usual. Schools were not randomly assigned to condition, but were instead assigned based on their willingness to implement the RBI. This may, therefore, have led to a selection bias whereby highly motivated schools became the experimental group, thus contributing to their success with the intervention. In addition, only teacher reported measures were used for social behaviours, which, again, may have led to demand characteristics, whereby teachers within the experimental condition were highly motivated for the intervention to succeed, thus potentially providing elevated scores. Triangulation of data from other data collection methods (e.g., observations of social behaviour and child self-report measures) would have minimised this potential for bias. Finally, the RBI is specifically designed to impact peer relationships, however this was not measured within the study.

The FRIENDS for Life intervention (20) aims to improve well-being, by helping children to cope with feelings of anxiety, fear and worry, by developing their self-esteem, teaching coping skills and promoting resilience. The study was conducted with 27 primary schools in Ireland (N = 709). The study used the SCS (Resnick et al., 1997) to measure SoSB, and considered three other outcome measures: coping with problems, self-concept and anxiety. Although the intervention's main aim was to support with anxiety, there was not found to be a significant effect of intervention on the total anxiety score. However, there was a significant positive condition effect for self-concept, coping with problems and school connectedness (η_p^2 = 0.01), such that there was a significant increase in the intervention's scores when compared with the control group. Similarly to RBI, allocation occurred at the school level for the FRIENDS for Life intervention. However,

schools were randomly allocated for this study, rather than being driven by the schools' interest in the intervention, thus preventing any selection bias.

1.4.1.1.2 Peer-led

1.4.1.1.2.1 Intervention details

For the two peer-led interventions (YLP and PGC), older peers were identified to act as 'peer leaders', who would then provide input to whole groups of younger peers. The aims, intervention training and intervention delivery differed for the two interventions. YLP focused on improving middle-school students' knowledge about bullying and aggression, through the delivery of two aggression prevention presentations by the peer leaders. The PGC intervention aimed to support students in their first year at high-school. Peer leaders received input from a teacher-advisor on topics such as team building, stress and anger management, risk assessment, conflicts in relationships, normative beliefs about drug and alcohol use, refusal skills, decision making and communication skills. Peer leaders then delivered this content to their younger peers. The PGC intervention was carried out over the full school year.

Both the YLP and PGC studies reference empirical evidence for the use of peer leaders as a rationale for the two interventions. For example, within the YLP study, the authors refer to research that suggests that whilst adult-led programs may be effective at sharing factual knowledge, peer-led programs may be better at modifying social norms (Mellanby, Newcombe, Rees, & Tripp, 2001). As such, it was hypothesised that the peer-led program would positively influence attitudes and emotional school adjustment of younger peers.

1.4.1.1.2.2 Findings

PGC (11) reported a non-significant time-by-group interaction for SoSB. A similar result was also noted for most other outcome measures. The authors note some difficulties with intervention implementation, suggesting that the school conditions (e.g., overcrowding, ambivalence towards non-traditional programming, overextended time and commitment of those involved) may have influenced the results obtained. The authors also note that the high percentage of high-risk students within the sample may have influenced findings, as well as there being too few participants to determine small statistically significant program effects.

YLP (3) used the PSSM (Goodenow, 1993) to measure school connectedness in their study, along with a range of other outcome measures relating to aggression, violence, victimisation and anxiety. There was found to be a significant difference between YLP and the control group for school connectedness, with levels maintained in the YLP group and having declined for the control

group (*d* = 0.54). Significant results for other outcome measures were variable. The authors note ceiling effects for some results (e.g., participants were already highly intolerant of aggression at pre-intervention), which leads one to consider whether this intervention might have been better focused at a more targeted population, if its main aim is to develop knowledge and behaviour in relation to aggression and victimisation. In addition, the school board from which the participating schools derived had mandated the provision of violence prevention programs in all schools; thus, control group schools were implementing interventions from a range of board options, and were not a homogenous group. This means it is difficult to consider and control for other confounding factors, beyond the prevention programs, which may have influenced any changes noted.

1.4.1.2 Systemic Change

1.4.1.2.1.1 Intervention details

Three universal interventions focused on making systemic changes, either at the whole school (ABPS) or class level (connectedness component of SPIY and Project REAL). The ABPS aimed to reduce the incidence of bullying and enable children to feel safer in school. Schools in the experimental condition were allocated a designated 'consultant' to advise on the implementation of the scheme, by supporting the school to action plan and review progress. The ABPS draws upon a social-ecological systems perspective on bullying and victimisation (Swearer & Espelage, 2004), which suggests there is a complex relationship and reciprocal interplay between individual (bully, bully-victim, victim and bystander), family, school and peers, community and cultural factors. The ABPS focuses specifically on the social ecology (with SoSB an aspect of this), and the interaction this has with individual factors in bullying behaviour. The authors refer to research showing the negative associations between bullying and children's SoSB (Bosworth, Espelage, & Simon, 1999).

The connectedness component of SPIY and Project REAL both focus on developing teachers' practice, through personal development training (e.g., attending workshops on school connectedness and student-teacher relationships, engaging in online modules and video-conference consultations). Project REAL focuses on developing teacher attunement, proposing that by increasing attunement, this will in turn increase SoSB (Anderman, 2003).

1.4.1.2.1.2 Findings

Study 1 (SPIY and connectedness component of SPIY) involved three schools being assigned to an experimental condition. Two schools were assigned to the SPIY curriculum plus connectedness component, and one school was assigned to just the connectedness component.

Unfortunately, data from the students in the connectedness only school were excluded from analysis due to small numbers of participants. Findings for the SPIY plus connectedness component group can be found in the 'adult-led' section of the results.

No significant differences were found between the intervention and comparison schools for any of the outcome measures (SoSB, bullying and victimisation measures) within the ABPS study (18). As ABPS focusses on whole school systemic change, the two time points may not have allowed adequate time for any effects to have taken place (with the post-measures taken only 2-3 months after baseline).

Project REAL (9) focuses on developing teacher practices within small, rural and low-resource schools. The study's analyses found a significant effect of intervention for teacher attunement, teacher management of classroom social dynamics and SoSB (d = 0.08)), with scores significantly greater within the intervention schools than control schools. Teacher attunement was found to be a significant and positive predictor of SoSB. The mechanisms through which teacher attunement promotes SoSB were not analysed in this study, and would therefore be a necessary next step. Whilst researchers within the study conducted observations of teacher classroom practices during the intervention, this was not carried out as a pre-measure. By having this information, the differences between teacher practice (before and after the intervention) could then have been further considered.

1.4.1.3 Mentoring

1.4.1.3.1.1 Intervention details

Study 17 used students already participating in the intervention, YouthFriends, across Kansas and Missouri. YouthFriends is a school-based mentoring program, whereby children and youth are mentored by a caring adult for approximately one hour per week. The intervention is available to all school-aged young people. Within this study, the authors focused on students receiving one-to-one mentoring, however YouthFriends can be carried out in pairs or small groups. Mentoring is reported to help establish social support networks, by integrating caring adults from the community and transferring this sense of community in the school (Solomon, Watson, Battistich, Schaps, & Delucchi, 1996).This evaluation of YouthFriends included eight different outcome areas being assessed. As the authors are drawing from pre-existing YouthFriends intervention participants, there is limited information about the intervention training and delivery. It is also unclear who is identified as the 'caring adult'.

1.4.1.3.1.2 Findings

YouthFriends (17) students scored significantly higher than controls on sense of school membership at post-intervention (*d* = 0.37). The authors also arbitrarily categorised participants as 'at-risk' (participants with scores within the lowest third of responses at baseline) for further analyses. These further analyses revealed a lack of intervention effect for those identified as 'at-risk', with the 'at-risk' control group and 'at-risk' YouthFriends group both showing a significant improvement for sense of school membership.

There were methodological limitations with this study. For example, dosage of the intervention was not monitored or reported. It is therefore difficult to conclude whether mentors had implemented the intervention as intended. As the intervention was also not set up by the authors, they had limited control or awareness over other potential confounding variables. As aforementioned, limited details about the intervention are provided within the write-up, meaning that it would be difficult to fully replicate the study.

1.4.1.4 Cognitive Reflection

1.4.1.4.1.1 Intervention details

The last universal intervention, a gratitude diary, has been defined under the term 'cognitive reflection', as the intervention prompts participants to engage in reflective thinking about feelings of gratitude. The gratitude diary intervention was carried out with Key-Stage Two pupils (Years 3 to 6) in one school. Participants within the experimental condition (gratitude diary) were asked to 'write down 2 or 3 things that you are thankful for or grateful for today at school', whilst a control group were asked to write about things that had happened that day (event diary). The intervention was carried out daily (Monday to Friday) for four weeks.

The gratitude diary intervention draws from findings within positive psychology (Seligman, Steen, Park, & Peterson, 2005), which posits that positive emotions and positive character traits are necessary for positive well-being. To promote positive well-being, positive psychology interventions encourage people to engage in simple intentional activities which focus on a range of positive emotions (such as gratitude). The link between gratitude and well-being has been considered to occur through the building of social resources, such as through increasing connectedness (Froh, Bono, & Emmons, 2010). Engaging with a gratitude diary was hypothesised to lead to pupils having an increased awareness of the prosocial and positive behaviour from the people around them, which in turn would increase the individual's prosocial behaviour and school bonding (Bono & Froh, 2009).

1.4.1.4.1.2 Findings

There was a significant interaction between time and type of intervention for SoSB. SoSB increased over time in the gratitude diary (η_p^2 = 0.23) and showed a non-significant decrease in the control group. The study also found a positive relationship between change in gratitude and SoSB scores. Whilst a positive intervention effect was found, the authors suggest that there is a need to consider whether gratitude was specifically the psychological mechanism that increased SoSB. It may be that other variables influenced this change instead. The addition of other measures (e.g., prosocial behaviour, teacher-student relationships and positive affect) would enable a more thorough understanding of this.

1.4.2 Targeted SoSB Interventions

1.4.2.1 Curriculum Based Teaching

1.4.2.1.1.1 Intervention details

Four of the targeted interventions focused on curriculum-based components (RY, Project Wings, Project EXCEL and Real Girls). Study 13 (Real Girls intervention) has been removed from this section due to receiving a 'poor' quality rating. Both RY and Project Wings were taught to small groups of students (8-12 students), whilst Project EXCEL was taught to a whole class (32 students). All three interventions included teaching from a school member of staff, however Project EXCEL and Project Wings were also co-facilitated by an external person (Project Wings: study-hired bilingual staff; Project EXCEL: research author).

The interventions' aims and participant population all differ. The RY intervention aims to 'reconnect' truant, underachieving high-school youth by decreasing school deviance (decreased truancy and increased GPA) and drug involvement, and improving mood management. As such, the study focused on 'at-risk' high-school youth (youth who are already experimenting with drugs or who exhibit other risk-related behaviour). Project Wings aims to reduce depressive symptoms and perceived stress of Latina adolescents, and Project EXCEL aims to increase African American youths' sense of communalism, connectedness, motivation to achieve, increase involvement in positive social change efforts and improve academic achievement.

Intervention training and delivery also differ. For RY, teachers undertook 4-days of training, and then delivered the manualised programme to students, with teaching units on self-esteem, decision-making, personal control and interpersonal communication. Intervention facilitators for Project Wings received approximately 30 hours of didactic training, before delivering the intervention sessions using a set agenda (see Appendix E). The sessions for Project EXCEL included

both educational (e.g., teaching on African and African American cultural exchanges) and empowerment components. The facilitator training for Project EXCEL is not reported.

1.4.2.1.1.2 Findings

No significant differences between the control/comparison group and experimental group was found for SoSB in both RY (2) and Project Wings (8). RY encountered some implementation challenges, which may have influenced their findings. For example, only half of the experimental group were exposed to the full RY program due to high mobility (with participants leaving or changing school). In addition, at-risk participants were identified by school guidance counsellors for the study. However, members of staff were reluctant to enrol eligible students if they were behind in their studies. This therefore meant that there were significant differences between at-risk students enrolled and not enrolled in the intervention. The authors also present an interesting reflection on the potential negative effects of running an intervention with targeted at-risk youth; they highlight the impact of peer contagion, whereby students are given the opportunity to affiliate and bond with other peers involved in antisocial behaviour, thus potentially normalising these behaviours. In addition, belongingness to the wider school community would appear to be unfeasible with a group that is not representative of that community as a whole. Consequently, it may be more beneficial to implement such interventions using a mixed group approach, which also includes positive role models for social behaviour.

The differences between the facilitation and content of the two conditions within the Project Wings study means that it is difficult to objectively compare the findings of both conditions. For example, the two conditions (Project Wings and Attention Control) included different levels of school staff involvement (e.g., using a member of school staff to co-facilitate the Project Wings intervention, but only using graduate research assistants for the Attention Control), meaning there were differences between the connections of the facilitator with the school, and level of prior experience and training. To make the research more robust, the conditions would need to be refined further, to make them more comparable.

The Project EXCEL (12) study found a significant difference between the control group and experimental group for SoSB, with participants in the experimental condition showing more positive change in SoSB over time, compared with those in the control group (unable to calculate effect size due to limited information shared within paper). The study also found similar positive findings for other outcome measures. However, these findings should be considered in relation to limitations noted by the authors about the measures used. As the evaluation of Black youth outcomes is a relatively new area of study (as reported by the authors), there was a lack of psychometrically sound measures used in the study. Some measures were created for the study,

or were used with African American adolescents for the first time, meaning that they lacked reliability and validity. Further research would appear to be warranted for developing and testing such measures for this population. Nevertheless, this study provides a thought-provoking discussion about the need to positively recognise and promote all cultures within education. Whilst this was carried out as a targeted intervention, this reflection would seem to be warranted at a systemic level; ensuring all pupils' cultures are valued and promoted.

1.4.2.2 Project Work

One of the targeted interventions incorporated project work (PPG). However, the two studies that included this intervention (14 and 15) received a 'poor' quality rating and have therefore been removed.

1.4.2.3 Mentoring

Three of the targeted interventions involved mentoring (School-based Mentoring (4), Wiz Kidz (5) and AMP (10)). Within the studies, mentoring was carried out on a one-to-one basis between a mentor and mentee. Two of the interventions (School-based Mentoring and AMP) used school staff as mentors and one intervention (Wiz Kidz) used older peers as mentors.

1.4.2.3.1 School staff mentors

1.4.2.3.1.1 Intervention details

For the two interventions that used school staff as mentors, mentees were identified as 'at-risk' students within the school (relating to high disciplinary referrals and high absences, in addition to low grades and/or academic motivation for AMP). The two studies aimed to enhance school related cognitions (e.g., to increase SoSB) and behaviours (e.g., to decrease disciplinary referrals and unexcused absences). Mentors received training on the mentoring approach, consisting of: two half-day sessions for School-based Mentoring and a three-hour training session for AMP, and ongoing training support.

Mentors met with mentees once a week for both interventions. Limited information is provided for School-based Mentoring as to the procedural outline of these sessions, but the study does present guidance for mentors' behaviour (e.g., to model only appropriate prosocial behaviour, use effective communication and implement trust building activities). The procedure used within AMP is much more explicit (see Appendix E). School-based Mentoring occurred over an 18-week period and AMP was carried out over a 5-month period (with a maximum of 13 possible weekly sessions).

1.4.2.3.1.2 Findings

There was a significant interaction of group and time for SoSB scores for School-based Mentoring (4), with participants in the mentoring group obtaining significantly higher SoSB scores at post-intervention, in comparison to the control group (*d* = 2.43). There was also a significant difference between the control and experimental group for SoSB with AMP (10); however, this difference was only apparent for participants 'mentored as intended' (defined as participants who had met with their mentor at least six times). Participants who were 'mentored as intended' showed a slight increase in SoSB, whilst control participants' sense of SoSB declined over time (*d* = 0.75). As this difference between SoSB scores is only noted for those 'mentored as intended', the authors conclude that a high level of contact (at least six meetings) is necessary to aid positive change to belonging. Study 4 (School-based Mentoring) provides some support for this; mentors who classified the intervention as 'viewed positively' were found to meet more consistently with their mentees than those that had 'questioned impact' of the intervention.

Within study 10 (AMP), the authors highlight the positive correlation between changes in SoSB scores and subscales from the relationship quality outcome subscales. The authors note positive associations between belonging and availability to support and intimacy, as reported by mentees, and note a trend for closeness and SoSB, as reported by mentors. Whilst just a trend, the authors wonder whether closeness might be a potential mediator or moderator of SoSB, providing further avenues for exploration as to the positive conditions for mentee-mentor relationships and subsequent impact on outcomes. A limitation of this study is the use of different relationship quality measures for mentors and mentees, meaning that direct comparisons could not be made. Future research should consider relationship quality scales that utilise similar subscales.

1.4.2.3.2 Peer mentors

1.4.2.3.2.1 Intervention details

The final mentoring intervention (Wiz Kidz) involved the use of peers as mentors, with seventh- and eighth-grade students acting as mentors to second- and third-grade students. Wiz Kidz aims to foster student engagement as a way to increase connectedness for both mentors and mentees. In addition, Wiz Kidz aims to develop social skills, teach problem-solving skills and build empathic relations. Within this study (5), mentees were identified as children currently experiencing significant instability at home. Mentors received initial and ongoing training from the school counsellor. Within each mentoring session, mentoring partners began by eating lunch together, before engaging in activities focused on relationship building, collaboration, group

problem-solving and cooperation. The authors highlight the utility of using peers as mentors, with mentees being more receptive to teachings presented by an older peer (Karcher, 2014). In addition, mentors are reported to benefit from the role, internalising their social role as mature and responsible students (Rhodes, 2002).

1.4.2.3.2.2 Findings

Findings showed no statistical significant differences between the Wiz Kidz mentees and the comparison group on any of the school connectedness measures. However, there was a statistically significant difference for school connectedness scores between the Wiz Kidz mentors and comparison group, with the mentors reporting higher connectedness to school than the comparison group (d = 0.61). Whilst the study showed some positive change for mentors, it should be noted that the sample size for this study was very small (e.g., 11 Wiz Kidz mentors and 11 Wiz Kidz mentees). Furthermore, unlike other mentoring programmes presented within this review, this study's sample consisted of children experiencing instability at home (rather than having an inclusion criteria focussed on school), which might offer an explanation as to why school connectedness scores were unchanged for mentees. For example, Maslow (1943) highlights security as a need that precedes belonging.

1.5 Discussion

1.5.1 **Summary of Results**

This review set out to investigate what interventions currently exist for supporting SoSB. The systematic search yielded 20 articles to be included in the review, and from these studies, 21 different intervention programmes were identified. Whilst all interventions aimed to increase SoSB, they were variable in many other aspects (e.g., their other aims, sample characteristics, design and outcome measures). In order to support with the synthesis of results, interventions were categorised according to whether they are universal or targeted interventions, and further divided based on common themes (Figure 3). Intervention details and findings were then presented within these subcategories (e.g., universal interventions: curriculum based teaching, systemic change, cognitive reflection and mentoring; targeted interventions: curriculum based teaching, project work and mentoring).

In addition to identifying what current SoSB interventions exist, the review also aimed to consider their effectiveness in doing this. Of the 19 studies (with one removed due to lack of statistical information), 12 studies reported a positive and significant effect of the experimental condition on SoSB scores, with scores often declining from pre- to post-intervention for the

control group, and either maintaining or increasing for the experimental group. In contrast, one study reported a negative effect of the experimental condition on SoSB scores. The finding that scores often declined for the control groups in the studies is interesting and appears to corroborate with research suggesting a general decline in SoSB over time (Anderman, 2003).

Collectively, these data support the notion that SoSB is malleable and can be enhanced through intervention support. The data can be seen to align with some of Allen and colleagues' (2016) guidance on strategies that schools can implement to support SoSB. Allen and colleagues, using Bronfenbrenner's (1994) bioecological framework, captured eight different individual and environmental factors which strongly relate to SoSB. These eight factors included: four individual factors (academic motivation, emotional stability, personal characteristics and gender), three microsystem factors (parent, teacher and peer support) and one mesosystem factor (school environment).

From their meta-analysis, Allen and colleagues found that teacher support and personal characteristics were the strongest predictors of SoSB and, within this review, all interventions do appear to incorporate either one or both of these factors. The majority of interventions involved some social and emotional teaching, aimed to support emotional stability (e.g., relaxation exercises, identifying unhelpful thoughts) and the development of personal characteristics (e.g., self-esteem, decision-making, personal control, gratitude, interpersonal skills). In addition, numerous interventions directly encouraged teacher support to students, through professional development (e.g., teacher training and workshops) or by allowing the time and space for teacher support to occur (e.g., using teachers as mentors). Indirectly, the gratitude diary may have supported with students' perceptions of teacher support, by potentially encouraging students to notice this in the school environment.

In consideration of the other factors presented by Allen and colleagues, parent support was featured within some interventions, such as through the mentor communicating with parents once a month about the positive behaviour being demonstrated by the mentee, and by hosting family events. Peer support also featured within a few interventions, such as through using peers as mentors or for teaching input. Finally, only one study focussed on the mesosystem factor, school environment, by developing and implementing an anti-bullying plan at a whole-school level. Within this study, a non-significant effect was found for intervention condition. Indeed, within the meta-analysis, mesosystem effects were found to be small for SoSB (Allen et al., 2016).

Due to the spread of interventions presented within this review, it is difficult to draw any firm conclusions in regards to which factors were most effective at increasing belonging. However, by categorising the interventions into universal or targeted interventions, considering

studies which were of 'fair' or 'good' quality (*N* = 17), and comparing overall effect sizes, it would appear that there was a trend towards studies of targeted intervention programmes reporting larger positive effect sizes than studies of universal interventions. For instance, universal intervention studies reported one negligible result (*d* = 0.08; study 9), four small effects (*d* = -0.27, 0.37, 0.42, η_p^2 = 0.01; studies 16, 17, 19 and 20) and two medium effects (η_p^2 = 0.23, *d* = 0.54; studies 3 and 6), and targeted intervention studies reported two medium effects (*d* = 0.61, 0.75; studies 5 and 10) and one large effect (*d* = 2.43, study 4). These results suggest a tentative bias towards targeted intervention programmes being more effective at increasing SoSB. This may be explained by targeted interventions using samples of 'at-risk' children and young people, who may have lower SoSB scores at baseline than samples within the universal interventions, affording more opportunity for positive change in scores. In addition, targeted interventions often involved more intensive and focussed support (e.g., working one-to-one with an adult or in a small group), which may mean that skills teaching was more directed to the individual's needs and the focussed environment enabled increased opportunity to develop relationships.

1.5.2 Strengths of the Literature Reviewed

In general, the methodological quality of the included studies was fair to good. The majority of studies were reported clearly and exhibited good external validity, for example, using staff, places and facilities that were reasonable and representative for the type of support school students could receive. The majority of studies also exhibited some good internal validity, such as managing to recruit participants (experimental and control/comparison) over the same time period, and ensuring the time between the intervention and outcome was the same for all conditions (experimental and control/comparison).

By adopting wider terminology and search terms in relation to SoSB (e.g., school connectedness, school affiliation, school membership and SoSB), the review hoped to capture a breadth of studies, which may be evidenced by the variety of SoSB interventions which have been identified. The author's categorisation of interventions, according to whether they are universal or targeted, was intended to enable this assortment of results to be presented in a clear manner.

1.5.3 Limitations of the Literature Reviewed

Whilst overall the methodological quality of the studies was fair to good, there were some consistent limitations in regards to study design. For example, the studies rarely randomised participants to conditions, often allocating participants at either a whole class or school level, or allocating directly to the experimental condition if participants met their inclusion criteria. In

addition, studies often had small sample sizes, which then affected the power available to potentially detect any small but statistically significant differences between conditions. Furthermore, studies rarely included a follow-up time point within their design, meaning that it is difficult to establish the longevity of many intervention effects.

The variability in interventions, for example in regards to their aims (beyond improving SoSB) and length and frequency of intervention delivery, means that it is difficult to draw any firm conclusions about what an effective SoSB intervention entails. Furthermore, the majority of studies took place in the USA, which may also impede any conclusions and generalisations to the UK, considering any differences in schooling practices.

Not all studies used accurate outcome measures, and instead used adapted versions of published measures or created their own measures, without reporting on the scale's validity and reliability. There were also some noted limitations concerning data analysis and presentation of results. Researchers did not always appear to conduct analyses of any group differences at pre-intervention, meaning that conditions may have been biased at the start and not adequately accounted for when analysing and presenting post-intervention differences. In addition, researchers did not always report effect sizes, and therefore, whilst suggesting a significant effect exists, it is unclear the size of this effect.

1.5.4 Conclusions and Future Research

Despite the variety of SoSB interventions presented within this review, there are some tentative conclusions that can be drawn from the data, and some identified pathways for future research. Overall, findings support the notion of SoSB being a malleable construct which can be promoted through intervention support. The data presents a trend towards targeted interventions being more effective than universal interventions, presenting particularly positive effects on SoSB for students identified as being 'at-risk' (e.g., students who are at risk of academic failure, have high disciplinary referrals and unexcused absences).

Allen et al.'s (2016) meta-analysis identified teacher support and personal characteristics as being the strongest predictors of SoSB, and indeed within this review, either one or both of these factors are present within all identified interventions. It could therefore be suggested that inclusion of support for both these factors provides a good foundation for SoSB interventions. However, not all studies included in this review yielded significant results and thus further research is needed to break down teacher support and personal characteristics to consider what elements of these factors are most effective.

For the majority of the universal intervention studies, interventions were led by members of the school community (e.g., teaching staff or peers). However, one study (19) used external members (graduate students) to lead the intervention. This study was the only one to report a significant decline in SoSB for the experimental group, potentially challenging the use of professionals, who are not themselves members of the school community, as the lead for school belonging interventions However, this tentative conclusion has been drawn from only one study (with a small effect noted), and therefore, further research is warranted. In addition, the authors note some limitations in regards to the effectiveness of the intervention delivery and the post-intervention time point used (considering this could be considered a follow-up time point instead), which could also account for differences between the groups.

In addition, one study (2) reported a potential negative effect of peer contagion when running a group intervention with targeted at-risk youth, whereby students are given the opportunity to affiliate and bond with other peers involved in antisocial behaviour, thus potentially normalising these behaviours. In consideration of this, it would appear that support for those identified as 'at-risk' would be better suited to interventions using a mixed group approach, whereby there are opportunities to affiliate and bond to positive role models.

1.5.5 Implications for Educational Psychologists (EPs)

By working in schools at a whole-school level, EPs appear well placed for advocating the importance of SoSB to school personnel, parents and students. EPs strive to be evidenced-informed practitioners, developing their knowledge base and understanding of available best practice based on quality research findings. This review aimed to highlight existing SoSB interventions and synthesise findings, in order to provide an overview of what could be recommended by EPs, during consultations with schools, as effective methods to support SoSB (when hypothesised to be an area needing support). Research into SoSB interventions is currently in a nascent stage, with limited numbers of studies having taken place in the UK. There is, therefore, a need for further research to be conducted.

Whilst further research is needed, one study highlighted the ineffectiveness, and somewhat negative impact, of using external support to lead a universal SoSB intervention. As such, EPs will need to consider how internal school personnel (e.g., teaching staff or peers) could be supported to deliver interventions themselves, rather than becoming directly involved, or becoming the sole leader of such an intervention. Schools should be encouraged to take on more ownership and accountability for ensuring students have a positive SoSB, considering how this could be promoted as part of the school ethos (e.g., highlighting the importance of positive pupil-teacher

relationships). Similarly to other group interventions, EPs will need to ensure that thought is given to the social dynamics when setting up small intervention groups, as one study highlighted the potential effect of peer contagion. To counteract this, groups should include a diversity of individuals, rather than just solely being a group for ‘at-risk’ students.

Chapter 2 Empirical paper

2.1 Comparing the effectiveness of different diary interventions (gratitude, appreciation and event) on children's sense of school belonging and positive affect

The study of gratitude has gained in interest over the past 20 years, particularly since the emergence of 'positive psychology', promoted by Martin Seligman in 1998, during his presidency for the American Psychological Association (APA). Positive psychology theories and research aims to focus psychological thinking away from a preoccupation with reparation and pathology, and balance this with thinking about what supports people to flourish and thrive (Seligman & Csikszentmihalyi, 2000). Positive psychology captures the study of positive emotions and experiences, positive character traits and enabling institutions, such as healthy schools and families (Seligman & Csikszentmihalyi, 2000; Suldo, 2016). By undertaking such research, psychologists are afforded an improved understanding of how, why and under what conditions people are able to flourish (Seligman et al., 2005).

From their empirical studies, Peterson and Seligman (2004) have identified 24 character strengths that enable human thriving. Using these identified strengths, it has been possible to design simple cognitive or behavioural strategies that aim to mimic the thoughts and behaviours of thriving individuals (Suldo, 2016), with the intention that people engaging with such activities will improve their own well-being (Lyubomirsky & Layous, 2013). One such identified strength is gratitude, defined as a "sense of thankfulness and joy in response to receiving a gift, whether the gift be a tangible benefit from a specific other or a moment of peaceful bliss evoked by natural beauty" (Peterson & Seligman, 2004, p. 554).

Within Peterson and Seligman's definition, there is reference to two different sources of 'gift' giving, and this distinction is evident within other scholars' definitions. For example, scholars distinguish between targeted (triadic) and propositional (dyadic) gratitude (McAleer, 2012; Gulliford, Morgan, & Kristjánsson, 2013). Targeted (triadic) gratitude requires three aspects: a beneficiary, a benefit and a benefactor, and involves gratitude being felt towards a benefactor ("A is grateful to B for x"), whereas propositional (dyadic) gratitude does not require a benefactor, as gratitude is aimed at something that exists or happened ("A is grateful that B"). Criticism has been raised in regards to the validity of including propositional (dyadic) definitions within the broad conceptualisation of gratitude. It has been argued that by removing the need for there to be a

benefactor within definitions of gratitude, gratitude's distinctiveness as a construct becomes diluted, as other terms such as 'glad', 'appreciative' or 'relieved' are also meaningful (Carr, 2016).

Adler and Fagley's (2005) model conceptualises gratitude as one aspect of appreciation. Appreciation is considered to be the higher-order construct, and is defined by eight different aspects: focusing on what we have ("have" focus), awe, ritual, present moment, self-social comparison, gratitude, loss/ adversity and, interpersonal. The gratitude aspect of appreciation refers to "noticing and acknowledging a benefit that has been received, whether from another person or a deity, and feeling thankful for the efforts, sacrifices, and actions of an other" (p. 83), seeming to align with targeted (triadic) definitions only. Fagley (2016) argues that other definitions, where there is an absence of a responsible agent or benefactor, such as propositional (dyadic) definitions, may in fact involve other aspects of appreciation, and not gratitude. This distinction between gratitude and other aspects of appreciation has been used to inform the author's thinking for the remainder of the paper.

Gratitude research, carried out with children and youth, has identified various positive correlates with gratitude and aspects of well-being and social success. Gratitude has been shown to have positive correlations with well-being and life satisfaction (Park & Peterson, 2006; van Eeden, Wissing, Dreyer, Park, & Peterson, 2008; Datu, 2014; Tian, Du, & Huebner, 2015) and negative correlations with burnout, depression and suicide ideation (Chen & Kee, 2008; Froh, Emmons, Card, Bono, & Wilson, 2011; Li, Zhang, Li, Li, & Ye, 2012). In addition, gratitude has been found to have positive effects on social support, prosocial behaviour, social integration (being passionate about helping and feeling connected to others) and social absorption (merging with others and becoming interdependent) (Froh, Yurkewicz, & Kashdan, 2009; Froh, Bono, & Emmons, 2010; Froh et al., 2011).

One hypothesis which has been proposed to account for gratitude's positive relationship with well-being and social connections is Fredrickson's (1998; 2013) broaden-and-build theory of positive emotions. Fredrickson suggests that positive emotions broaden an individual's momentary thought-action repertoire and build on existing physical, intellectual and social resources (1998). This is in contrast to negative emotions, which function to narrow a person's momentary thought-action repertoire (Fredrickson, 1998). Fredrickson (1998) calls upon evolutionary perspectives to explain the proposed differences between responses to positive and negative emotions. The narrowing of thought-action repertoires for negative emotions is considered a necessary response to aid survival, with threatening situations, which elicit negative emotions, requiring fast and decisive action to survive. Whereas, for positive emotions, which are usually not elicited from threatening situations, fast and decisive action is not necessary, enabling

the pursuit of more novel and creative thinking. Positive emotions are proposed to broaden the scope of attention, cognition (with more integrated, creative and flexible thinking) and action, and through this broadening of the mind, enable the building of resources, which can be called upon in the future.

Fredrickson (2013) has applied this theory to highlight the broadening and building associated with a range of positive emotions, including gratitude. Fredrickson suggests that gratitude broadens a person's thought-action repertoire by creating a desire in the individual to be prosocial and think creatively about novel ideas for being kind and generous to others. This fits with McCullough and colleagues' (McCullough, Kilpatrick, Emmons, & Larson, 2001) description of gratitude as having a moral motive function, whereby the grateful person feels compelled to behave prosocially themselves. This broadened thought-action tendency then builds and adds to the individual's existing social resources, developing the individual's skills for love, loyalty and social bonds (Fredrickson, 2013). Over time, actions derived from gratitude build and strengthen social relationships (Fredrickson, 2004). Support for the notion that gratitude strengthens relationships is also evident within the find-remind-bind hypothesis (Algoe, Haidt, & Gable, 2008; Algoe, 2012) which posits that gratitude supports the individual to acknowledge new ('find'), or remind of existing, relationship partners, and bind the individuals together. Furthermore, gratitude serves as a moral reinforcer for the benefactor, encouraging them to behave morally in the future (McCullough et al., 2001). Finally, the experienced growth in resources also enables the individual to adapt more successfully to stressful situations in the future, leading to greater levels of sustainable well-being (Garland et al., 2010).

Acknowledging the positive relationship between gratitude and other variables, such as well-being and social connections, and in light of research highlighting the utility of using simple cognitive or behavioural strategies to promote well-being (Suldo, 2016), researchers began to consider ways in which gratitude can be enhanced through use of gratitude interventions. Within gratitude interventions, individuals are encouraged to focus their attention and thoughts onto the things, people and events for which they are thankful (Suldo, 2016). Different gratitude intervention activities exist within the literature. These include gratitude journaling (e.g., Emmons & McCullough, 2003), gratitude letters and visits (e.g., Froh, Kashdan, Ozimkowski, & Miller, 2009) and gratitude school curriculums (e.g., Froh et al., 2014). Gratitude studies have predominantly been carried out with adult participants, meaning that the literature using child populations is rather limited (Owens & Patterson, 2013).

A recent systematic review and meta-analysis conducted by Renshaw and Olinger-Steeves (2016) identified six gratitude intervention studies which have used child and adolescent school

populations. Eleven distinct outcome variables were identified within the studies. However, positive affect (PA) was the only outcome which the authors argued could be generalised to other populations of youth; noting gratitude interventions as having a small positive effect on PA (*g*=.23). The lack of multiple samples for the other outcomes meant the authors were unable to draw any other conclusions. Focussing specifically on one type of gratitude activity, gratitude journaling (or 'gratitude diaries') with children and adolescents, research will next be considered.

Two of the six gratitude intervention studies identified within Renshaw and Olinger-Steeves systematic review had implemented a gratitude diary (Froh, Sefick, & Emmons, 2008; Owens & Patterson, 2013). Froh and colleagues (2008) conducted a gratitude diary intervention with adolescents (M_{age}= 12.17 years). School classes were randomly assigned to either a grateful, hassles or control condition for a period of 2 weeks. Participants within the gratitude condition were asked to list up to five things they were grateful for since yesterday. In the hassles condition, participants were asked to list up to five hassles since yesterday. Finally, the control group just completed the measures. Findings indicated that the gratitude condition significantly increased gratitude and significantly decreased negative affect (NA), in comparison to the hassle diary condition. The gratitude condition also significantly increased school satisfaction, in comparison to both the hassle and control conditions. All significant effects were maintained at a three-week follow-up. The use of hassles conditions within studies has, however, been criticised, as such techniques induce NA, thus exaggerating any differences between the groups (Froh et al., 2009; Diebel, Woodcock, Cooper, & Brignell, 2016).

Owens and Patterson (2013) implemented their gratitude diary with a younger population of children, aged 5 to 11 years. Participants were randomly assigned to a gratitude, 'best possible selves' or control condition, which they completed once per week for 4-6 weeks. Rather than writing their responses, participants were asked to draw these. No significant differences between gratitude and the other conditions were noted for any outcome variables. The authors did not, unfortunately, include a gratitude manipulation measure within their study, meaning that readers are unable to evaluate the intervention's desired effect of increasing gratitude scores.

Long and Davis (2011) study with adolescent young offending boys (aged 13-17 years) used similar intervention conditions to Owens and Patterson (2013). Participants were assigned to either a 'life goals', gratitude diary or control condition, and were required to write for 15 minutes a day for five consecutive days. Similarly to Owens and Patterson (2013), the authors did not implement a gratitude manipulation check, and therefore, it is difficult to ascertain whether the gratitude diary did in fact increase feelings of gratitude. In addition, like Owens and Patterson's

findings, no significant differences between gratitude and the other conditions were noted for any outcome variables.

Expanding upon the findings of Froh et al., (2008), Diebel and colleagues (2016) implemented a novel school-based intervention, prompting participants to focus specifically on feelings of gratitude to school. Acknowledging the criticism in regards to using a hassle diary condition, Diebel and colleagues implemented an event diary condition as their control group. Participants were asked to write down two or three things that they were grateful for at school that day (gratitude diary) or two or three things that happened in school that day (event diary). The intervention was carried out daily for four weeks. Participants were obtained from Years 3 to 6 from a one-form entry primary school (M_{age} = 9 years 4 months). Unique to this study is the investigation of the association between gratitude and the building of social resources, by considering the impact of the gratitude diary intervention on SoSB. Findings revealed a significant difference between the conditions for changes in gratitude scores, with participants in the event diary showing significantly decreased gratitude scores and a trend for increased gratitude scores for participants in the gratitude diary condition. SoSB showed a significant increase for participants in the gratitude diary condition and showed a non-significant decrease for participants in the event diary condition. A relationship between gratitude and SoSB is noted, with changes to gratitude correlated to changes in SoSB.

Extending on this research, Diebel conducted a further school-based gratitude intervention with children aged 8 to 10 years old, as part of her doctoral thesis (Diebel, 2014). Diebel explored whether individual differences in relation to empathy and nostalgia proneness had any impact on changes in gratitude and SoSB between the two conditions (gratitude diary condition and event diary condition). Diaries were completed on alternate days for a total of two weeks and one day (resulting in seven diary entries). Findings revealed higher levels of gratitude in the gratitude diary condition, compared to the control diary condition at post-intervention. Whilst there was no statistically significant difference between the conditions for SoSB, supplementary analyses revealed a moderation effect associated with nostalgia proneness, at both a direct and indirect level. Participants higher in nostalgia proneness significantly benefited from the gratitude intervention, with increased SoSB scores noted. The study reported no long-term effects of intervention when measured at a two-week follow-up.

The current study aims to develop on Diebel (2014) and Diebel et al.'s (2016) research, by continuing to explore the effectiveness of gratitude interventions on the building of social resources. In addition, the current study aims to add to research that exists in relation to the impact of gratitude interventions on well-being (considering an aspect of well-being, PA). By using

Adler and Fagley's (2005) conceptualisation of *gratitude*, this study adopts a more stringent definition of gratitude. This is in contrast to previous 'gratitude diary' instructions. For example, in both Diebel (2014) and Diebel et al.'s (2016) studies, the gratitude diary group were asked to "write down 2 or 3 things that you are thankful or grateful for today at school", which neglects the focus on there being an active agent which brought about this change. Participants may, therefore, have written about some other aspect of appreciation. The current study aims to provide a more specific focus on the difference between gratitude (focussing on who you are grateful to) and appreciation (focussing on what you are thankful for), considered to be novel to this study. To further address some of the limitations noted within the literature thus far, the control group will entail participants in this group completing an event diary, as opposed to a hassles diary; a gratitude manipulation check will be implemented; and follow-up measurements will be taken.

Research Questions and Hypotheses

The primary aim of this study is to explore the impact of implementing a school-based diary intervention on children's SoSB and PA. This paper addresses the following research questions:

- What impact does diary condition (gratitude, appreciation and event) have on changes to SoSB and PA?
- Do any effects identified at post-intervention maintain at follow-up?
- Does an individual's nostalgia proneness have an impact on the effectiveness of diary condition?

It was hypothesised that participants within the gratitude and appreciation diary conditions would show a greater increase in SoSB and PA, relative to participants in the event diary condition. It is thought that by prompting participants to write about people they are grateful to, or things they are thankful for, participants will be encouraged to attend to and reflect on positive aspects of their day. Attention may be guided towards noticing positive relationships with others (such as school staff and peers) or towards noticing support received from other people. This aligns with the find-remind-bind hypothesis (Algoe et al., 2008; Algoe, 2012), which posits that gratitude enables individuals to acknowledge new, or remind of existing relationship partners, and bind the individuals together. By encouraging participants to reflect on positive relationships with others, this would enable these relationships to strengthen, leading to greater emotional attachment to others and a sense of inclusion with others, and ultimately, a greater SoSB. The broaden-and-build theory of positive emotions (Fredrickson, 1998; 2013) suggests that positive emotions, such as feelings of gratitude and appreciation, broaden an individual's attention, cognition and action. This broadened thought-action repertoire enables the building of social,

intellectual and physical resources, which means that the individual is able to adapt more successfully to stressful situations in the future, and leads to greater levels of well-being (Garland, et al., 2011).

2.2 Method

2.2.1 Participants

Participants were recruited from five primary schools in the South of England. In total, 12 classes (*N* = 287) were included in the study: one Year 3 class (*N* = 25), eight Year 4 classes (*N* = 191), two Year 5 classes (*N* = 45) and one Year 6 class (*N* = 26). Participants were aged between 7 and 11 years (*M*= 8.76 years, *SD*= 0.83). The headteacher of each school agreed to an opt-out procedure for the research. Letters were sent to parents, providing them with information about the study and offering them the opportunity to opt-out their child from the study (Appendix F). Eleven parents chose to do this. Assent was also obtained from the pupils, via a verbal response, in addition to providing pupils with the option to opt-out of the study, via a written opt-out form (Appendix G). Participants were made aware of their right to withdraw from the study at any point during the intervention and up to one month following the debrief. No pupils chose to opt-out of the study. In order to be included in the analysis, participants needed to have: completed both pre- and post-intervention measures, have written ten or more diary entries and adhered to the fidelity check (discussed within the 'Analytic Approach' section). This resulted in a total sample of 196 participants (98 male and 98 female) (Table 3).

Table 3

Numbers of Participants from each of the Schools at Time 1, Time 2 and Time 3

	Time 1	Time 2*	Time 3
School 1	68	53 (18 Year 3, 20 Year 4 and 15 Year 5)	
School 2	50	40 (Year 4)	37 (Year 4)
School 3	42	34 (16 Year 4 and 18 Year 5)	32 (16 Year 4 and 16 Year 5)
School 4	49	37 (16 Year 4 and 21 Year 6)	35 (15 Year 4 and 20 Year 6)
School 5	78	32 (Year 4)	

Total	287	196 (18 Year 3, 124 Year 4, 33 Year 5 and 21 Year 6) (A=65, E=60 and G=71)	104 (68 Year 4, 16 Year 5 and 20 Year 6) (A=32, E=36 and G=36)

Notes. A = appreciation diary; E = event diary; G = gratitude diary. * participants having met conditions: completed Time 2 measures, completed 10+ diary entries and adhered to fidelity check

Sample size was calculated with G*Power (version 3) (Faul et al., 2007), using power of 95%, a significance level of 5%, three groups (gratitude, appreciation and event diary conditions) and three repetitions (Time 1 [T1], Time 2 [T2] and Time 3 [T3]). Two previous studies implementing a gratitude diary intervention have reported medium to large effect sizes (η_p^2 = 0.23, Diebel et al., 2016; η_p^2 = 0.06, Froh et al., 2008). Both effect sizes were used to inform the sample size calculation, with a total sample size of 39 to 165 participants noted as being necessary to achieve similar effects.

2.2.2 **Design**

The intervention was carried out as a class, with pupils randomly allocated to either the gratitude (*N* = 97), appreciation (*N* = 96) or event (*N* = 94) diary condition. Participants were not made aware of the different conditions. All diaries (gratitude, appreciation and event) had the same front cover, but contained different instructions. Children were advised to keep their diaries private from one another. The class teachers were also not made aware of which pupils were in each diary group. Participants completed the diaries daily during the school day (Monday to Friday) for three-weeks, leading to 15 possible diary entries. Measures were taken at baseline (T1, pre-intervention), post-intervention (T2) and at a three-week follow-up (T3).

2.2.3 **Measures**

Measures of gratitude, SoSB and PA were obtained at T1, T2 and T3. In addition, at T1, participants provided demographic details in regards to their age and gender, and completed a measure of nostalgia proneness.

Nostalgia Proneness

Southampton Nostalgia Scale for Children (SNS-C) (Appendix H)

The SNS is a measure of nostalgia proneness, defined as an individual's propensity to think positively about their past (Routledge, Arndt, Sedikides, & Wildschut, 2008). The scale has been

adapted for use with children by simplifying the vocabulary, adding in an additional explanation, "Nostalgia is a feeling that children have when they think about things that happened when they were younger" and adding two vignettes to portray examples of individuals experiencing feelings of nostalgia. This adapted version has previously been used in Diebel's study (2014). After listening to the vignettes, children are asked to answer seven questions about nostalgia on a 7-point rating scale *(1 = not at all/ very rarely, 7 = very much/ very frequently)*. Participants' overall nostalgia proneness is calculated by summing their ratings, with participants able to obtain a score between 7 and 49. In the current study, these items formed an index with satisfactory reliability (α = .78, *M*= 31.01, *SD*= 8.28).

SoSB

The Belonging Scale (Goodenow, 1993, adapted by Frederickson & Cameron, 1999) (Appendix I)

The Belonging Scale assesses children's sense of belonging in their school, defined as the extent to which they feel accepted, included, respected and supported (Fredrickson & Cameron, 1999). The Belonging Scale is an adapted version of the PSSM (Goodenow, 1993), containing a reduced number of items which have been anglicised, making the scale accessible to children as young as eight-years-old. Children are asked to read twelve statements and rate the extent to which they agree on a three-point scale (*0 = no, not true, 1 = not sure, 3 = yes, true*). Participants' overall SoSB score is calculated by summing their ratings, with participants able to obtain an overall score between 12 and 36. In the current study, these items formed an index with satisfactory reliability at T2 (α = .79, *M*= 29.26, *SD*= 4.42) and good reliability at T3 (α = .87, *M*= 29.57, *SD*= 5.15). However reliability was questionable at T1 (α = .64, *M*= 29.98, *SD*= 4.87).

Gratitude

The Gratitude Questionnaire (GQ-6) (McCullough, Emmons, & Tsang, 2002) (Appendix J)

The GQ-6 is a six-item questionnaire designed to assess the individual's propensity to experience gratitude in everyday life. This study used an adapted version of the GQ-6, as previously used by Diebel (2014). Within the adapted version, the word 'school' was added to each question, in order to measure gratitude specifically towards school. In addition, question 6 has been adapted in order to make it accessible to younger children, changing from "long amounts of time can go by before I feel grateful to something or someone" to "I do not often find myself feeling grateful at school" (as per Diebel's, 2014, study). Participants rate the statements on a 7-point rating scale *(1 = strongly disagree, 7 = strongly agree).* Participants' overall GQ-6 score is calculated by summing their ratings, with participants able to obtain an overall score between 7 and 49. In the current study, these items achieved satisfactory reliability at T1 and T2

(T1: α = .72, *M*=32.78, *SD*= 6.68; T2: α = .74, *M*=32.13, *SD*= 6.72) and good reliability at T3 (α = .84, *M*=32.34, *SD*= 7.45).

Gratitude Resentment and Appreciation Test (revised short form) (S-GRAT) (Watkins, Woodward, Stone, & Kolts, 2003; Thomas & Watkins, 2003) (Appendix K)

GRAT is designed to measure dispositional gratitude. It contains three different subscales, which the authors propose are characteristics of a grateful person (Watkins et al., 2003). The authors propose that grateful individuals would: (a) not feel deprived in life, but feel a sense of abundance (Lack of a Sense of Deprivation; LOSD), (b) have a tendency to appreciate simple pleasures in life (Simple Appreciation; SA) and (c) appreciate the contribution of others to their well-being (Appreciation of Others; AO). The revised shortened version of the GRAT (S-GRAT; Thomas & Watkins, 2003) attempts to counter the negative skewness of scores associated with the original version, by expanding the 5-point Likert response to a 9-point scale. In addition, the shortened version has adapted some of the vocabulary to make the items temporally and culturally relevant to a wider audience. For the current study, the language used within the S-GRAT has been simplified in order to make it accessible to a younger audience. The scale contains 16 items measured on a 9-point rating scale *(1 = strongly disagree, 9 = strongly agree).* Subscale scores are obtained by summing the relevant ratings, and an overall S-GRAT score is calculated by summing all 16 rating, with participants able to obtain an overall score between 16 and 144.

As the S-GRAT has been adapted for the current study, a confirmatory factor analysis (CFA) was conducted to test the fit of the three-dimensional original model. AMOS was used to run CFA, with Maximum Likelihood (ML) estimation chosen. The indices used to determine the model-data fit were the chi-square test, the root mean-square error of approximation (RMSEA) and the comparative fit index (CFI) (Brown, 2015). According to Hu and Bentler (1999), $\chi 2$ as non-significant; RMSEA ≤.06 and CFI ≥.95 are indicative of a good model-data fit. The results within this study indicated a poor fit for the pre-intervention data: $\chi 2$ was significant (p<.001); RMSEA = .079 and CFI = .875. As such, the three-dimensional factor structure has not been used within the analyses, with analyses conducted solely using the total S-GRAT score, rather than the subscales. Overall, the items achieved good reliability at T1, T2 and T3 (T1: α = .85, *M*=108.48, *SD*= 20.00; T2: α = .85, *M*=108.99, *SD*= 19.56; T3: α = .88, *M*=109.71, *SD*= 21.29).

Positive Affect

Positive and Negative Affect Scale for children (PANAS- C) (Laurent et al., 1999) (Appendix L)

PANAS is designed to measure general affect using two subscales: positive affect (PA) and negative affect (NA) (Watson & Clark, 1999). The expanded version of the PANAS (PANAS-X;

Watson & Clark, 1999) has been adapted for use with children (PANAS-C; Laurent et al., 1999), with 27 items retained (based on children's ability to read and understand the items). The scale consists of a number of words to describe different emotions: 12 for PA and 15 for NA. Children are asked to read each item and indicate how often they have felt this during the past few weeks. For the current study, only the PA scale was used, and adapted to focus specifically on school, with children asked, "How often have you felt [X emotion] during the past few weeks at school?" Participants rated the items on a 5-point rating scale *(1 = very slightly or not at all, 5 = extremely).* Participants' overall PA score was calculated by summing their ratings, with participants able to obtain an overall score between 12 and 60. In the current study, these items achieved good reliability at T1, T2 and T3 (T1: α = .86, *M*=45.84, *SD*=9.22; T2: α = .87, *M*=45.96, *SD*= 9.48; T3: α = .89, *M*=45.88, *SD*= 9.45).

2.2.4 **Procedure**

Ethical approval was obtained from the University of Southampton's School of Psychology Ethics Committee and Research Governance (Appendix M). Following this, a pilot study was conducted, in order to consider whether the measures, intervention instructions and concepts of gratitude and nostalgia were clearly understood by participants. Whilst participants initially expressed some uncertainty in regards to seeing the word *nostalgia* on the first set of questions, following the vignettes being read, participants were able to complete the questionnaire. During the questionnaires, some participants asked for clarification in regards to answering negatively worded questions (which are reverse scored). By rereading the questions and reminding of the different scale options, participants were then able to complete these questions independently. No changes were made to the measures, intervention instructions and concept scripts (e.g., for gratitude), and therefore data from the pilot study has been used within the final analysis.

The author initially made contact with headteachers of primary schools in the local area, to discuss the study aims and enquire about participation. Following expressions of interest from the headteacher, the author arranged to meet with class teachers who would be running the interventions with their class.

2.2.4.1 **Data Collection**

Data collection at T1, T2 and T3 followed the same format. Participating pupils completed the measures as a class, with the author delivering the instructions verbally. The measures were completed in the same order at each of the time points. Measures were taken on the first day of the intervention (T1; pre-intervention), the last day of the intervention (T2; post-intervention) and at a three-week follow-up (T3). Before completing the measures at T1, the author provided a

semi-scripted introduction to the class regarding the concept of gratitude and instructions for completing the rating scales (Appendix N).

2.2.4.2 Intervention

Once the measures had been completed at T1, the author then introduced the diary task, using a semi-structured script (Appendix O), to participants in small groups of around 6 or 7 children (allocated to the same diary condition), in a quiet area outside of the classroom. Participants were given a short amount of time (5 minutes) to draw a picture on the front of their new diaries. The class then completed their diary daily for three weeks as a class activity, without the researcher present. Please see Appendix P for instructions written within the different diaries (gratitude, appreciation and event), and Figure 4 for a visual representation of the procedure.

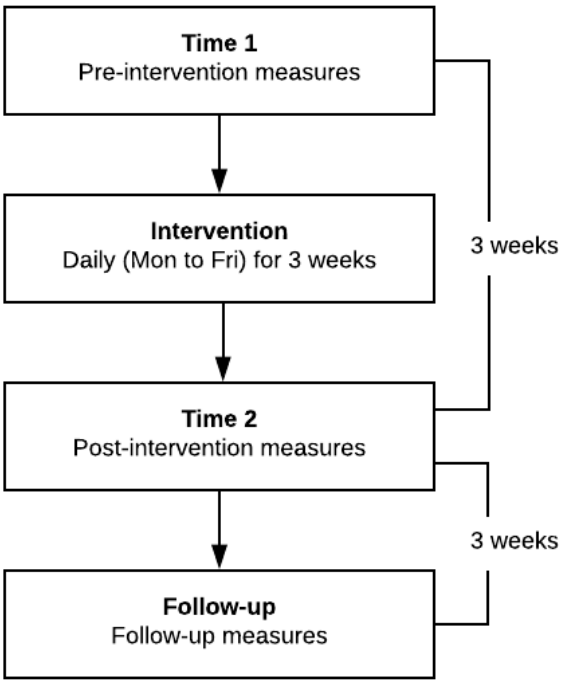


Figure 4: Flow diagram depicting intervention procedure

2.2.5 Analytic Approach

All data was input into SPSS (Statistics 24). Participants needed to: have written at least 10 diary entries, have completed both pre- and post-intervention measures and to have met a fidelity check, in order to be included within the analyses. The fidelity check consisted of the author reviewing the first and last entry in each of the diaries and checking that these entries adhered to the diary instructions. Several participants did not meet the fidelity check. For

example, some participants within the event diary wrote about somebody they are thankful to or something they are thankful for. In addition, some participants within the gratitude diary condition did not identify a person they were thankful to, but included objects and activities instead (e.g., books and playtime).

Reverse coding was completed for all appropriate items within The Belonging Scale, GQ-6 and S-GRAT, and total scores for each of the measures were calculated for each of the time points (T1, T2 and T3). Additionally, change scores were calculated for SoSB, GQ-6, S-GRAT and PA, by subtracting T1 scores from T2 scores.

A series of mixed ANOVAs was conducted to determine whether there were significant intervention effects for the gratitude and appreciation diary when compared to the control group (event diary). All data were checked for assumptions of normal distribution (as assessed by Normal Q-Q Plots), homogeneity of variances (as assessed by Levene's test) and homogeneity of covariances (as assessed by Box's test of equality). There was no evidence that any of these assumptions had been violated. Outliers identified within the data have been included within the analyses due to their representation of 'true' responses.

2.3 Results

2.3.1 Preliminary Analyses

Mean scores for each of the measures at T1 and T2 are presented within Table 4. Differences in demographic variables (age, gender and school number) between the three conditions (gratitude, appreciation and event diary) for nostalgia, SoSB, gratitude and PA at T1 were tested. One-way ANOVAs indicated no significant differences between the groups for all except: nostalgia and gender, $F(1, 189) = 5.48$, $p = .020$; SoSB and gender, $F(1, 191) = 4.16$, $p = .043$, and PA and school number, $F(4, 189) = 2.82$, $p = .027$. A chi-square correlation between condition and gender suggested there were equal amounts of males and females in the three conditions, $\chi^2(2) = 1.96$, $p = .375$.

Table 4

Means and Standard Deviations of Self-Report Measures for Participants in the Intervention and Control Groups at Time 1 and Time 2

Measure	Time 1	Time 2	Time 3 *
	Mean (SD)	Mean (SD)	Mean (SD)
Nostalgia Proneness			
Gratitude diary	30.73 (9.19)		
Appreciation diary	31.52 (8.07)		
Event diary	30.81 (7.38)		
The Belonging Scale			
Gratitude diary	29.70 (4.48)	28.64 (4.81)	30.58 (4.85)
Appreciation diary	29.52 (4.43)	29.27 (4.23)	28.52 (5.54)
Event diary	30.47 (3.08)	30.09 (4.15)	29.55 (5.02)
GQ-6			
Gratitude diary	32.59 (7.21)	31.13 (7.30)	33.71 (6.72)
Appreciation diary	32.66 (6.71)	32.34 (6.96)	30.65 (8.13)
Event diary	33.12 (6.12)	32.86 (5.80)	32.46 (7.43)
S-GRAT			
Gratitude diary	106.18 (22.50)	108.10 (19.95)	111.50 (20.39)
Appreciation diary	109.21 (18.76)	108.80 (21.72)	107 (23.44)
Event diary	110.41 (18.55)	111.00 (16.75)	110.26 (20.58)
Positive Affect			
Gratitude diary	45.01 (9.79)	46.90 (8.67)	46.80 (8.09)
Appreciation diary	46.24 (9.81)	45.60 (10.44)	45.81 (10.76)

Event diary	47.05 (7.31)	45.64 (9.73)	45.03 (9.63)

* T3 means and standard deviations obtained from smaller number of participants than for T1 and T2 (due to reduced number of participants completing follow-up measures). N = 196 for T1 and T2; N = 104 for T3.

Correlational analyses were used to examine the relationships between all measures at T1. As illustrated in Table 5, all measures, apart from nostalgia proneness and SoSB, were significantly related. Small positive correlations were noted between nostalgia proneness, gratitude and PA. A medium positive correlation was noted between gratitude (GQ-6) and PA. Finally, large positive correlations were noted between gratitude, SoSB and PA.

Table 5

Pearson Correlations for Main Study Variables at Time 1

	Nostalgia proneness	SoSB	Gratitude (GQ-6)	Gratitude (S-GRAT)	PA
Nostalgia proneness		.15	.26*	.28*	.26*
SoSB	.15		.55*	.66*	.53*
Gratitude (GQ-6)	.26*	.55*		.63*	.47*
Gratitude (S-GRAT)	.28*	.66*	.63*		.59*
PA	.26*	.53*	.47*	.59*	

Note. As there are several correlations, a conservative critical value of $p < .005$ was used to assess statistical significance, in order to avoid Type 1 errors.

* $p < .005$

2.3.2 **Gratitude**

A manipulation check was conducted to examine whether the intervention groups (gratitude and appreciation diaries) had a significant effect on gratitude scores, compared to the control group (event diary). Two 2 (Time: T1 vs. T2) x 3 (Group: gratitude vs. appreciation vs. event) mixed ANOVAs were conducted for GQ-6 and S-GRAT scores. The analyses revealed no statistically significant interactions between the intervention and time for GQ-6 scores ($F(2, 188) = 0.66$, $p = .518$, $\eta_p^2 = .007$) and S-GRAT scores ($F(2, 179) = 0.39$, $p = .679$, $\eta_p^2 = .004$). In addition, no main effects for time (GQ-6: $F(1, 188) = 1.89$, $p = .171$, $\eta_p^2 = .010$; S-GRAT: $F(1, 179) = 0.39$, p

= .531, η_p^2 = .002) or intervention (GQ-6: $F(2, 188) = 0.60$, $p = .549$, $\eta_p^2 = .006$; S-GRAT: $F(2, 179) = 0.56$, $p = .571$, $\eta_p^2 = .006$) were found. This suggests that the intervention (gratitude and appreciation diaries) did not successfully manipulate feelings of gratitude, as they were designed to do. Thus, the initial hypothesis that involvement in the intervention groups would significantly increase gratitude scores, relative to the control group participants, has been rejected.

2.3.3 **SoSB**

A 3 (Diary condition) x 2 (Time: T1 vs. T2) x 2 (Gender) mixed ANOVA was conducted to determine whether diary condition had an effect on SoSB. Gender has been included within this analysis as differences were noted between the groups at T1 (see 'Preliminary Analyses').

Out of a total possible score of 36 points, the mean SoSB score for all participants at T1 was 29.83 (*SD*= 4.13); slightly higher than the mean score noted for Diebel et al.'s (2016) participants at T1 (*M*= 29.06). Mean total SoSB scores at T2 highlighted a decrease in scores for all groups following the intervention (see Table 4).

T1, T2 and T3 SoSB scores were transformed using the SQRT function due to there being a negative skew for scores. The transformed SoSB scores were found to be normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$).

There were no significant two- or three-way interaction effects: Gender x Time x Diary group, $F(2, 182) = 0.34$, $p = .710$, $\eta_p^2 = .004$; Gender x Time, $F(1, 182) = 0.02$, $p = .887$, $\eta_p^2 < .001$; Time x Diary group $F(2, 182) = 1.52$, $p = .221$, $\eta_p^2 = .016$; Gender x Diary group, $F(2, 88) = 1.52$, $p = .225$, $\eta_p^2 = .033$. There were also no significant main effects for Diary group, $F(2, 182) = 0.77$, $p = .466$, $\eta_p^2 = .008$, nor Gender, $F(1, 182) = 3.54$, $p = .062$, $\eta_p^2 = .019$. There was, however, a main effect for Time, $F(1, 182) = 3.91$, $p = .049$, $\eta_p^2 = .021$, with a decrease of scores from T1 to T2.

To consider whether any differences existed at follow-up (T3), a 3 (Diary condition) x 3 (Time: T1 vs. T2 vs. T3) x 2 (Gender) mixed ANOVA was conducted. No statistically significant two- or three-way interactions existed. In addition, no main effects for Time, Gender nor Diary group was found (all *p* values > .05).

Lastly, a Pearson's product-moment correlation was conducted to assess the relationship between SoSB change scores and gratitude change scores. A moderate positive correlation was noted between changes in SoSB and changes in gratitude to school scores (as measured by the GQ-6), $r(183) = .47$, $p < .001$, with gratitude to school accounting for 21.30% of the variance in SoSB scores. In addition, there was a moderate positive correlation between changes in SoSB

scores and gratitude more generally (as measured by S-GRAT), $r(177) = .41$, $p < .001$, with gratitude accounting for 16.89% of the variance in SoSB scores.

2.3.4 Positive Affect

A 3 (Diary condition) x 2 (Time: T1 vs. T2) x 5 (School number: 1 vs. 2 vs. 3 vs. 4 vs. 5) mixed ANOVA was conducted to determine whether diary condition had an effect on PA. School number has been included within this analysis as differences were noted between the groups at T1 (see 'Preliminary Analyses').

Out of a total possible score of 60 points, the mean PA score for all participants at T1 was 45.84 (*SD*= 9.22). Mean total PA scores at T2 indicated an increase for the gratitude dairy participants and a decrease for event diary and appreciation diary participants following the intervention (see Table 4).

T1, T2 and T3 PA scores were transformed using the SQRT function, due to there being a negative skew for scores. The transformed PA scores were normally distributed for most groups, as assessed by Shapiro-Wilk's test ($p > .05$). However, follow-up scores for appreciation diary participants in School 3 and pre-intervention scores for gratitude diary participants in School 4 remained non-normally distributed, as assessed by Shapiro-Wilk's test ($p < .05$).

There were no significant two- or three-way interaction effects: School number x Time x Diary Group, $F(8, 171) = 0.89$, $p = .524$, $\eta_p^2 = .040$; School number x Time, $F(4, 171) = 0.35$, $p = .838$, $\eta_p^2 = .008$; Time x Diary group, $F(2, 171) = 1.94$, $p = .146$, $\eta_p^2 = .022$; School number x Diary group, $F(8, 171) = 0.33$, $p = .953$, $\eta_p^2 = .015$. There were also no significant main effects for Time, $F(1, 171) = 0.06$, $p = .804$, $\eta_p^2 < .001$, nor Diary group, $F(2, 171) = 0.33$, $p = .828$, $\eta_p^2 = .002$. There was, however, a main effect for School number, $F(4, 171) = 3.31$, $p = .012$, $\eta_p^2 = .072$, with a significant difference noted between School 1 and 2. School 1 was associated with a mean PA score 0.70 (95% CI, .01 to 1.38) points higher than School 2, $p = .044$.

To consider whether any differences existed at follow-up (T3), a 3 (Diary condition) x 3 (Time) x 5 (School number) mixed ANOVA was conducted. No statistically significant two- or three-way interactions existed. In addition, no main effects for Time, School number nor Diary group was found (all p values > .05).

Lastly, a Pearson's product-moment correlation revealed a moderate positive correlation between changes in PA and changes in gratitude to school scores (as measured by GQ-6), $r(182) = .30$, $p < .001$, with gratitude to school accounting for 8.94% of the variance in PA scores. A larger correlation was noted between changes in PA and changes in gratitude more generally (as

measured by S-GRAT), $r(174) = .38$, $p < .001$, with gratitude accounting for 14.59% of the variance in PA scores.

2.3.5 Nostalgia Proneness

Moderation analysis, using Model 1 from Hayes, 2013, was conducted (using the PROCESS macro for SPSS, Hayes, 2013) to explore whether nostalgia proneness moderates the relationship between change in gratitude (GQ-6) and change in SoSB scores (Figure 4). Gender was included within the analysis as a covariate as differences in nostalgia proneness scores were noted between males and females at T1 (see 'Preliminary Analyses').

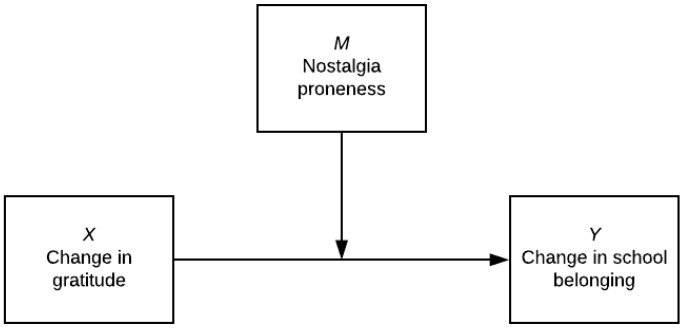


Figure 5: Moderation model depicting nostalgia proneness as a moderator for the relationship between change in gratitude and change in SoSB scores

Several outliers were identified within the analysis, as assessed by inspection of Mahalanobis, Cook's distance and Leverage scores. Participant data was removed from the analysis if they failed to meet at least two of these checks ($N = 3$; participant 1421, 2429 and 4617). There was no evidence of multicollinearity, as assessed by inspection of the correlation matrix. The assumption of normality was met, as assessed by visual inspection of the histogram for standardized residual values, and linearity was established by visual inspection of the P-P plot. Finally, the assumption of homogeneity and homoscedasticity was met, as assessed by visual inspection of the scatterplot for standardized residual values versus standardized predicted values.

The overall statistical moderation model was found to be significant, $F(4, 172) = 10.43$, $p < .001$. $R^2 = .195$, however, the interaction effect between change in GQ-6 and nostalgia proneness was non-significant, $b = .01$, $t(172) = 1.14$, $p = .254$. Whilst change in GQ-6 was found to significantly predict change in SoSB scores, $b = .20$, $t(172) = 6.00$, $p < .001$, with every 1 point increase in GQ-6 scores meaning a 0.20 point increase in SoSB scores, nostalgia proneness was

not significant, b = -.04, $t(172)$ = -1.33, p = .2543. This analysis therefore suggests that nostalgia proneness did not moderate the relationship between change in gratitude and change in SoSB.

2.3.6 Exploratory Supplementary Gratitude Analyses

As the author did not find predicted condition effects on gratitude scores for the whole group of children, supplementary hierarchical regression analyses were conducted to investigate whether there may have been significant effects of condition for certain groups of children. For each gratitude measure (GQ-6 change scores and S-GRAT change scores), a separate three-step hierarchical regression analysis was conducted. Diary groups were dummy coded for both analyses (0 = gratitude diary and appreciation diary; 1 = event diary). T1 measures included in the analysis were standardized using the centering technique (subtracting the sample mean from individual means), in order to aid interpretation of findings (Lott & Antony, 2012). For each analysis, age and gender were entered in Block 1, T1 measures (nostalgia, SoSB and PA) in Block 2 and diary condition in Block 3.

For both analyses there was independence of residuals, as assessed by a Durbin Watson statistic of 2.08 (DV = GQ-6) and 2.33 (DV = S-GRAT). Linear relationships between the DVs and IVs was noted, as assessed by visual inspection of studentized residuals versus unstandardized predicted values plots, in addition to visual inspection of partial regression plots. There was homoscedasticity, as assessed by visual inspection of studentized residuals versus unstandardized predicted values plots. There was no evidence of multicollinearity, with all tolerance values being greater than 0.1. There were four outliers detected (one in the GQ-6 analysis and three in the S-GRAT analysis), as assessed by a standardized residual value being greater than ± 3 standard deviations, however, all were maintained in the analyses. There were no leverage values greater than 0.2 and values for Cook's distance above 1. Finally, the assumption of normality was met, as assessed by visual inspection of normal P-P plots.

When GQ-6 was input as the DV (see Table 6), the full model of gender, age, T1 measures and diary condition (Model 3) was non-significant, R^2 = .02, $F(6, 174)$ = 0.67, p = .671; adjusted R^2 = -.01. When added in Block 3, diary condition led to a non-significant increase in R^2 of .01, $F(1, 168)$ = 0.91, p = .342.

Table 6

Hierarchical Multiple Regression Predicting Change in GQ-6 from Age, Gender, Time 1 Measures and Diary Condition

	GQ-6 change					
	Model 1		Model 2		Model 3	
Variable	B	β	B	B	B	B
Constant	1.60		1.99		2.13	
Age	-.33	-.04	-.39	-.05	-.44	-.06
Gender	.75	.06	1.04	.08	1.02	.08
Pre-nostalgia			-.05	-.07	-.05	-.06
Pre-belonging			-.14	-.09	-.15	-.09
Pre-PA			-.01	-.01	-.01	-.02
Gratitude and Appreciation diary					1.09	.07
R^2	<.01		.02		.02	
F	.38		.63		.67	
ΔR^2	<.01		.01		.01	
ΔF	.38		.79		.91	

Note. N = 175

*p <.05

Similarly to GQ-6 findings, when S-GRAT was input as the DV (see Table 7), the full model of gender, age, T1 measures and diary condition (Model 3) was non-significant, R^2 = .06, $F(6, 167)$ = 1.73, p = .861; adjusted R^2 = -.01. When added in Block 3, diary condition led to a non-significant difference in R^2 of <.001, $F(1, 161)$ = 0.04, p = .852. There was, however, a significant increase in variance from Block 1 to Block 2 with the addition of T1 measures: R^2 of .06, $F(3, 162)$ = 3.36, p = .020. Despite this difference, Model 2 remained non-significant.

Table 7

Hierarchical Multiple Regression Predicting Change in S-GRAT from Age, Gender, Time 1 Measures and Diary Condition

	S-GRAT change					
	Model 1		Model 2		Model 3	
Variable	B	β	B	B	B	β
Constant	4.35		5.85		5.96	
Age	-.50	-.03	-.76	-.04	-.79	-.05
Gender	.99	.03	2.53	.08	2.52	.08
Pre-nostalgia			-.33	-.19*	-.33	-.18*
Pre-belonging			-.40	-.11	-.40	-.11
Pre-PA			-.06	-.04	-.06	-.04
Gratitude and Appreciation diary					.48	.01
R^2	>.01		.06		.06	
F	.15		2.08		1.73	
ΔR^2	>.01		.06		>.01	
ΔF	.15		3.36		.04	

Note. N = 168

*p <.05

Based on the above two regression analyses, it can be concluded that the intervention (gratitude and appreciation) was unsuccessful in manipulating feelings of gratitude beyond age, gender and pre-measure scores. As data from participants who completed fewer than 10 diary entries has been excluded from the analyses, a Pearson's correlation coefficient was conducted to explore whether the number of diary entries completed correlated to GQ-6 change scores. No statistically significant relationship between number of diary entries and GQ-6 change scores was found, $r(255) = .08$, $p = .214$.

2.4 Discussion

The current study aimed to build upon previous research, by exploring the effectiveness of a school-based gratitude diary intervention for increasing SoSB (Diebel, 2014; Diebel et al., 2016) and PA (Renshaw & Olinger-Steeves, 2016). Novel to this study is the distinction made between a *gratitude* and *appreciation* diary, using Adler and Fagley's (2005) conceptualisation of the two constructs. Adler and Fagley define appreciation as a higher-order construct, which is characterised by eight different aspects, one of which is 'gratitude'. A feeling of gratitude involves acknowledgement of there being a responsible agent or benefactor (a person, deity or other agent capable of intentional action) who brought about the positive outcome, condition or benefit experienced.

Considering this distinction between gratitude and appreciation, it would appear that previous studies that have used the term 'gratitude diary' to describe their intervention condition have actually been implementing appreciation diaries. Participants in the 'gratitude diary' conditions of such studies have been encouraged to think about things that they are grateful for that day, without there being a need to acknowledge a responsible agent or benefactor who brought about this positive change. This study therefore aimed to provide a more specific focus on encouraging gratitude (focussing on who you are grateful to) and appreciation (focussing on what you are thankful for), by implementing three different diary conditions (appreciation, gratitude and event).

The hypothesis that participants within the intervention groups (gratitude and appreciation diary) would show a greater increase in gratitude relative to participants in the control group was rejected. The manipulation check revealed that the intervention conditions had been unsuccessful in influencing gratitude, with no discernible differences in changes to gratitude scores over time noted between the conditions. This finding is inconsistent with previous 'gratitude diary' research with children and young people (Diebel 2014; Diebel et al., 2016; Froh et al., 2008). Within these studies, gratitude scores have been found to be significantly higher at post-intervention for participants within the 'gratitude diary' group, compared to participants within the control groups (Froh et al., 2008: hassles diary; Diebel, 2014: event diary). Findings do, however, need to be interpreted with caution when studies have compared a 'gratitude diary' to a hassles diary (such as Froh et al., 2008), as there has been criticism that the hassles diary potentially exaggerates any differences. Manipulation checks have not always been conducted in other 'gratitude diary' research with children and young people (Long & Davis, 2011; Owens & Patterson, 2013), meaning that conclusions about these studies interventions validity and efficacy cannot be made.

Possible explanations for the current study's lack of intervention effect may be attributed to differences in the intervention design between the current study and previous studies that have successfully manipulated gratitude. For example, intervention instructions in previous research have been more specific about expectations for the diary entries, asking participants to 'write down 2 or 3 things that you are thankful or grateful for today at school' (Diebel, 2014; Diebel et al., 2016), whereas the intervention in the current research neglected this specificity of amount, asking participants to note down 'some things' they are thankful for in school that day. It may be that by providing a more specific focus (e.g., 'write down 2 or 3 things'), participants are encouraged to reflect more deeply on their feelings of gratitude during the day and select their 'best' two or three examples. By reflecting more deeply, participants are enabled the opportunity to savour their positive experiences (Sheldon & Lyubomirsky, 2006) and retrieve feelings of gratitude associated with these. In contrast, a more general focus (e.g., write 'some things') may reduce the opportunities to truly savour these positive experiences.

A further difference noted between the intervention design in the current study and previous studies is the explicit instructions to school staff regarding when diaries are to be completed. Within Diebel's (2014) study, teachers were advised to incorporate the completion of diaries within their afternoon teaching session. This instruction was not shared within the current study, and therefore classes may have completed their diaries at inconsistent or incompatible times (e.g., first thing in the morning or during afternoon registration). As such, participants may not have been enabled adequate time to reflect on their school day. The current study did not collect data on diary completion times, which means that this is unable to be explored further.

A third possible explanation for the current study's lack of intervention effect may derive from having a sample of participants who are already highly grateful. Using the *resistance hypothesis* (McCullough, Tsang, & Emmons, 2004), Harbaugh and Vasey (2014) highlight a discrepancy between the impact of gratitude exercises for individuals high and low in trait gratitude. The authors suggest that there may be a ceiling effect for gratitude interventions used with highly grateful individuals. Such individuals already reap the associated rewards, thus reducing the likely impact of a gratitude intervention for them (Harbaugh & Vasey, 2014). Whereas, those low in trait gratitude are more likely to benefit from intentional practice. When comparing the mean gratitude level at baseline within the current study to other studies, this is shown to be relatively high (GQ-6 scores, with a score of 42 being the highest: Current study, *M*= 32.78; Diebel, 2014, *M*= 30.42; Diebel et al., 2016, *M*= 31.07), and may offer some explanation as to the lack of intervention effects noted within the current study. Finally, fidelity checks were, at best, only carried out on a total of 20% of the dairy entries (completed for the first and last entry from each diary). As a result, the author is unable to conclude whether the diaries fully

represented each condition, and may therefore be a further potential explanation for the lack of intervention effects. In consideration of the find-remind-bind hypothesis (Algoe et al., 2008; Algoe, 2012) and the broaden-and-build theory of positive emotions (Fredrickson, 1998; 2013), positive change to gratitude scores was predicted to lead to positive change in SoSB and PA scores. By manipulating feelings of gratitude, it was hypothesised that participants within the intervention groups would show a greater increase in SoSB and PA, relative to participants in the control group. The two analyses indicated that there were no significant interaction effects between time and diary group for either SoSB or PA, and therefore this hypothesis was rejected.

As change to gratitude was considered the mediator for change to SoSB and PA, the intervention's lack of success at manipulating feelings of gratitude can be used to explain the lack of group effect. Indeed, where gratitude has been successfully manipulated in other studies by the intervention, PA and SoSB have been shown to increase over time in the 'gratitude diary' group (Emmons & McCullough, 2003; Diebel et al., 2016; Diebel, 2014). Although, direct comparison between the current study and Emmons and McCullough's (2003) work should be considered with caution, due to their use of an adult sample and their comparison of the gratitude diary group with a passive control (with participants in the control group just completing the measures). Further support for the positive relationship between change in gratitude and change in SoSB and PA is noted from the correlational analyses conducted within the current study. A moderate correlation between gratitude change scores and SoSB change scores was noted, with change to GQ-6 scores accounting for 21.3% of the variance in SoSB. Within the moderation analysis, GQ-6 change scores were found to significantly predict change in SoSB scores (e.g., on average, for each one point increase in GQ-6 scores, there was an associated 0.20 point increase in SoSB scores).A moderate correlation was also noted between gratitude change scores and PA change scores, with change to S-GRAT accounting for 14.59% of the variance in PA. Thus, if gratitude scores had been successfully increased by the gratitude and appreciation diary intervention, notable differences between the groups for changes to SoSB and PA may have been noted, although further research is warranted.

The third research question this paper aimed to address was in relation to whether nostalgia proneness moderates the relationship between changes in gratitude and changes in SoSB, as found by Diebel (2014). The moderation analysis model was found to be non-significant, suggesting that nostalgia proneness did not moderate the relationship between change in gratitude and SoSB within the current study.

Finally, the last research question aimed to consider whether any intervention effects maintained at a three-week follow-up. Results indicated no interaction or main effects for SoSB

nor PA at follow-up. As the intervention conditions employed in this study did not manipulate gratitude as expected, it would be unreasonable to make any conclusions about the intervention's long-term effects. A follow-up has not been conducted in the majority of previous 'gratitude diary' studies with child and adolescent populations (e.g., Owens & Patterson, 2013; Diebel et al., 2016; Long & Davis, 2011). For the two studies that have included a follow-up, Diebel (2014) noted no impact of the intervention at a two-week follow-up and Froh and colleagues (2008) present positive findings for the 'gratitude diary' at a three-week follow-up, but when compared to a hassles diary condition. The only effect at follow-up, which showed a favourable difference for the 'gratitude diary' in comparison to the control condition, was participants' satisfaction with school experience (Froh et al., 2008).

2.4.1 Limitations and Directions for Future Research

This study aimed to counteract limitations noted within previous gratitude diary research with children and adolescents. Similar to Diebel et al. (2016) and Diebel (2014), participants within the control group completed an event diary, designed to act as a neutral condition, as opposed to a hassles diary (used within Froh et al., 2008), which has been criticised for inducing NA and potentially exaggerating differences between the groups. Additionally, rather than allocating participants at a whole-class or group level, as per previous research (Froh et al., 2008; Owens & Patterson, 2013; Long & Davis, 2011), this study employed a more scientifically robust approach to allocation. Participants were allocated at an individual level, thus preventing any selection bias and balancing confounding variables between the groups. Furthermore, the addition of a manipulation check within the study enabled the author to ascertain whether the intervention successfully increased gratitude scores, and further explore any relationships between gratitude and the dependent variables (PA and SoSB), something which has been missing from previous studies (Owens & Patterson, 2013; Long & Davis, 2011). Finally, this study incorporated a follow-up time point to explore the longevity of any intervention effects.

Whilst attempting to rectify previous studies' shortcomings, the current study is not without its own limitations. Most notable are the limitations associated with the gratitude measures used. Using Adler and Fagley's (2005) definition of gratitude, only one of the six questions from the GQ-6 would be considered to enquire about gratitude (acknowledging an active agent or benefactor who has brought about the positive outcome, condition or benefit), with the other five questions enquiring about other aspects of appreciation, and not gratitude. Although the GQ-6 was considered to potentially be a good fit for measuring impact of the appreciation diary, it was considered that an additional measure would be needed to measure 'gratitude', as per Adler and Fagley's (2005) conceptualisation. The S-GRAT was chosen as this

additional measure, as it includes an appropriate subscale: 'Appreciation of Others'. The scale items were simplified for the current study, to make it more accessible to a younger audience, based on Froh, Fan and colleagues (2011) conclusions about the scale. Unfortunately, when comparing the simplified scale to the original scale structure (which contains three subscales), the analysis indicated a poor model fit. This therefore meant that only the total S-GRAT scores could be used in future analyses, preventing the author from considering the 'gratitude' subscale, 'Appreciation of Others', separately. Thus, in addition to the GQ-6, the S-GRAT became a secondary measure of appreciation, and not a gratitude measure, as was intended. Future research would do well to consider the development, or adaptation, of a gratitude measure which can be used with children and adolescents, in line with the conceptualisation of gratitude as just one aspect of appreciation.

The design of the study meant that classes contained participants from all three diary groups. Whilst this was conducted to increase scientific robustness of the study, it meant that some participants became aware of the differences in diary conditions between themselves and peers. Indeed, this was apparent when carrying out the fidelity check, with a number of diaries having to be removed from the analysis due to participants writing about a different condition to the one they had been allocated. Furthermore, one class informed me that during the intervention a supply teacher had drawn the class's attention to there being more than one diary condition. This suggests that further support may have been necessary when initially setting up the diaries with the participants.

Furthermore, the questionnaires took longer than anticipated to complete with each of the classes, which reduced the available time for introducing and discussing the diaries with small groups. It may be that participants were left uncertain with the task that had been set, which meant they relied on peer or teacher support to help aid their understanding. As a group, examples of what participants could write in their diaries were discussed, however, the groups did not complete their first diary entry with the author. It may have been beneficial for additional time to have been allocated for this to take place, in order to check understanding. Further timetabling challenges meant that some classes completed their measures on a Friday, and whilst they were given their diary on the same day, did not complete their first entry until the Monday, when they then may have needed reminding about what to do. Future studies may want to consider allowing more time to introduce the diaries to the groups (providing 10-15 minutes per small group), encouraging the group to complete their first entry during this time.

A large sample size was obtained for the current study. However, there were difficulties with some classes completing the required number of diary entries, therefore meaning that a

large percentage of participants were removed from analysis. Future researchers may want to consider implementing a regular check-in with school staff, in order to check how diary completion is going. Furthermore, there is currently no clear guidance as to the impact of length of intervention. Although an arbitrary intervention fidelity cut-off of 10 diary entries was employed in the current study, intervention lengths have been variable (e.g., seven diary entries in Diebel, 2014; 20 diary entries in Diebel et al., 2016). Adopting a daily measurement approach for the intervention may enable some consideration as to the effect of length of intervention, exploring any changes for these measures.

2.4.2 Implications for Educational Psychologists (EPs)

The main aim of the study was to build upon the limited evidence-base that currently exists for using gratitude diaries with children and young people to improve well-being and the building of social connections. It was considered that by including two intervention conditions and making a distinction between a gratitude and appreciation diary, differences between the conditions for changes to gratitude, SoSB and PA could be explored. Any differences noted between the conditions would then enable explicit recommendations to be made about diary instruction and focus.

EPs have an important role in supporting schools to identify appropriate evidence-based interventions. At present, gratitude research with children and young people is still in the early stages and therefore the evidence-base is rather limited. Although this study presented correlational evidence indicating that change in gratitude is positively associated with change in SoSB and PA, the gratitude and appreciation interventions were unsuccessful in manipulating gratitude. This is contrary to previous findings (Froh et al., 2008; Diebel, 2014; Diebel et al., 2016) and suggests that further research is required to consider what factors promote or prevent the success of a gratitude diary for increasing feelings of gratitude.

Some possible explanations for the lack of intervention effect in this study were considered in relation to noted differences between the current and previous studies' designs. To ensure replication of successful gratitude diary interventions, there is a need to ensure that instructional procedures are clearly defined. Further studies would enable the development of such procedures and instructions, considering factors that support or hinder impact of the gratitude intervention. This would appear to be especially warranted considering that school personnel usually carry out the interventions recommended through discussions with EPs. Indeed, a tentative finding from the review of SoSB interventions suggests that SoSB interventions are more

effective when led by members of the school community (e.g., teaching staff or peers), rather than external members.

The resistance hypothesis (McCullough, Tsang, & Emmons, 2004) suggests a ceiling effect for the use of gratitude interventions with already highly grateful individuals, however, suggests that those low in trait gratitude are more likely to benefit from the intentional practice afforded by such interventions. With this in mind, when EPs are advising schools about implementing a gratitude diary intervention, it would appear that the intervention would be of most value for targeted young people (those for whom trait gratitude is low), rather than as a universal intervention. In addition, schools will need to be supported to consider how to provoke deeper processing of moments of gratitude (e.g., focussing attention to a finite number of items: 'write down 2 or 3 things', and considering what time in the day would allow sufficient reflection and writing time for the intervention).

A final implication for EP practice is in relation to the conceptualisation of gratitude and appreciation, as the definitions used for gratitude appear somewhat conflicted at present. This is also apparent within the gratitude measures that are currently used. When recommending interventions to schools, it is imperative to continue to investigate the impact of such interventions, such as by using appropriate pre- and post-measures. Further discussions and research is therefore needed to continue exploring the conceptualisation of gratitude, and to continue to evaluate and develop appropriate measures based on this conceptualisation.

Appendix A **List of search terms**

Search terms were applied, then limiters added to meet the inclusion and exclusion criteria. The search was completed in October 2017.

Search Terms	Electronic Database	Limiters Applied	Articles retrieved
"school connectedness" OR "school affiliation" OR "school membership" OR "school belonging"	PsycINFO	Peer reviewed English language	262
	Web of Science	Articles English language	228
AND	ERIC	Peer reviewed English language	114
strateg* OR program* OR intervention			
		Total:	604

Appendix B **Studies with exclusion and inclusion criteria**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Anderson-Butcher, D. (2010)	Y	Y	Y	N – general evaluation of the intervention	N – just experimental groups	**No**
Battistich, V., Schaps, E., & Wilson, N. (2004)	Y	Y	N – follow-up study	N – just post	Y	**No**
Bond, L., Glover, S., Godfrey, C., Butler, H., & Patton, G. C. (2001)	Y	Y	Y	N – measuring school environment change – no SoSB outcomes	N – just experimental groups	**No**
Bushnell, M. (1997)	Y	Y	Y	N – no outcomes – observational data	N – single case study	**No**
Catalano, R. F., Haggerty, K. P., Oesterle, S., Fleming, C. B., & Hawkins, D. J. (2004)	Y	Y	Y	Y	N – just experimental groups	**No**
Chan, C. S., Rhodes, J. E., Howard, W. J., Lowe, S. R., Schwartz, S. E. O., & Herrera, C. (2013)	Y	Y	Y	Y	N – control group but not used within study	**No**
Chapman, R. L., Buckley, L., Sheehan, M., & Shochet, I. M. (2013)	Y	Y	Y	Y	Y	**Yes**
Cho, H., Hallfors, D. D., & Sánchez, V. (2005)	Y	Y	Y	Y	Y	**Yes**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Chung-Do, J. J., Goebert, D. A., Hamagani, F., Chang, J. Y., & Hishinuma, E. S. (2017)	Y	Y	Y	N –just post	N	**No**
Connolly, J., Josephson, W., Schnoll, J., Simkins-Strong, E., Pepler, D., MacPherson, A., … Jiang, D. (2015)	Y	Y	Y	Y	Y	**Yes**
Converse, N., & Lignugaris, B. (2009)	Y	Y	Y	Y	Y	**Yes**
Coyne-Foresi, M. (2015)	Y	Y	Y	Y	Y	**Yes**
Diebel, T., Woodcock, C., Cooper, C., & Brignell, C. (2016)	Y	Y	Y	Y	Y	**Yes**
Drolet, M., Arcand, I., Ducharme, D., & Leblanc, R. (2013)	Y	Y	Y	N – qualitative study	N	**No**
Eisenhower, A., Baker, B. L., & Taylor, H. (2016)	Y	Y	Y	N – describes the how of the intervention	N	**No**
Eisenhower, A., Taylor, H., & Baker, B. L. (2016)	Y	Y	Y	N – student-teacher relationship and parent-school connectedness	N	**No**
Espelage, D. L., Rose, C. A., & Polanin, J. R. (2016)	Y	Y	Y	Y	Y	**Yes**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Fair, C. D., Hopkins, K., & Decker, A. (2012)	Y	Y	Y	Y	N	**No**
Gaete, J., Valenzuela, D., Rojas-Barahona, C., Valenzuela, E., Araya, R., & Salmivalli, C. (2017)	Y	Y	N – design protocol provided, but study to be carried out	Y	Y	**No**
Garcia, C., Pintor, J., Vazquez, G., & Alvarez-Zumarraga, E. (2013)	Y	Y	Y	Y	Y	**Yes**
Goldner, L. (2017)	Y	Y	Y	Y	N	**No**
Gregoric, C., & Owens, L. (2008)	Y	Y	Y	Y	N	**No**
Hamm, J. V, Farmer, T. W., Dadisman, K., Gravelle, M., & Murray, A. R. (2011)	Y	Y	Y	Y	Y	**Yes**
Holt, L. J., Bry, B. H., & Johnson, V. L. (2008)	Y	Y	Y	Y	Y	**Yes**
Johnson, V. L., Holt, L. J., Bry, B. H., & Powell, S. R. (2008)	Y	Y	Y	Y	Y	**Yes**
Karcher, M. J., Davidson, A. J., Rhodes, J. E., & Herrera, C. (2010)	Y	Y	Y	N	Y	**No**
Kernsmith, P. D., & Hernandez-Jozefowicz, D. M. (2011)	Y	Y	Y	Y	N	**No**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
King, K. A., Vidourek, R. A., Davis, B., & McClellan, W. (2002)	Y	Y	Y	Y	N	**No**
Kraus, S. E. C., & Cleveland, R. E. (2016)	Paper could not be obtained.					**No**
Lamb, D., & Gulliford, A. (2011)	Y	Y	Y	N – SDQ used	Y	**No**
Lewis, K. M., Sullivan, C. M., & Bybee, D. (2006)	Y	Y	Y	Y	Y	**Yes**
Mackie, I., & MacLennan, G. (2015)	Y	N – obtained from full-text. Defining a model for supporting connectedness in schools.				**No**
Mann, M. J., Smith, M. L., & Kristjansson, A. L. (2015)	Y	Y	Y	Y	Y	**Yes**
McDonough, M. H., Ullrich-French, S., Anderson-Butcher, D., Amorose, A. J., & Riley, A. (2013)	Y	Y	Y	Y	N	**No**
McGuire, J. K., & Gamble, W. C. (2006)	Y	Y	Y	N – community belonging rather than school	N	**No**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Mcloughlin, C. S. (2009)	Y	Y	Y	Y	Y	**Yes**
Mcloughlin, C. S. (2010)	Y	Y	Y	Y	Y	**Yes**
McMahon, S. D., & Washburn, J. J. (2003)	Y	Y	Y	Y	N	**No**
Miller, C. F., Kochel, K. P., Wheeler, L. A., Updegraff, K. A., Fabes, R. A., Martin, C. L., & Hanish, L. D. (2017)	Y	Y	Y	Y	Y	**Yes**
O'Connor, E. (2016)	Y	Y	Y	Y	N	**No**
Patton, G., Bond, L., Butler, H., & Glover, S. (2003)	Y	N – (from full text) overview of the research				**No**
Portwood, S. G., Ayers, P. M., Kinnison, K. E., Waris, R. G., & Wise, D. L. (2005)	Y	Y	Y	Y	Y	**Yes**
Pryce, S., & Frederickson, N. (2013)	Y	Y	Y	Y	Y	**Yes**
Ramirez, M., Harland, K., Frederick, M., Shepherd, R., Wong, M., & Cavanaugh, J. E. (2013)	Y	Y	Y	Y	N	**No**
Richtman, K. S. (2007)	Y	Y	N – overview of intervention design and general results	N	N	**No**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Riley, A., Anderson-Butcher, D., Logan, J., Newman, T. J., & Davis, J. (2017)	Y	Y	Y	N – only used the teacher support subscale of the PSSM and only at post-test	N	**No**
Riley, T., & White, V. (2016)	Y	Y	Y	N – qualitative case study using semi-structured interviews	N	**No**
Rose, K., Hawes, D. J., & Hunt, C. J. (2014)	Y	Y	Y	Y	Y	**Yes**
Rowe, F., & Stewart, D. (2011)	Y	Y	Y	N – qualitative case study	N	**No**
Ruttledge, R., Devitt, E., Greene, G., Mullany, M., Charles, E., Frehill, J., & Moriarty, M. (2016)	Y	Y	Y	Y	Y	**Yes**
Saewyc, E. M., & Edinburgh, L. D. (2010)	Y	Y	Y	N – pre and post school connectedness just taken for experimental group, not control	Y	**No**
Spier, E. (2010)	Y	Y	Y	N	N	**No**
Stevens, S., Andrade, R., & Page, M. (2016)	Y	Y	Y	Y	N	**No**

	Inclusion/ Exclusion Criteria					Eligible for inclusion?
	School-age population?	**School intervention?**	**Empirical paper?**	**Pre- and post- school belonging measure?**	**Comparison group?**	
Ullrich-French, S., & McDonough, M. H. (2013)	Y	Y	Y	N – only used subscale from PSSM	N	**No**
Vera, E., Shriberg, D., Alves, A., De Oca, J. M., Reker, K., Roche, M., … Rau, E. (2016)	Y	Y	Y	Y	N	**No**

Appendix C **Data extraction table of included studies**

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
1. Chapman, Buckley, Sheehan, & Shochet (2013)	**Characteristics:** Teachers and Grade 8 students from 5 secondary schools in Canberra, Australia **Country:** Australia **N (% male):** Health or Pastoral Care teachers from E_1 and E_2= 21 (not reported) E_1= Baseline: 77 (56%) Follow-up: 92 (51%) E_2= Baseline: 41 (not reported) Follow-up: not reported (not reported) C=	**Experimental interventions:** **E_1**: Skills for Preventing Injury in Youth (SPIY) and connectedness components (2 schools) **E_2**: Connectedness components only (1 school) **Control:** **C**: Curriculum-as-usual (2 schools)	Quant for students (questionnaire) Mixed for teachers (questionnaire and focus group) **Allocation:** random at school level **Time points:** Pre- and 6 months post-intervention for students. Pre- and 8-weeks post intervention for teachers. **Length and frequency:** 8-weekly 50-min lessons	**Injury:** The Extended Adolescent Injury Checklist (Chapman, Buckley & Sheehan, 2011) **Risk-taking:** The Australian Self-report Delinquency Scale (Mak, 1993) **Alcohol use:** The Australian School Students Alcohol and Drugs Survey (Western, Lynch, Ogilvie et al., 2003) **School connectedness:** The Psychological Sense of School Membership (PSSM) scale (Goodenow, 1993)	**Injury, risk-taking and alcohol use:** *ns* difference for transport risk behaviour, alcohol use, transport injury and violence injury. E_{1+2} < C for violence risk behaviour (*p*=.02) **School connectedness:** *ns* difference

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Baseline: 196 (46%) Follow-up: 207 (50%) **Age range:** not reported **Mean age (SD):** 13.6 years (0.5) **Drop out/ incomplete data:** Gained students 77 to 92 for E and 196 to 207 for C.				
2. Cho, Hallfors, & Sánchez (2005)	**Characteristics:** 9th to 11th grade students from 9 high schools in two large urban school districts in USA. Students identified as high risk for school dropout (students in top 25% for truancy and bottom 50% for GPA), or referred by school teacher/ counsellor. **Country:** USA **N (% male):** 1,218 (Not reported) E= 615	**Experimental condition:** **E:** Reconnecting Youth (RY) **Control:** **C:** Condition not reported.	**Allocation:** random at individual level **Time points:** pre-, post-intervention and 6-month follow-up. **Length and frequency:** one semester class (55 core and 24 booster lessons)	Shortened version of the High School Questionnaire (HSQ) (Eggert, Herting & Thompson, 1998; Eggert, Thompson, Herting & Nicholas, 1994a; Eggert et al., 1994b). − **Substance use** (alcohol; smoking cigarette and marijuana; hard drug) − **Problem behaviours** (anger; delinquency) − **Peer affiliation patterns and student connection to school** (peer high-risk behaviour; conventional peer bonding; school connectedness)	**Substance use:** *ns* difference **Problem behaviours:** *ns* difference **Peer affiliation:** E<C for conventional peer bonding (pre- to port-intervention) E>C for peer high-risk behaviour (pre- to 6-month follow-up) E<C for conventional peer bonding (pre- to 6-month follow-up)

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	C= 603 **Age range:** Not reported **Mean age (SD):** Not reported **Drop out/ incomplete data:** 176 students dropped out from pre-intervention to follow-up (14.45%)			**Achievement and attendance:** GPA and school attendance.	**School connectedness:** *ns* difference **Achievement:** *ns* difference **Attendance:** *ns* difference
3. Connolly et al. (2015)	**Characteristics:** Two high schools were randomly selected from a pool of 12 high schools determined to be similar to each other in size, students' needs and ethno-cultural diversity. Each of the two high schools were associated with two "feeder" middle schools. Participants included Grade	**Experimental condition:** **E:** Youth-led aggression prevention program (YLP). Students in Grade 11 and 12 designated as 'peer leaders' present two aggression prevention presentations (bullying; gender-based aggression). **Control:**	**Allocation:** random at school level **Time points:** Pre- and post-intervention. **Length and frequency:** C: 3x adult-led programs delivered in the classroom or in an	**Knowledge about bullying, sexual harassment and dating aggression** RISE Knowledge Questionnaire (Moran & Weiser, 2004) **Pro-bullying attitudes:** Provictim Scale (Rigby & Slee, 1991) **Pro-sexual harassment attitudes:** Adolescent Sexual Harassment Attitudes Scale (developed for current study; derived from the American Association of University	**Knowledge about bullying, sexual harassment and dating aggression:** *s* increase for E (p<.001) and C (p<.05) *ns* difference between E and C for bullying and sexual harassment knowledge.

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	7 and 8 middle school students. **Country:** Canada **N (% male):** 509 (48.6%) E= 209 C= 300 **Age range:** 11-14 years **Mean age (SD):** 12.37 years (.63) **Drop out/ incomplete data:** 12% attrition	**C:** usual practice (selected from several school board options)	assembly for 90 mins in total. E: 2x peer-led presentations for 90 mins in total.	Women Scale of Sexual Harassment, 2001). **Pro-dating violence attitudes:** Attitudes Towards Dating Violence Scale (Price & Byers, 1999) **Bullying victimization:** Canadian Public Health Association Safe School Survey for Grades 4-7 (Totten, Quigley & Morgan, 2004). **Sexual harassment victimization:** Sexual Harassment Questionnaire (McMaster et al., 2002) **Dating aggression victimization**: Conflict in Adolescent Dating Relationships Inventory (CADRI; Wolfe et al., 2001) **School connectedness:** PSSM (Goodenow, 1993) **Anxiety:** Shortened Screen for Child-Related Anxiety Disorders (Birmaher, Khetarpal, Brent, Cully, Balach, Kaufman & Neer, 1997).	E>C for dating aggression knowledge (p=.003) **Pro-bullying attitude:** *ns* change for E *s* decrease for C (p=.003) *ns* difference between E and C **Pro-sexual harassment attitude:** *ns* change for YLP or UP **Pro-sexual harassment attitude:** *ns* change for E or C *ns* difference between E and C **Pro-dating aggression attitude:** *s* decrease for E (p=.002) and C (p<.001) *ns* difference between E and C

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
					Bullying victimization and sexual harassment victimization: *ns* change for E or C *ns* difference between C and E **Dating aggression victimization:** *ns* change for E *s* increase for C (*p*=.05) *ns* difference between E and C **Anxiety:** *s* decrease for E (*p*=.003) *ns* change for C *s* difference between E and C (more dramatic decrease for E) (*p*=.049) **School connectedness:** *ns* change for E s decrease for C (*p*=.002) *s* difference between E and C (decrease for C

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
					and similar to baseline for E) (p=.022) (Cohen's d=0.19)
4. Converse & Lignugaris (2009)	**Characteristics:** Urban junior high school. School counsellors identified 45 at-risk students, aged 13 to 15 years old, based on high numbers of office disciplinary referrals (at least 3) and unexcused absences (at least 7), within the previous school quarter. 11 were excluded due to having an Individual Education Program. **Country:** USA **N (% male):** 32 mentees (81% in E and 87% in C) E = 16 C = 16	**Experimental condition:** School-based mentoring **Control:** wait-list control	Mixed-methods: mentees and completed the questionnaire. Mentors also completed interviews. **Allocation:** random at individual level **Time points:** Pre- (1 week prior to beginning) and post-intervention (during last week of intervention) **Length and frequency:** at least one mentoring session per week for 18 weeks, during non-academic time (before school,	**Office disciplinary referrals and absences** **School connectedness:** adapted from a survey developed by King et al (2002) (self; peers; teachers; other adults at school)	**Office disciplinary referrals:** E<C (p<.01) Pre and post-test survey **Absences:** *ns* differences **School connectedness** E>C overall (p<.001) (Cohen's d=2.43) Mentor interviews coded as "viewed positively" (10 dyads) or "questioned impact" (6 dyads). This was then used to analyse data.

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	13 mentors (faculty and staff members) (15%) **Age range:** 13-15 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** 0		after school, break or lunch)		
5. Coyne-Foresi (2015)	**Characteristics:** Seventh- and eighth-grade mentor group (volunteers). Second- and third-grade mentees (identified because they struggle in social situations or within their home and/or classroom environment). Mentees known to regularly isolate and intimidate their peers or who possessed high behavioural challenges were excluded from recruitment. **Country:** Canada	**Experimental condition:** **E:** Wiz Kidz mentoring program **Control** **C:** curriculum as usual	**Allocation:** not randomly allocated – selected based on criteria, then matched with comparison children **Time points:** Pre (Nov 2013) and post-test data (May 2014) **Length and frequency:** weekly during the lunch hour from October through June 2013-2014.	**Connectedness (mentors):** 7th and 8th grade students completed an 18-question adapted Hemingway Measure of Adolescent Connectedness (school; peers; teachers) (Karcher, 2011) **Connectedness (mentees):** 2nd and 3rd grade students completed a 12-question adapted Hemingway Measure of Pre-Adolescent Connectedness (school; peers; teachers) (Karcher, 2011). E mentors and mentees, their teachers and parents completed a five-question questionnaire to capture a descriptive account of	**Connectedness (mentors):** E>C for school (p=0.047) *ns* difference between E and C for peers and teachers **Connectedness (mentees):** *ns* difference between pre- and post-intervention for E or C *ns* difference between E and C 86% of mentors and mentees identified that they enjoyed playing

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	N (% male): E Mentors =12 (25%) E mentees = 12 (41.67%) Mentees' teachers = 8 Mentee and mentors parents = 24 C= 27 **Age range:** Mentors: 12-14 years Mentees: 7-9 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** 9% missing for E mentees and mentors 12% missing for C 1 mentor left program 66% parent data missing			their expectations, experiences and impressions of the program.	and engaging with their match, 47% noted an improvement in their social skills development and self-esteem and 30% identified no change. 69% identified feeling more connected to the school and to peers. 75% of parents communicated their belief that their children were more connected and involved in the school, community and with their peers. 83% of teachers cited an increase in their students' sense of community.
6. Diebel, Woodcock, Cooper, & Brignell (2016)	**Characteristics:** Four Key Stage 2 (KS2) classes from a one-form entry primary school in Southampton, UK.	Whole class diary intervention **Experimental condition:** **E:** gratitude diary	**Allocation:** random at individual level (within each year group)	**School belonging:** The Belonging Scale (Frederickson & Dunsmuir, 2009)	**School belonging:** E>C (p<.001) (η_p^2 = 0.23) **Gratitude to school:**

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Country: England **N (% male):** 116 (Not reported) (Based on 100 that were retained): E = 49 (63.27%) C = 51 (39.22%) **Age range:** Year groups 3 to 6 **Mean age (SD):** 9 years 4 months **Drop out/ incomplete data:** 13.79%	**Control:** **C:** event diary	**Time points:** pre- (two days before starting) and post-intervention (last day of intervention) **Length and frequency:** Diaries completed 10 mins every school day (Monday to Friday) for four weeks	**Gratitude to school:** adapted version of GQ-6 (McCullough et al., 2002). School added to questionnaire and Q6 simplified	E>C (p<.001) (gratitude generally declined during the study – E diary may have protected from sig decrease?) > in gratitude correlated with > in school belonging
7. Espelage, Rose, & Polanin (2016)	**Characteristics:** data taken from a larger RCT that included 36 schools across Illinois and Kansas, USA. This study focussed on students with disabilities across 12 schools in two Midwest school districts. **Country:**	**Experimental condition:** **E:** Second Step (Committee for Children, 2008) **Control:** **C:** Stories of Us – Bullying program (Faull, Jimerson, Swearer & Espelage, 2008)	**Allocation:** schools matched in pairs than randomly allocated **Time points:** Autumn 2010 (T1 - baseline), Spring 2011 (T2), Spring 2012 (T3) and Spring 2013 (T4)	**School belonging:** PPSM: Goodenow, 1993 **Empathy:** Empathic Concern (EC) scale (Davis, 1983) **Caring behaviours:** Caring of Others (COO) scale (Crick, 1996)	**School belonging:** *ns* **Empathy:** *ns* **Caring behaviours:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	USA **N (% male):** 123 students with disability diagnosis (57%) E: 47 (61.7%) C: 76 (53.9%) **Age range:** 11-12 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** none (all data used if student completed survey at T1)		**Length and frequency:** 15 lessons delivered in sixth grade, and 13 lessons in seventh and eighth grade (50-min/ lesson)	**Willingness to intervene in bullying episodes:** Willingness to intervene in Bullying Episodes (Espelage, Green & Polanin, 2012). **Grades and achievement:** Collected at Wave 1 and 4 – GPA for science, math and social studies. Reading and math scores obtained from Illinois Standards Achievement Test (ISAT)	**Willingness to intervene in bullying episodes:** *s* Wave 3 analysis **Grades and achievement:** *ns*
8. Garcia, Pintor, Vazquez, & Alvarez-Zumarraga (2013)	**Characteristics:** RCT in two neighbouring urban high schools, USA**.** Spanish speaking Latina adolescent females between 13-16 years. Study sought to also include recently immigrated adolescents. **Country:** USA	**Experimental condition:** **E:** Project Wings Girls' Group **Control:** **C:** attention control condition (encouraging healthy living through activities – intended to avoid mental health, stress and coping information	**Allocation:** random allocation at individual level (within each school). Block randomisation according to whether they had attended elementary school in the US **Time points:**	**Perceived stress:** The Perceived Stress Scale (PSS) (Cohen, Kamarck & Mermelstein, 1983) & The Depression, Anxiety and Stress Scale (DASS) stress subscale (Lovibond & Lovibond, 1995) **Depressive symptoms:** DASS depression subscale (Lovibond & Lovibond, 1995)	*Used p value of <.10 to indicate sig effect within write-up. However, I have only reported sig at <.05* **Perceived stress, depressive symptoms, productive coping, coping in reference to**

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	N (% male): 42 (0%; all female) **Age range:** 13-16 years **Mean age (SD):** 14.8 (0.72) **Drop out/ incomplete data:** 54.75% dropout/ incomplete data from pre- to follow-up		Pre- (T1), mid- (T2), post- (T3), 3-month post- (T4) and 9-month post-(T5) intervention **Length and frequency:** 16 3-hour weekly group sessions and a booster session at a 3-month post intervention.	**Productive coping:** Productive coping subscale of Adolescent Coping Orientation for Problem Experiences (ACOPE) inventory (Patterson & McCubbin, 1987). **Coping in reference to others:** Coping in reference to others subscale of ACOPE. **Non-productive coping:** Non-productive subscale of ACOPE. Questionable alpha. **Family-; mother-; father-; school; peer-connectedness:** (Harris, 2009)	**others & non-productive coping:** *ns* **Family-; mother-; father-; school; peer-connectedness:** E<C for family connectedness at post-intervention (p=.03)
9. Hamm, Farmer, Dadisman, Gravelle, & Murray (2011)	**Characteristics:** sixth grades (transition year) of 2 middle schools in the Midwestern and 4 middle schools in the Southwestern regions of USA (small, rural communities). Schools considered low-resource schools. **Country:**	**Experimental condition:** **E:** Project REAL (Rural Early Adolescent Learning) **Control:** **C:** condition not reported	**Allocation:** schools matched in pairs than randomly allocated **Time points:** six weeks into the school year and six weeks prior to the end of the school year (post-intervention)	*Teacher and student measures:* **Teacher attunement:** teachers' accuracy in identifying the membership of specific peer groups (comparing student social cognitive maps [SCM] and teacher SCM). *Teacher measure:* **Teacher classroom practices (observed by researcher):**	**Teacher attunement:** E>C (p=.002) **Classroom practice:** E>positive ratings than C (p=.03) **Emotional risk of participation:** *Not clearly reported*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	USA **N (% male):** Students: 242 (44%) Teachers: 26 (Not reported) **Age range:** sixth grade students **Mean age (SD):** Not reported **Drop out/ incomplete data:** Not reported		**Length and frequency:** teacher participation in CPD throughout school year	Developed for the project and pilot tested previously (Hamm et al., 2010): *Student measures:* **Emotional risk of participation:** (Hamm & Faircloth, 2005). **School belonging:** PSSM (Goodenow, 1993). **School bullying context:** The Protective Peer Ecology scale (Song, 2005) – three subscales (peer protector; peer protection and peer encouragement).	**School belonging:** E>C (p<.001) Teacher attunement was sig and positive predictor of belonging (p<.001) **School bullying context:** *ns difference between E and C for 3x subscales* **Peer protector:** teacher attunement was sig and positive predictor (p<.01) **Peer protection:** teacher attunement was sig and positive predictor (p<.001)
10. Holt, Bry, & Johnson (2008)	**Characteristics:** ninth grade students (transition year) in an urban mid-Atlantic public high school. Subsample of youths completing 'Peer Group Connection' intervention, with study focused on students deemed to be at risk of academic failure.	**Experimental condition:** **E:** Achievement Mentoring Program (AMP; Bry, 2000) **Control:** **C:** non-mentored; curriculum as usual	**Allocation:** random allocation at individual level (based on initial inclusion criteria) **Time points:** pre-intervention (final semester of freshman year), post-	**School belonging:** PSSM; Goodenow, 1993 **Teacher support:** created from 4 questions from PSSM **Academic self-efficacy:** 7/11 items from "self-efficacy for self-regulated learning" subscale from the Children's Multidimensional	*Distinguished between 'intent-to-treat' (ITT) and 'mentored as intended' (MAI) analyses* **School belonging:** MAI: E>C (p=.04) at post-test (Cohen's d=0.75)

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Country: USA **N (% male):** 44 (final sample of 40 - 58%) E: 22 C: 22 Mentors: 8 teachers and 2 school counsellors (30%) **Age range:** Ninth grade **Mean age (SD):** Not reported **Drop out/ incomplete data:** 9.09%		intervention (end of ninth grade) and 6-month follow-up. **Length and frequency:** weekly for 20-30 mins	Self-Efficacy Scales (Zimmerman et al., 1992). **Decision making:** three items from McNeal and Hansen's (1999) decision-making scale **GPA**: grades in Math, Science, Social Studies and Language Arts averaged. **Attendance records** **Discipline referrals** **Mentor perceptions of relationship quality:** portions of a survey developed by Harris and Nakkula (2003): closeness, distance, academic support-seeking, non-academic support seeking, satisfaction, risk compatibility and logistical problems. **Mentees perceptions of relationship quality:** (Harris & Nakkula, 2003): relational	**Teacher support:** ITT & MAI: E>C (p=.03; .003) at post-test **Academic self-efficacy:** *ns* **Decision making:** ITT & MAI: E>C (p=.004; .008) at post-test MAI>ITT (p=.045) at post-test **GPA:** *ns* **Attendance:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
				satisfaction, instrumental satisfaction, availability to support, dissatisfaction and dependability.	**Discipline referrals:** *ns* **Mentor perceptions of relationship quality:** 4/7 subscales and discipline referrals (*r*=-.47--.57; *p*<.05) **Mentee perceptions of relationship quality: (correlations)** 6/7 subscales and grades (*r*=-.60 to --.72, *p*<.05). Instrumental support and discipline referrals (*r*=-58, *p*<.05). Availability of support and intimacy, and school belonging (*r*=.54*; p*<.05; *r*=.49, *p*<.05)
11. Johnson, Holt, Bry, & Powell (2008)	**Characteristics:** Ninth grade students from a low-income urban high school in New Jersey, USA. **Country:**	**Experimental condition:** **E_1:** Peer Group Connection (Powell, 1993) **E_{1+2}**: Achievement Mentoring (Bry, 2005)	**Allocation:** by school timetable (all those with PE seventh period allocated to E_1; all those with PE first	**School bonding:** PSSM; Goodenow, 1993 **Ability for self-expression:** (Bandura, 1990)	*Intent to treat model. Categorized students as high-risk (GPA below 70 and/or absences in excess of 6) and low-risk*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	USA **N (% male):** 157 (46%) E_1: 97 (E_{1+2}: of these, 20 were assigned to receive mentoring, in addition to the program) C: 60 Mentors: 10 school staff (30%) **Age range:** 13-16 years **Mean age (SD):** 14 years **Drop out/ incomplete data:** 17.83% (from pre- to post-intervention)	**Control:** **C:** curriculum as usual (PE lesson)	period allocated to C). Students allocated to E_{1+2} based on school staff identifying them as a student at risk of dropping out of school and/or failing to be promoted to 10th grade **Time points:** pre- (beginning of school year) and post-intervention (end of school year). **Length and frequency:** E_1: school-year weekly lesson with 2 x peers leading (upperclassmen). Also participated in an activity day, family night and evening event. E_{1+2}: weekly for around 25-30mins.	**Ability to make friends**: (McNeal & Hansen, 1999) **Ability to resist peer pressure**: resistance to peer pressure to cut class; use substances; have sex (Bandura, 1990). **Tolerance of friends' substance use**: (Elliott, Huizinga and Menard, 1989) **Academic achievement:** school records, GPA for math, language arts, social studies and science. **Attendance** **School related misconduct**: (Bowen and Richman, 1997)	**School bonding:** *ns* **Ability for self-expression:** *ns* **Ability to make friends:** *ns* **Ability to resist peer pressure:** high-risk E > high-risk C (p=.05) **Tolerance of friends' substance use:** *ns* **Academic achievement:** *ns* **Attendance:** *ns* **School related misconduct:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
12. Lewis, Sullivan, & Bybee (2006)	**Characteristics:** 3 8th grade classes from a predominantly Black, inner-city, public middle school situated in neighbourhood with low SES. To be eligible, youth had to be in the 8th grade and indicate, through self-report, that they were of African descent. **Country:** USA **N (% male):** 65 (53%) E: 32 C: 33 **Age range:** eighth grade **Mean age (SD):** 13.3 years (.53) **Drop out/ incomplete data:** 12.31% from pre-to post-intervention	**Experimental condition:** **E:** Emancipatory Education course (Project EXCEL-Ensuring Excellence through Communalism, African Education & Leadership) **Control:** **C:** Life Skills course	**Allocation:** random at the class level **Time points:** pre-, mid- (2 months later) and post-intervention (4 months) **Length and frequency:** 3 days per week for one school semester	**Communal vs. competitive orientation:** adapted partly from Triandis, Bontempo, Villareal, Asai and Lucca's (1998) Self Reliance with Competition subscale and Jagers and Mock's (1995) Communalism scale. Communal World-View Scale (CWVS) created for study **School connectedness:** PSSM; Goodenow, 1993 **Motivation to achieve:** Scale developed for study **Social change involvement:** The Measure of Social Change for Adolescents (MOSC-A; Lewis, 2001)	**Communal vs. competitive orientation:** E>C (communal orientation) (p<.001) E>C (competitive orientation) (p<.001) **School connectedness:** E>C (p<.001) **Motivation to achieve:** E>C (p<.001) **Social change involvement:** E>C (p<.001) Intervention effect mediated by communalism and school connectedness. In addition, competitive individualism partially mediated the intervention effect.

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
13. Mann, Smith, & Kristjansson (2015)	**Characteristics:** adolescent girls referred by two public middle schools in California. Each school selected 32 girls with the highest school-related rates of problem behaviour, poor academic performance and truancy. 100% of participants had a confirmed history of 'developmental challenge'. **Country:** USA **N (% male):** 48 (0%; all female) **Age range:** 12 to 14 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** Not reported	**Experimental condition:** **E:** REAL Girls (Mann, 2013) **Control:** **C:** wait-list control (curriculum as usual)	Quasi-experimental crossover design. Mixed methods (qual – focus groups, 90 days after intervention). **Allocation:** allocated at school level (based on initial inclusion criteria) **Time points:** baseline, T1 (Group 1: E; Group 2: C) and T2 (Group 1 & 2 both completed E) **Length and frequency:** 3-day intervention conducted over two full school days with a 2-hour booster treatment 10 days later	**Self-efficacy***:* The Academic Self-Efficacy subscale of the Patterns of Adaptive Learning Scales (Midgley et al., 2000) **School connectedness:** School Connectedness Scale (McNeely, Nonnemaker & Blum, 2002) **Identity:** Identity subscale of the Adolescent Personality Style Inventory (Lounsbury, Huffstetler, Leong & Gibson, 2005) and four items from The Pathways Subscale of the Hope Scale (Snyder et al., 1991)	**Self-efficacy***:* Sig positive change overall when both groups had completed E (p<.01) **School connectedness:** Sig positive change overall when both groups had completed E (p<.01) (η_p^2 = 0.46) **Identity:** Sig positive change overall when both groups had completed E (p<.01) Focus groups confirmed the quant findings. Girls reported the intervention helped them feel more connected to school, confident academically, goal oriented and self-assured when facing

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
					challenges in general. 4 themes identified.
14. Mcloughlin (2009)	**Characteristics:** 17 schools within Twinsburg, Ohio, USA. Students selected by teachers if they matched one of four leadership patterns (positive or well-rounded/ prosocial leaders; controversial leaders; rejected isolates; or neglected isolates) **Country:** USA **N (% male):** 198 (Not reported) E: Not reported C: Not reported **Age range:** Not reported **Mean age (SD):** Not reported	**Experimental condition:** **E:** Positive Peer Group (PPG) initiative (PSI Affiliates, Inc) **Control:** **C:** condition not reported	**Allocation:** based on inclusion criteria. Students in same class as those selected as leaders became control group **Time points:** Pre- and post-intervention (in the year immediately following) **Length and frequency:** 25 consecutive weeks (duration Not reported)	**The Teacher Global Rating Scale**: created for study (classroom behaviour; responsibility; following directions; punctuality; social behaviour; and problem solving) **Self-discipline:** created for study **Work ethic**: created for study **Behavioural accountability**: created for study **Bonding to school:** created for study **Anger management**: created for study **Self-concept:** The Piers-Harris Children's Self-Concept Scale (Piers, 1986) **Self-esteem:** The Behavior and Academic Self-Esteem Scale	*No statistical p-values given, just reported using Yes/ No criterion. As such, I have not reported any findings.*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Drop out/ incomplete data: Not reported				
15. Mcloughlin (2010)	**Characteristics:** Alternative high school in Ohio, USA - all young people have either dropped out of attendance from regular public education schools or have been removed from mainstream settings. Students selected by teachers if they matched one of four leadership patterns (positive or well-rounded/ prosocial leaders; controversial leaders; rejected isolates; or neglected isolates). **Country:** USA	**Experimental condition:** **E:** Positive Peer Groups (PPG) initiative (PSI Affiliates, Inc) **Control:** **C:** condition not reported	**Allocation:** based on inclusion criteria. Remaining students became control group **Time points:** Pre- and post-intervention (before beginning of PPG sessions and immediately after) **Length and frequency:** 25 consecutive weeks (duration Not reported)	PSI Student Survey (PSISS) (using five scales from Mcloughlin, 2009): • **Self-discipline** • **Work ethic** • **Behavioural accountability** • **Bonding to school** • **Anger management** **Bonding to school:** PSSM (Goodenow, 1993)	*No p-values given (just reported if p<.05 or <.01).* Significant group x time interaction for all outcome measures. C scores fell, whilst E scores either remained the same or increased.

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	N (% male): E: 26 (69.23%) C: Not reported **Age range:** 14.1 to 17.8 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** Not reported				
16. Miller et al. (2017)	**Characteristics:** Two separate cohorts of fifth-grade students and their teachers, from 6 elementary schools in a large metropolitan area in the southwestern USA. **Country:** USA **N (% male):** 627 (47.5%) E: 368 (Cohort 1 = 139; Cohort 2 = 229) (48.6%)	**Experimental condition:** **E:** Relationship Building Intervention (RBI; Miller et al., 2015) **Control:** **C:** curriculum as usual	**Allocation:** E schools identified based on willingness to implement the RBI, then matched with C schools **Time points:** Pre- (Aug/ Sep) and post-intervention (Feb/ Mar). **Length and frequency:** one activity each week beginning in	*Teacher measure:* **Social behaviours:** Prosocial and Aggressive Behavior subscales of the Child Behavior Scale (CBS; Ladd, Herald-Brown & Andrews, 2009; Ladd & Profilet, 1996). *Student measures:* **School liking:** school liking subscale from School Liking and Avoidance Questionnaire (SLAQ; Ladd & Price, 1987) **Classroom identification/ inclusion:** adapted version of the Classroom Identification and	*Intent-to-treat model.* **Social behaviours:** E<C for aggression (p<.05) *ns* for prosocial behaviour **School liking:** E>C (p<.05) (Cohen's d=0.42) **Classroom identification/ inclusion:**

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	C: 259 (Cohort 1 = 60; Cohort 2 = 199) (45.9%) Teachers: 24 (Not reported) E: Not reported (20%) C: Not reported (14%) **Age range:** Fifth-grade **Mean age (SD):** 10.02 (0.40) **Drop out/ incomplete data:** 1.47% dropout from pre- to post-intervention However, 15 students gained at post-intervention.		late-Aug to mid-Mar (over approx. 26 weeks). Activities averaged 45 min/ week.	Participation subscale of PSSM (Goodenow, 1993). 6 items were original subscale items and 2 additional items were included. **Academic achievement:** mean overall grade of language, writing, math, science and social studies grades.	E>C (p<.05) (Cohen's d=0.61) **Academic achievement:** E>C (p<.05)
17. Portwood, Ayers, Kinnison, Waris, & Wise (2005)	**Characteristics:** Students in 5 school districts across Kansas and Missouri, USA, already implementing YouthFriends. Inclusion in study: to be in grade 4-12 and have a one-on-one (mentor-mentee) YouthFriends match.	**Experimental condition:** **E:** YouthFriends mentoring program **Control:** **C:** curriculum as usual	**Allocation:** E identified based on inclusion criteria, then matched with C **Time points:** Pre- (first semester of academic year) and post-intervention (last	Two versions of evaluation questionnaire "older" - youth in grades 7+ and "younger" - grades 4, 5 and 6. The two versions were identical with two exceptions – neither the drug and alcohol use questions nor six of the questions regarding attitudes toward the	**Drug and alcohol use:** *ns* **Attitudes regarding drugs and alcohol:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Country: USA **N (% male):** 208 (final sample of 170: 48%) E: 102 (Not reported) C: 106 (Not reported) Mentors: Not reported **Age range:** Grade 4-12 **Mean age (SD):** Not reported **Drop out/ incomplete data:** 18% attrition from pre- to post-intervention		month of the school year). Data on grades, suspensions and expulsions obtained for current and preceding school years. **Length and frequency:** One hour each week for the duration of the school year.	future were included in the younger version. **Drug and alcohol use:** monitoring the future survey (30-day use) (Johnson, 1996) **Attitudes regarding drugs and alcohol:** student survey of risk and protective factors/ favourable attitudes toward drug use (Arthur, Hawkins, Catalano & Pollard, 1996). **Intentions/ expectations to use drugs/ alcohol:** Tanglewood research evaluation/ commitment to not use drugs (Hansen, 1996) **Attitudes toward school:** Denver youth survey/ attitudes toward school (Institute of Behaviors Science, 1990) **School connectedness:** PSSM (Goodenow, 1993). **Academic performance:**	**Intentions/ expectations to use drugs/ alcohol:** *ns* **Attitudes toward school:** *ns* **School connectedness:** E>C (*p*=.03) **Academic performance:** *ns* **Community connectedness:** *ns* **Attitudes toward delinquency:** *ns* **Self-esteem:** *ns* **Self-concept:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
				Student survey of risk and protective factors/ academic failure (Arthur, Hawkins, Catalano & Pollard, 1998) **Community connectedness:** Social responsibility (Nedwick, 1987; Flewelling, Paschall & Ringwalt, 1993) **Attitudes toward delinquency:** Student survey of risk and protective factors/ belief in moral order (Arthur, Hawkins, Catalano & Pollard, 1998). **Self-esteem:** Rosenberg self-esteem scale (Rosenberg, 1965). **Self-concept:** Individual protective factors index (Phillips & Springer, 1992) **Goal setting:** Goal setting skills (Hansen, 1997) **Attitudes towards adults:** Presence of caring-individual	**Goal setting:** *ns* **Attitudes towards adults:** *ns* **Attitudes toward the future:** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
				protective factors index (Phillips & Springer, 1992) **Attitudes toward the future:** Monitoring the future survey – education expectations and aspirations (Johnsston, 1996)	
18. Pryce & Frederickson (2013)	**Characteristics:** Year 4, 5 and 6 pupils from 14 classes in 4 primary schools in a district in the West Midlands of England, and their teachers. **Country:** England **N (% male):** 338 (52.66%) **Age range:** 8-11 years **Mean age (SD):** Not reported **Drop out/ incomplete data:** Not reported	**Experimental condition:** **E:** Anti-Bullying Pledge Scheme **(**ABPS) **Control:** **C:** continued with existing anti-bullying work	Mixed methods design (qual – 4 focus groups at post-intervention. 6 children from each school) **Allocation:** schools expressed interest in intervention. Comparison schools selected by Educational Psychology Service as actively involved in anti-bullying work; and matched with E school characteristics. **Time points:**	*Student measures:* **Peer-assessed bullying and victimisation:** Guess Who (Nabuzoka and Smith, 1993) (identifying peers that fit bully or victim description) **Self-reported bullying and victimisation:** Peer Relations Questionnaire – short version (PRQ; Rigby and Slee, 1993) (tendency to bully, to be victimised and to be pro-social) **Classroom climate:** My Class Inventory (MCI-SF; Fraser, 1982) (cohesiveness, friction, difficulty, satisfaction and competition) **School belonging:** Belonging Scale (Frederickson et al. 2007).	**Peer-assessed bullying and victimisation:** *ns* **Self-reported bullying and victimisation:** *ns* **Classroom climate:** *ns* **School belonging:** *ns* **Adjustment difficulties:** *ns* **Theory of planned behavior and anti-bullying scales** *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
			Pre- (prior to launch of intervention) and post-intervention (2-3 months following the launch). **Length and frequency:** whole school anti-bullying focus	**Adjustment difficulties:** Total Difficulties score on the Strengths and Difficulties Questionnaire (SDQ; Goodman et al. 1998) (emotional symptoms, conduct problems, hyperactivity and attention, and peer relationships) *Teacher and student measures:* **Theory of planned behavior and anti-bullying scales** Pupil: pupils' intentions to participate in bullying behaviour, attitudes to participating in bullying behaviour, subjective norm about bullying based on perceptions of parent, teacher and peer expectations, and pupils' perceived control over bullying behaviour. Teacher: undertaking anti-bullying work and assessed intentions, attitudes, subjective norm and perceived control.	Five major themes identified for qual analysis: positive pupil perception, negative pupil perception, change in/ amount of bullying, reactive strategies and pro-active strategies.
19. Rose, Hawes, & Hunt (2014)	**Characteristics:** Two cohorts of pupils in Grades 6 and 7 at four	**Experimental Condition:** **E_1:**Resourceful Adolescent Program (RAP; Shochet,	**Allocation:** cluster-randomization used to assign school	**Depression (1):** Reynolds Adolescent Depression Scale –	*Compared RAP (E_1 & E_2) to no RAP (C) and PIR (E_2)to no PIR (E_1 & C)*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	independent single sex secondary schools in Sydney, Australia. **Country:** Australia **N (% male):** 210 (56%) 70 participating in 2008 140 in 2009 **Age range:** 9 – 14 years **Mean age (SD):** 12.22 years (0.77) **Drop out/ incomplete data:** 11% attrition from T1 to T4	Holland & Whitefield, 1997), followed by Peer Interpersonal Relatedness (PIR) program (RAP-PIR) **E_2:** RAP followed by a placebo (RAP-placebo) **Control:** **C:** curriculum as usual	classes (N=14) to conditions **Time points:** T1 (baseline), T2 (10 weeks after baseline; post-RAP), T3 (20 weeks after baseline; post-PIR or placebo), T4 (14 months after baseline) **Length and frequency:** RAP – 11 weekly 40-50 min sessions PIR – 9 weekly 40-50 min sessions Placebo – 9 weekly 40-50 min sessions	Second Edition (RADS-2) (Reynolds, 2002) **Depression (2):** Children's Depression Inventory (CDI) (Kovacs, 1992). A score of 19 = elevated score (Kovacs, 1992) **School connectedness:** PSSM (Goodenow, 1993). **Perception of relationship quality:** Clinical Assessment of Interpersonal Relations (CAIR) (Bracken, 2006) (mother, father, female peers, male peers and teachers) **Life satisfaction:** Multidimensional Students' Life Satisfaction Scale (MSLSS) (Huebner, 1994) **DSM Diagnosis:** MDD subsection of the Diagnostic Interview Schedule for Children, Adolescents and Parents (DISCAP; Holland & Dadds, 1997), at time 4, administered by	**Depression (1 & 2):** <u>*T1 to T3*</u> • *ns* (RAP:no RAP) • PIR< no PIR (*p*=.008; .026) <u>*T1 TO T4*</u> • *ns* (RAP:no RAP) • *ns* (PIR:no PIR) **School connectedness:** <u>*T1 to T3*</u> • RAP < no RAP (*p*=.027) • *ns* (PIR:no PIR) <u>*T1 TO T4*</u> • *ns* (RAP:no RAP) • *ns* (PIR:no PIR) **Perception of relationship quality:** <u>*T1 to T3*</u> • *ns* (RAP:no RAP) • *ns* (PIR:no PIR) <u>*T1 TO T4*</u>

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
				senior clinical psychologist (blind to experimental condition).	• *ns* (RAP:no RAP) • PIR> no PIR (*p*=.01) **Life satisfaction:** <u>*T1 to T3*</u> • *ns* (RAP:no RAP) • *ns* (PIR:no PIR) <u>*T1 TO T4*</u> • *ns* (RAP:no RAP) • PIR> no PIR (*p*=.047) **DSM Diagnosis:** *ns* difference across conditions
20. Ruttledge et al. (2016)	**Characteristics:** children from 27 primary schools across Ireland. **Country:** Ireland **N (% male):** 709 (48.80%) E: 333 (51.95%) C: 376 (46.01%) **Age range:** 9-13 years	**Experimental condition:** **E:** FRIENDS for Life **Control:** **C:** wait-list control; curriculum as usual	**Allocation:** block randomisation by school type. **Time points:** T1 (early Jan 2013), T2 (early April 2013) and T3 (late June 2013) **Length and frequency:** weekly for 10 weeks, as part of SPHE (Social, Personal and Health Education)	*Student and parent measure:* **Anxiety:** Spence Children's Anxiety Scale (SCAS; Spence, 1998) (social phobia, separation anxiety, panic attack/ agoraphobia, physical injury fears, obsessive compulsive disorder and generalised anxiety disorder). Child and parent versions used. *Student measures:* **Self-concept:** Beck Self-Concept Inventory for Youth (BSC-Y; Beck et al., 2005).	**Anxiety:** Child reported total score, separation anxiety, obsessive compulsive, panic/ agoraphobia, physical injury fears and generalised anxiety: *ns* Child reported social phobia: E<C (*p*=.003) Parent reported total score: *ns*

Author(s)	Participants	Intervention	Design	Outcome Measures	Significant results/ interactions
	Mean age (SD): 10.83 years (.70) **Drop out/ incomplete data:** 10% dropout from pre- to post-intervention		curriculum between Jan – Apr 2013	**Coping with problems:** Coping Efficacy Scale (CEF; Sandler et al., 2000) **School connectedness:** School Connectedness Scale (SCS; Resnick et al., 1997)	Parent reported separation anxiety: E<C (*p*=.001) **Self-concept:** E>C (*p*<.001) **Coping with problems:** E>C (*p*=.006) **School connectedness:** E>C (*p*=.007) (η_p^2 = 0.011)

Appendix D **Quality assessment questions and table of included studies**

Reporting

1. Is the hypothesis/aim/objective of the study clearly described?
2. Are the main outcomes to be measured clearly described in the Introduction or Methods section?
3. Are the characteristics of the patients included in the study clearly described?
4. Are the interventions of interest clearly described?
5. Are the distributions of principal confounders in each group of subjects to be compared clearly described?
6. Are the main findings of the study clearly described?
7. Does the study provide estimates of the random variability in the data for the main outcomes?
8. Have the characteristics of patients lost to follow-up been reported?
9. Have actual probability values been reported (e.g., 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?

External Validity

10. Were the subjects asked to participate in the study representative of the entire population from which they were recruited?
11. Were those subjects who were prepared to participate representative of the entire population from which they were recruited?
12. Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?

Internal Validity - Bias

13. If any of the results of the study were based on “data dredging”, was this made clear?
14. In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls?
15. Were the statistical tests used to assess the main outcomes appropriate?
16. Was compliance with the intervention/s reliable?
17. Were the main outcome measures used accurate (valid and reliable)?

Internal Validity - Confounding

18. Were the patients in different intervention groups (trials and cohort studies) or were the cases and control (case-control studies) recruited from the same population?
19. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and control (case-control studies) recruited over the same period of time?
20. Were study subjects randomised to intervention groups?
21. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?
22. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?
23. Were losses of patients to follow-up taken into account?
24. Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?

	Study Number																			
Question	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Reporting (Score 0 or 1)																				
1.	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
2.	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
3.	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
4.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
5.	0	1	0	0	0	1	1	1	1	1	0	0	1	0	0	1	0	0	0	0
6.	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1
7.	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1
8.	0	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	0
9.	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1
Reporting Total:	**6**	**9**	**8**	**8**	**7**	**8**	**7**	**8**	**9**	**9**	**7**	**8**	**5**	**1**	**3**	**7**	**6**	**7**	**8**	**7**
External Validity (Score 0 or 1)																				
10.	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	1	1
11.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12.	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	0	1	0	1
External Validity Total:	**2**	**1**	**2**	**1**	**1**	**2**	**1**	**0**	**2**	**1**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**1**	**2**
Internal Validity – Bias (Score 0 or 1)																				
13.	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
14.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16.	1	1	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	1	1
17.	0	1	1	0	0	0	1	1	1	1	1	0	1	0	0	1	1	1	1	1
Internal Validity (Bias) Total:	**4**	**5**	**3**	**3**	**4**	**3**	**4**	**4**	**5**	**4**	**5**	**3**	**4**	**3**	**3**	**5**	**3**	**4**	**5**	**5**
Internal Validity – Confounding (Score 0 or 1)																				
18.	0	1	0	1	1	1	0	1	0	1	0	0	0	1	1	0	1	0	0	0
19.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20.	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
21.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.	0	0	1	0	0	1	1	1	1	1	0	1	0	0	0	1	0	0	1	1
23.	0	1	1	1	1	1	0	1	1	1	1	1	0	0	0	1	1	0	1	1
Internal Validity (Confounding) Total:	**1**	**4**	**4**	**4**	**3**	**6**	**2**	**5**	**3**	**5**	**2**	**3**	**1**	**2**	**2**	**3**	**3**	**1**	**3**	**3**
Power (Score 0 or 1)																				
24.	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**
Total (out of 24):	**14**	**20**	**17**	**16**	**15**	**20**	**15**	**18**	**20**	**20**	**17**	**15**	**10**	**6**	**8**	**18**	**13**	**14**	**17**	**18**

Appendix E **Intervention Details**

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
Skills for Preventing Injury in Youth (SPIY) (1)	Whole class intervention	Grade 8 (aged 13-14 years)	To increase safer behaviours: • actively intervening in and reducing peers' involvement in risk (vehicle risk, interpersonal violence and alcohol use) • decrease individual risk-taking • increase perceptions of injury severity and preparedness to help friends through first aid training.	<u>Intervention training</u> Half-day workshop for teachers: Content on the problem of injury and risk-taking in adolescence. <u>Intervention delivery</u> Manualized programme: presentation of a risk-taking injury scenario, designed to provide the opportunity for practical application of skills. Multiple activities are designed with the scenarios, including discussions and role plays.	Health or Pastoral Care teachers	14 (Fair)
Connectedness component - complementary addition to SPIY (1)	As above	Grade 8 (aged 13-14 years)	To promote a caring and connected school context, to support SPIY curriculum. To provide teachers with strategies to increase students' connectedness to school and specifically to enhance student–teacher relationships, and increase students' sense of	<u>Intervention training</u> Half-day workshop for teachers: definitions and theories of school connectedness and the way in which connectedness is related to students' behaviour. Strategies for promoting connectedness and identifying teachers' own relevant strategies and methods for putting these into practice.	As above	As above

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
			belonging, inclusion and support within the school context.			
Reconnecting Youth (RY) (Eggert, Nicholas & Owen, 1995) (2)	At-risk high-school youth (youth who are already experimenting with drugs or who exhibit other risk-related behaviour) Group intervention	High school	To "re-connect" truant, underachieving high school youth by helping them to develop a greater sense of personal control, adaptive coping behaviors and improved interpersonal communication and relationship skills. To decrease school deviance, decrease drug involvement and improve mood management.	<u>Intervention training:</u> 4-day training session for teachers <u>Intervention delivery:</u> Manualized programme: first 10 days introduce students to RY model (daily monitoring attendance, drug use and moods), and the teacher begins to establish a positive group environment. 4 units follow this overview on self-esteem, decision making, personal control and interpersonal communication.	Teacher	20 (Good)
Youth-led aggression prevention program (YLP; Respect in Schools Everywhere [RISE]) (3)	Whole class intervention	Middle school	To improve knowledge about bullying, harassment and dating aggression, and reduce victimization.	<u>Intervention training:</u> Manualized programme: 16 afterschool sessions for peer leaders, led by mental health workers on aggression prevention and leadership skills. <u>Intervention delivery:</u> Two aggression prevention presentations (bullying; gender-based aggression) developed and presented to middle school students by 2 peer leaders (using prescribed content).	Grade 11 and 12 students ('peer leaders') from local high school	17 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
School-based mentoring (4)	Variable populations 1:1 intervention This study: at-risk students (high numbers of office disciplinary referrals and unexcused absences	Variable This study: 13-15 years	Variable This study: to decrease disciplinary referrals, decrease unexcused absences and increase school connectedness.	<u>Intervention training:</u> 2 x half-day training sessions for mentors – reviewed highlights from literature on school-based mentoring, taught communication techniques, taught trust building activities and shown program procedures. <u>Intervention delivery:</u> four components: time commitment (meet once a week), prosocial behaviour (model only appropriate prosocial behaviour during interactions), effective communication (verbal and non-verbal skills such as active listening and open body language) and trust building (involving the mentee in determining session activities, communicating respect for mentee opinions, using humour and using icebreaker activities).	Faculty and staff members	16 (Good)
Wiz Kidz mentoring program (5)	Students experiencing significant instability at home	Not clear This study: mentees (2nd and 3rd grade),	To foster student engagement as a means to increase connectedness for both the mentors and mentees, while at the same time broadening social skills development, teaching	<u>Intervention training:</u> Mentors provided with 2 hours of training (from school counsellor), exploring the mentoring process, mentee engagement, challenges in the mentoring relationship and	Peer mentors	15 (Fair)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
	1-1 intervention	mentors (7th and 8th grade)	problem-solving skills and building empathic relationships.	eventual termination. The school counsellor created a mentor manual. Three additional training sessions took place ever 8 weeks and were focused on topics of need. Mentors also participated in 15-min weekly supervision sessions. Mentors and mentees matched through participation in a range of activities. <u>Intervention delivery:</u> Began with mentoring partners eating lunch together or in small groups, followed by a guided activity that focused on relationship building and collaboration for the mentoring partners, and ended with a whole-group activity that required group strategy and cooperation.		
Gratitude diary (6)	Whole class intervention	Variable This study: year groups 3 to 6	To increase school belonging.	<u>Intervention training:</u> semi-structured script about the concept of gratitude, with each student given a diary with the instruction "write down 2 or 3 things that you are thankful for or grateful for today at school" <u>Intervention delivery:</u>	Set up by trainee educational psychologist, then prompted daily by classteacher	20 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				Students write in their diary daily at school for 10 mins		
Second Step (Committee for Children, 2008) (7)	Whole class intervention This study: children with disabilities	6th to 8th Grade	To develop social and emotional knowledge and skills.	<u>Intervention training:</u> 4-hour training for teachers: research on bully prevention and social-emotional learning; provided with intervention kits; specific implementation strategies to maximise fidelity. <u>Intervention delivery:</u> Manualized programme: covering social-emotional targets (e.g., empathy, communication skills, problem solving, bully prevention, friendship skills, harassment, emotion regulation, alcohol and drug prevention)	Teachers	15 (Fair)
Project Wings Girls' Group (8)	Latina adolescents Group intervention	13-16 years	To reduce depressive symptoms and perceived stress, by increasing healthy coping through enhancing individual and social-level protective resources.	<u>Intervention training:</u> 30 hours (approx.) didactic training to all facilitators <u>Intervention delivery:</u> Sharing circles, relaxation exercises and skills building: increasing understanding of, among other things, how stress functions; common sources of stress and strategies that	Lead facilitator: study-hired bilingual staff with prior experience or education in mental health, girls; group facilitation and Latino adolescent development.	18 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				can help to manage stress in a positive wat; and modelling/ identifying healthy school- and family-based social supports.	Cofacilitator: bilingual, Latina school staff	
Project REAL (Rural Early Adolescent Learning) (9)	Whole-class intervention		To help teachers in low-resource, rural schools support the positive social, academic and behavioural adjustment of their early adolescents.	<u>Intervention training:</u> Professional development program for teachers: site visit (90 min discussion of teaching challenges, perceptions of their students and school culture), 1.5 day summer institute (major content themes introduced), 8 45-min online modules and 7 hour long video-conference consultation.	Project-REAL trainers	20 (Good)
Achievement Mentoring Program (AMP) (10)	High school 1:1 intervention This study: at risk students	Variable This study: 9th grade	To enhance school-related cognitions and behaviours.	<u>Intervention training:</u> 3-hour training for mentors. Met as a small group once a week for supervision. <u>Intervention delivery:</u> a. Talk with one of the student's teachers to learn one positive thing the student did that week and to learn about any upcoming assignments b. Meet with mentee for 15-20 mins to acknowledge positive	Teachers/ school counsellors	20 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				accomplishment and problem-solve around how to maintain this positive behaviour and complete future assignments c. Practice an important and relevant behaviour with the mentee d. Discuss mentee's attendance record, tardy arrivals to school, discipline referrals and report cards Mentors learned about their mentee's longer-term plans and goals. They were also encouraged to contact the mentee's parents once a month to communicate one positive behaviour demonstrated.		
Peer Group Connection (Powell, 1993) (11)	Whole-class intervention Students transitioning into high school.	9th Grade	To construct and nurture a prosocial school environment in order to reduce the risk for and enhancing protective factors against the development of problem behaviours.	<u>Intervention training:</u> Peer leaders attended a class with the teacher-advisor 4 lessons a week. 3 where the curriculum was taught by the teacher-advisor and 1 for evaluating the teaching session for the 9th graders. The peer leaders were also trained in an extended weekend retreat by the teacher-advisors before the program.	Teacher-advisors to peer leaders Peer leaders to 9th graders	17 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				The teacher-advisors had received training from the program developers in a 3-day residential retreat. Additional training was received on 2 days over the year. <u>Intervention delivery:</u> 16 program modules delivered by peer leaders (team building, stress and anger management, risk assessment, conflicts in relationships, normative beliefs about drug and alcohol use, refusal skills, decision making and communication skills). Students also participated in an activity day, a family night and an evening cabaret event.		
Emancipatory Education course (Project EXCEL-Ensuring Excellence through Communalism, African Education & Leadership) (12)	Students needed to be of African descent Group intervention	This study: 8th grade	To increase African American youths' sense of communalism, connectedness, motivation to achieve, increase involvement in positive social change efforts and improve academic achievement.	<u>Intervention training:</u> Not reported <u>Intervention delivery:</u> Educational component: African and African American cultural exchanges, a focus on cohesion-building and collectivism, and learning opportunities that dealt with leaderships and social change for Black adolescent students.	Co-taught by 8th grade teacher and research author	15 (Fair)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				Empowerment component: furnishing youth with practical avenues through which they could change their own lives and that of their communities. Intervention topics included African/African American History and Culture; Building Cohesion and Communalism; African Rituals and Practices; Enhancing Interpersonal Skills & Inner Strength; Putting Theory Into Practice; Student Leadership and Activism; School and Community Partnerships; and Positive Behavior		
REAL Girls (13)	Middle school girls Group intervention This study: girls with highest school-related rates of problem behaviour, poor academic performance and truancy (with a	Unsure This study: 12-14 years	To develop resilience and achieve successful outcomes in school and life.	<u>Intervention training:</u> Not reported <u>Intervention delivery:</u> 12 Program Strategies for Promoting Resilience in Middle School Girls (Mann, 2012): choosing a private or special location; intentionally choosing intensity and energy; developing supportive and cohesive teams; providing attentive adult women as role models; using fun to create a climate of trust and rapport; establishing and re-establishing	Adult women as role models This study: University health promotion students	10 (Poor)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
	history of developmental challenge)			relevance; practicing actively evaluating situations and making decisions; using preassessment to tailor a portion of the program; provide time to reflect individually and collaboratively; using culminating activities and ceremonies to debrief and consolidate learning; providing take-home gifts that communicate care and reinforce community; and, reconnecting through follow-up events and booster treatments.		
Positive Peer Group (PPG) initiative (PSI Affiliates, Inc) (14)	Group intervention Children selected based on four leadership patterns: positive or 'well-rounded'/ prosocial leaders, controversial leaders, rejected isolates and neglected isolates	This study: 7th grade students	To build and develop prosocial skills. To build personal responsibility. To bond with the school community. To manage conflict responsibly. To foster identification with a positive peer group.	<u>Intervention training:</u> Not reported <u>Intervention delivery:</u> Opportunity for students to work together in small groups on projects that contribute to improving their school or solving a problem that they themselves recognise within the school. Students complete a school needs-analysis, plan a project and evaluate the impact of the project.	PSI Affiliates, Inc. (human services consortium of psychologists, educators and prevention specialists)	6 (Poor)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
Positive Peer Group (PPG) initiative (PSI Affiliates, Inc) (15)	As above This study: Alternative education school	This study: 14 – 18 years	As above	As above	As above	8 (Poor)
Relationship Building Intervention (RBI; Miller et al., 2015) (16)	Whole class intervention	Elementary school children	To foster peer interaction and connections that are positively toned, meaningful and respectful.	<u>Intervention training:</u> Half-day training – rationale for the intervention, overview of intervention goals, core concepts, units and methods, instruction on utilizing inclusive language and organisational practices, and a discussion of the implementation schedule and activity format. <u>Intervention delivery:</u> Manualized approach. Structured activities designed to promote classroom environments that are collaborative, inclusive and conducive to the development and maintenance of positive peer relationships and academic success. The activities consist of a series of developmentally appropriate, teacher-facilitated experiential exercises that promote relationship-building skills such as empathy, communication, problem	Teachers	18 (Good)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				solving, diversity appreciation, and friendship formation and support. Opportunities to learn key social and emotional skills, as identified by The Collaborative for Academic, Social and Emotional Learning (CASEL): self-awareness, self-management, social awareness, relationship skills and responsible decision-making (CASEL, 2012). 21 activities across 5 units: Diversity and Inclusion, Empathy and Critical Thinking, Communication, Problem Solving and Peer Relationships.		
YouthFriends mentoring program (17)	Variable populations 1:1 or 1:2 or group intervention This study: 1:1 intervention	Variable – all ages from K-12	Variable This study: to improve values, attitudes and behaviours in regard to substance abuse. To improve attitudes and behaviours in regard to school. To improve school connectedness. To effect positive changes in attitudes toward self, adults and the future.	Unclear	Caring adult – unclear who	13 (Fair)
Anti-Bullying Pledge Scheme **(**ABPS) (18)	Whole school intervention	Whole school	To reduce the incidence of bullying in schools, and to enable	<u>Intervention training:</u>	Consultant (EP) and school	14 (Fair)

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
		This study: primary school	children to feel safer in school and more confident about the help that they receive from teachers and the school community.	<u>Intervention delivery:</u> Manualized approach, with schools allocated a consultant to advise on implementation of the training (EPs, with experience in anti-bullying). Staged approach: (a) Initial meeting between senior management team and consultation when the pledge process in describes and a decision is made about engagement with the scheme (b) Planning meeting between school and consultant (c) Representatives from school make declaration of their commitment to the pledge and anti-bullying (d) Questionnaires sent to pupils, parents, staff and governors to gain views about current anti-bullying work (e) Information collated and used to draw up anti-bulling action plan (f) Visit by consultant to review progress (g) Annual visit by consultant to update action plan		

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
Resourceful Adolescent Program (RAP; Shochet, Holland & Whitefield, 1997) (19)	Group intervention	Adolescence	To prevent adolescent depression.	<u>Intervention training:</u> Training from an accredited trainer (1 day). <u>Intervention delivery:</u> Manualized program. Teaching adolescents how to recognise and affirm their strengths, stress-management skills, cognitive restructuring of negative thinking styles, conflict resolution with parents and problem-solving skills.	Graduate students enrolled in doctoral-level clinical training	17 (Good)
Peer Interpersonal Relatedness (PIR) program (RAP-PIR) (19)	Group intervention	Adolescence	To increase the effectiveness of the RAP program in preventing the development of depressive symptoms.	<u>Intervention training:</u> Training from the authors (1 day). <u>Intervention delivery:</u> Core components: friendship formation and peer interaction skills, adaptive strategies to manage peer conflict, and the use of training strategies specifically developed to help the development of friendships. Teaches adolescents basic social skills and complex performance skills, including social perception, conversation, friendship building and maintenance, self-care, assertiveness, interpersonal problem-solving,	Graduate students enrolled in doctoral-level clinical training	As above

Intervention (study number)	Focus group	Year level/ age	Overall aim of intervention	Content	Who runs it?	Quality score (rating)
				conflict resolution with peers and techniques to manage bullying.		
FRIENDS for Life (20)	Group/ whole class	Unclear – primary?	To improve emotional health, by helping children to cope with feelings of anxiety, fear and worry by developing self-esteem, teaching coping skills and promoting resilience.	<u>Intervention training:</u> Trained by licenced trainers. Two-day training – familiarise teachers with the programme, underlying theory behind cognitive behavioural approaches, self-concept, attachment theory anxiety, depression and ethical issues when running the programme. <u>Intervention delivery:</u> Manualized approach 10 structured sessions to help teach children how to identify feelings associated with various kinds of emotional distress; how to relax; how to identify unhelpful thoughts and to change these to more helpful thoughts; how to overcome everyday problems and build on success. These sessions involve a mixture of group work, role plays, workbook exercises, games and interactive activities.	Teachers	18 (Good)

Appendix F **Parent information and consent**

UNIVERSITY OF Southampton

CONSENT FORM (*Version 1, 10/03/2017)*

Study title: Effectiveness of a diary intervention on children's sense of school belonging

Researcher name: Ashleigh Shuttleworth

Dear Parent/Guardian,

My name is Ashleigh Shuttleworth and I am Trainee Educational Psychologist at the University of Southampton. I would like to invite your child to take part in a research study.

I am conducting a research project in schools in the Southampton area as part of my thesis. The purpose of this project is to investigate whether writing a daily diary about school can have a positive impact on children's sense of belonging to schools and the amount of positive emotions that are experienced about school. The project will involve KS2 students (Years 3, 4, 5 and 6) and will last for three weeks.
I have attached an information sheet about the study that I thought you might find useful. Please do contact me if there is anything that is not clear or if there is anything you would like to know more about.

If you do not wish your child to take part in the project please sign and return the slip below.

……

Research Project

Parental Opt Out Form

I do NOT wish for my child to take part in this project.

Child's Name ……

Parents signature …… Date ……

Information Sheet

What is the purpose of this study?
The purpose of this project is to investigate whether a three-week diary intervention about children's experiences in school can have a positive impact on children's sense of belonging towards school and the amount of positive emotions that are experienced about school.

Why has my child been invited?
The diary study will be a whole class project and every child from years three to six (Key Stage Two year groups [KS2]) have been invited to take part.

Does my child have to take part?
No, it is up to you and your child to decide. If you **don't** want your child to join in with the study please sign and return the form. Participation in this study is completely voluntary and if your child decides at any point that they don't want to take part anymore, they are free to stop without having to give a reason for their choice.

What will happen to my child if they take part?
The project is a whole class intervention with KS2 children and will involve them filling out a daily diary for three weeks. Children will be completing their diaries in the classroom as a class activity. This diary should take them 5-10 minutes to complete. Children will be given either an:

- Event diary which will ask them to write about things that happened in school that day
- Appreciation diary which will ask them to write about things they appreciate, or are thankful for, at school that day
- Gratitude diary which will ask them to identify somebody they are thankful for at school that day

The diaries will be collected in at the end of the study to be analysed further.

Before and after the intervention, and at a three week follow up, each child will be asked to fill out a number of short self-rated questionnaires as a class. These questionnaires ask about nostalgia, sense of belonging to the school, gratitude, appreciation and positive emotions that are experienced at school.

What will happen if my child does not want to carry on with the study?
Children volunteer to take part. If at any point they decide they don't wish to take part any more, they are free to do so.

What are the benefits of taking part?
This aim of this project is to investigate how to increase children's well-being and sense of belonging in schools; an area of great interest to Educational Psychologists and schools. The findings of this project will be fed back to your school.

What are the possible disadvantages and risks of taking part?
The aim is for the diaries to be an enjoyable activity for the children to complete. The whole class will complete the diaries for 5-10 minutes each day during the three-week intervention.

If at any point during the intervention your child chooses not to fill out their diary entry, they are free to do so.

To safeguard all children who participate, a named member of school staff will be available to any child who wants to talk about anything they have written about. Schools will also be given my contact details if extra support is required.

What will happen to the findings of the research study?
As explained above, the findings should prove useful to the school. It is also possible that the findings will be presented in academic forums or submitted for publication in academic journals.

It is important to note that all data from the study will be anonymised and no child's data or diary will be identifiable, nor will any information be given about the schools which have taken part in the study.

What if there is a problem?
If you have any complaints, concerns or questions about this research please feel free to contact me. My contact details are:
Name: Ashleigh Shuttleworth
University address: Building 44a, University of Southampton, SO16 7PB
Telephone number: (02380) 595321
Email address: as1g15@soton.ac.uk
In the unlikely case that something goes wrong in this study we advise you to contact the chair of the Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: 02380 593856, email fshs-rso@soton.ac.uk .

Will the results of this study be kept confidential?
All information collected will be held in accordance with the Data Protection Act 1988. All data will be anonymised and will be stored securely on a password protected computer for ten years before it is destroyed.

Who has reviewed this study?
This study has been reviewed and approved by the University of Southampton, School of Psychology Ethics Committee. All necessary safeguarding checks and references have been successfully completed.

Appendix G **Child assent**

UNIVERSITY OF Southampton

ASSENT FORM (*Version 1, 05/05/2017*)

Study title: Effectiveness of a diary intervention on children's sense of school belonging

Researcher name: Ashleigh Shuttleworth

If you do NOT want the researcher to use your information for her project, please write your name and put a tick in the box at the bottom.

If you are happy to take part today but decide that you do not want the researcher to have your information later on, then please let your teacher know.

……

Research Project

Child Opt Out Form

☐ I do NOT want to take part in this project.

Name ……

Appendix H **Southampton Nostalgia Scale for Children**

Nostalgia is a feeling that children can have when they think about things that happened when they were younger.

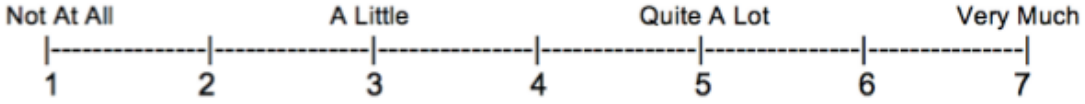
Please read these stories about Leah and Daniel, who feel nostalgia for something that happened when they were younger.

Leah enjoys thinking about something that happened at school when she was younger. She looks at a photo that reminds her of this event. This memory is very important to Leah and she likes thinking about it and remembering what happened that day. Leah misses the event and wishes she could go back to that day. Leah feels happy but also a tiny bit sad as she thinks about it.

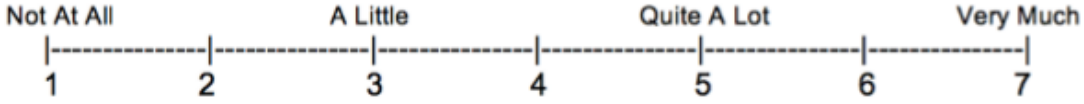
Daniel hears a song on the radio that makes him remember a time from when he was younger. As Daniel thinks about this song, it reminds him of special moments with his friends and the fun times they had together. He enjoys thinking about how good things were in the past and he wishes that he could travel back in time to experience those times again. Daniel feels good about this memory.

Now, we would like to know if you feel nostalgia

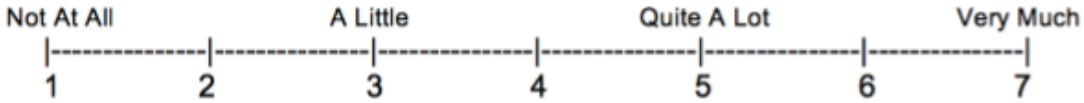
1. How much do you like to feel nostalgia?



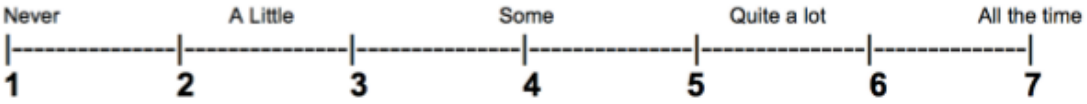
2. How important is it for you to feel nostalgia



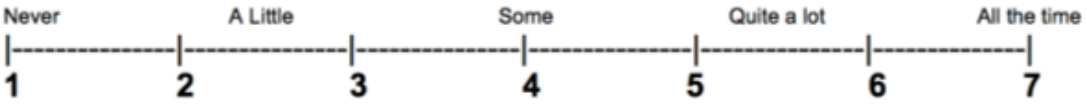
3. How much do you enjoy to feel nostalgia?



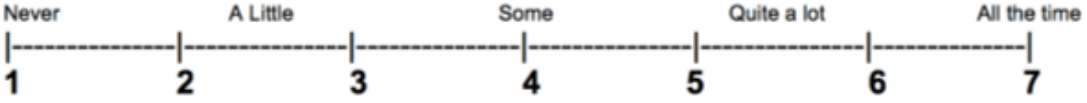
4. How typical is it for you to have nostalgia when you think about the past?



5. How often do you feel nostalgia when you think about things that happened when you were younger?



6. Generally speaking, how often do feel nostalgia?



7. Can you tick how often you feel nostalgia,

___At least once a day

___Three to four times a week

___ Approximately twice a week

___Approximately once a week

___Once or twice a month

___Once every couple of months

___Once or twice a year

Appendix I **The Belonging Scale (adapted)**

		No not true	Not sure	Yes true
Practice	*I feel happy drawing pictures*	*No*	*?*	*Yes*

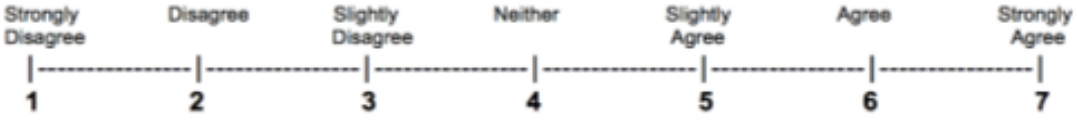
1.	I feel really happy at my school.	No	?	Yes
2.	People here notice when I'm good at something.	No	?	Yes
3.	It is hard for people like me to feel happy here.	No	?	Yes
4.	Most teachers at my school like me.	No	?	Yes
5.	Sometimes I feel as if I shouldn't be at this school.	No	?	Yes
6.	There is an adult in school I can talk to about my problems.	No	?	Yes
7.	People at this school are friendly to me.	No	?	Yes
8.	Teachers here don't like people like me.	No	?	Yes
9.	I feel very different from most other kids here.	No	?	Yes
10.	I wish I were in a different school.	No	?	Yes
11.	I feel happy being at my school.	No	?	Yes
12.	Other kids here like me the way I am.	No	?	Yes

Appendix J **GQ-6 (adapted)**

1. I have so much in school to be thankful for.

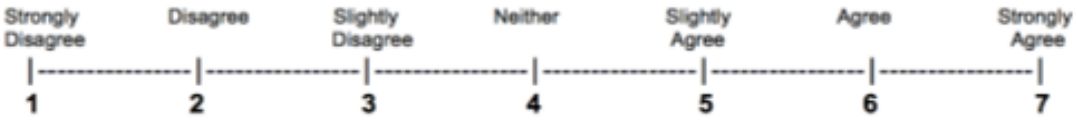
2. If I had to make a list of everything I felt grateful for in school, it would be a very long list.

3. When I think about school, I can't think of many things to be grateful for.



4. I am grateful to lots of different people at school.

5. As I get older, I find myself feeling more thankful for my memories at school.



6. I do not often find myself feeling grateful.

Appendix K **Gratitude Resentment and Appreciation Test (S-GRAT) (adapted)**

1. People have helped me get where I am today.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

2. Life has been good to me.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

3. I never seem to get my share of anything.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

4. I am often amazed at the beauty of nature.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

5. I try to remember how people have helped me to do the things I am proud of.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

6. I feel I have missed out on good things that I deserve.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

7. Every autumn I really enjoy watching the leaves change colours.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

8. I try to think about all those who have supported and helped me in life.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

9. I think that it's important to notice and enjoy lovely things around me.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

10. More bad things have happened to me in my life than I deserve.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

11. Because of things that have happened to me, I feel like the world owes me something.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

12. I think that it's important to be thankful for the things that are good in my life.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

13. I think it's important to enjoy the little things in life.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

14. I feel very thankful for the things others have done for me in my life.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

15. Other people seem to have an easier life than I do.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

16. I think it is important to feel thankful for each day.

Strongly disagree		Disagree		Neither agree or disagree		Agree		Strongly agree
1	2	3	4	5	6	7	8	9

Appendix L **Positive Affect subscale from PANAS**

How often have you felt each feeling during the past few weeks at school?

1. **Interested**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

2. **Excited**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

3. **Happy**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

4. **Strong**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

5. **Energetic**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

6. **Calm**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

7. **Cheerful**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

8. **Active**

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

1	2	3	4	5

9. Proud

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

10. Joyful

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

11. Delighted

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

12. Lively

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

Appendix M **Ethics approval**

Your Ethics Submission (Ethics ID:25593) has been reviewed and approved

ERGO [ergo@soton.ac.uk]

To: Shuttleworth A.

Submission Number: 25593
Submission Name: Comparing the effectiveness of different diary interventions (gratitude, appreciation and event) on children's sense of school belonging
This is email is to let you know your submission was approved by the Ethics Committee.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment)

Comments
None
Click here to view your submission
Coordinator: Ashleigh Shuttleworth

ERGO : Ethics and Research Governance Online
http://www.ergo.soton.ac.uk

DO NOT REPLY TO THIS EMAIL

Appendix N **Semi-structured script for whole class**

Hello

My name is Ashleigh and I am a Trainee Educational Psychologist at Southampton University. As part of my learning, I have to develop and carry out a research project.

As part of my research project, I am asking pupils in Years 3, 4, 5 and 6 to take part in filling out a diary for three weeks. I have spoken to your head teacher and he/ she has agreed that I am able to ask pupils in this school whether they would like to take part. I am therefore talking to you today to see if you would like to do this. The diary is going to take place as a class activity straight after… It will take around 5 to 10 minutes to complete and will take place daily for three weeks. As there are some instructions on how to fill out the diary, I am going to take you out in small groups in a while and chat more about this.

First of all though, I need to ask a few questions from you. I will also be back again once the diary has finished to ask some more questions. By filling in these questions I will think you are happy to take part in my project. I have been given permission from your parents for you to take part, if you would like to.

I will now hand out the questionnaires. Please don't write on them yet because I am going to read the questions out loud and we can then fill them in altogether.

Please write your name on the top of the page. When I leave school today I will not have your names on the papers but will change you to a number so nobody will know who wrote what.

Hand questionnaires out one at a time and read questions aloud.

- Nostalgia
- Belonging
- GQ-6
- GRAT
- PANAS

Thank you for filling out the questionnaires.

I will now take you out in small groups so I can explain more about the diary.

Appendix O **Semi-structured script for small groups**

Event diary

Ensure correct number of relevant diaries (event) are available for the group of children.

Encourage group to introduce themselves.

As I mentioned in class, as part of my university project I am getting pupils in Year 3, 4, 5 and 6 to take part in filling out a diary for three weeks. Each of you has your own diary to write in and this will take place during the school day. The diary will stay in school so you will not have to write in the diary over the weekend. It will just be for school days.

In your diary I would like you to write about something that happened in school that day. For example, I could write: I met lots of children from X school today. I'll hand out your diaries now. Please can you write your name on the front of these. You can also draw a picture on the front if you would like to. We can then look at the instructions together.

Hand out diaries, pens and crayons.

Open example diary and read through the instruction prompts:

I would like you to:

- Please write about something that happened in school today.
- Start a new page for each new day you write in your diary.
- Remember that this is your diary and private to you. However, I will be looking at these at the end of the project and taking them away with me.
- If you want to talk to somebody about what you have written, please speak to your teacher.

Nobody will be looking at how you have spelt the words in your diaries so please do not worry about your spelling.

After three weeks I will be coming back in to school to take the diaries back to the university. I will remove your names from the diary so that nobody will be able to identify who wrote what.

Does that seem OK? Would you like to ask any questions?

Gratitude diary

Ensure correct number of relevant diaries (gratitude) are available for the group of children.

Encourage group to introduce themselves.

As I mentioned in class, as part of my university project I am getting pupils in Year 3, 4, 5 and 6 to take part in filling out a diary for three weeks. Each of you has your own diary to write in and this will take place during the school day. The diary will stay in school so you will not have to write in the diary over the weekend. It will just be for school days.

In your diary I would like you to write about somebody you are grateful for at school that day. Does anybody remember what grateful means?
Yes. For this diary, it means writing about somebody that you are thankful to at school that day because they have done something for you. For example, I could write: I am grateful for Mr/Mrs X for letting me come in to X school and speak to you all.

I'll hand out your diaries now. Please can you write your name on the front of these. You can also draw a picture on the front if you would like to. We can then look at the instructions together.

Hand out diaries, pens and crayons.

Open example diary and read through the instruction prompts:

I would like you to:

- Please write about somebody that you are thankful to in school that day.
- Start a new page for each new day you write in your diary.
- Remember that this is your diary and private to you. However, I will be looking at these at the end of the project and taking them away with me.
- If you want to talk to somebody about what you have written, please speak to your teacher.

Nobody will be looking at how you have spelt the words in your diaries so please do not worry about your spelling.

After three weeks I will be coming back in to school to take the diaries back to the university. I will remove your names from the diary so that nobody will be able to identify who wrote what.

Does that seem OK? Would you like to ask any questions?

Appreciation diary

Ensure correct number of relevant diaries (appreciation) are available for the group of children.

Encourage group to introduce themselves.

As I mentioned in class, as part of my university project I am getting pupils in Year 3, 4, 5 and 6 to take part in filling out a diary for three weeks. Each of you has your own diary to write in and this will take place during the school day. The diary will stay in school so you will not have to write in the diary over the weekend. It will just be for school days.

In your diary I would like you to write about something that you appreciated in school that day. Does anybody know what appreciated means?
Yes. For this diary, it means writing about something or somebody that you are thankful to at school that day. For example, I could write: I appreciate my handy folder which means all my paperwork is kept together.

I'll hand out your diaries now. Please can you write your name on the front of these. You can also draw a picture on the front if you would like to. We can then look at the instructions together.

Hand out diaries, pens and crayons.

Open example diary and read through the instruction prompts:

I would like you to:

- Please write about something that you are thankful for in school that day.
- Start a new page for each new day you write in your diary.
- Remember that this is your diary and private to you. However, I will be looking at these at the end of the project and taking them away with me.
- If you want to talk to somebody about what you have written, please speak to your teacher.

Nobody will be looking at how you have spelt the words in your diaries so please do not worry about your spelling.

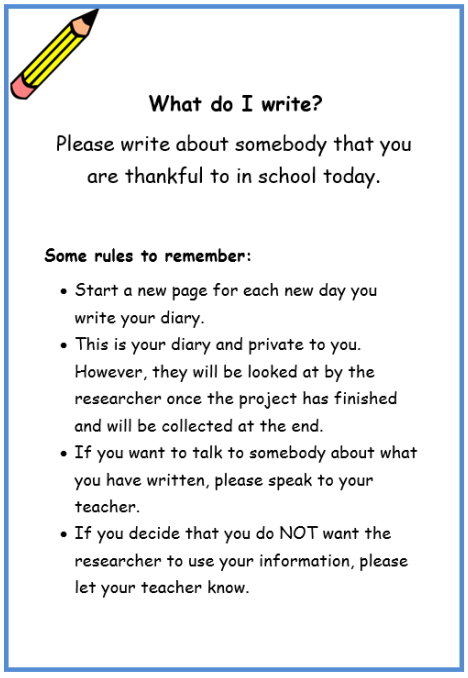
After three weeks I will be coming back in to school to take the diaries back to the university. I will remove your names from the diary so that nobody will be able to identify who wrote what.

Does that seem OK? Would you like to ask any questions?

Appendix P **Example of gratitude, appreciation and event diary instructions**

Front cover for all diaries (gratitude, appreciaiton and event)

Gratitude diary

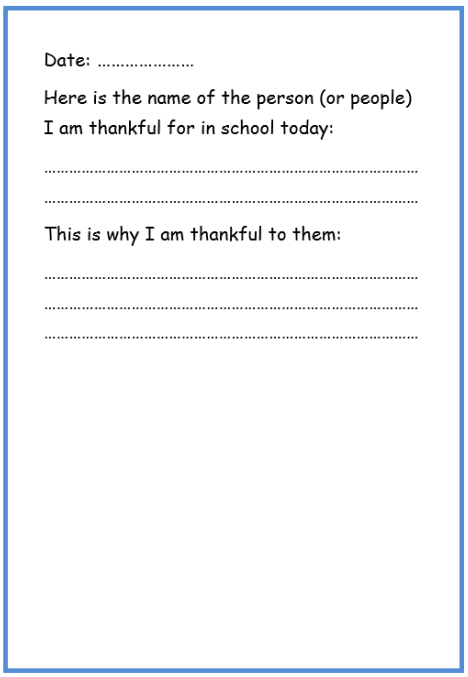


What do I write?

Please write about somebody that you are thankful to in school today.

Some rules to remember:

- Start a new page for each new day you write your diary.
- This is your diary and private to you. However, they will be looked at by the researcher once the project has finished and will be collected at the end.
- If you want to talk to somebody about what you have written, please speak to your teacher.
- If you decide that you do NOT want the researcher to use your information, please let your teacher know.



Date: .....

Here is the name of the person (or people) I am thankful for in school today:

.....

.....

This is why I am thankful to them:

.....

.....

.....

Appreciation diary

What do I write?

Please write about something that you are thankful for in school today.

Some rules to remember:

- Start a new page for each new day you write your diary.
- This is your diary and private to you. However, they will be looked at by the researcher once the project has finished and will be collected at the end.
- If you want to talk to somebody about what you have written, please speak to your teacher.
- If you decide that you do NOT want the researcher to use your information, please let your teacher know.

Date: .....

These are some things I am thankful for in school today:

.....

.....

.....

.....

.....

.....

Event diary

What do I write?

Please write about something that happened in school today.

Some rules to remember:

- Start a new page for each new day you write your diary.
- This is your diary and private to you. However, they will be looked at by the researcher once the project has finished and will be collected at the end.
- If you want to talk to somebody about what you have written, please speak to your teacher.
- If you decide that you do NOT want the researcher to use your information, please let your teacher know.

Date: .....

These are some things that happened in school today:

.....

.....

.....

.....

.....

.....

List of References

Adler, M. G., & Fagley, N. S. (2005). Appreciation: Individual differences in finding value and meaning as a unique predictor of subjective well-being. *Journal of Personality*, *73*(1), 79–114. http://doi.org/10.1111/j.1467-6494.2004.00305.x

Algoe, S. B. (2012). Find, remind, and bind: The functions of gratitude in everyday relationships. *Social and Personality Psychology Compass*, *6*(6), 455–469. http://doi.org/10.1111/j.1751-9004.2012.00439.x

Algoe, S. B., Haidt, J., & Gable, S. L. (2008). Beyond reciprocity: Gratitude and relationships in everyday life. *Emotion*, *8*(3), 425–429. http://doi.org/10.1037/1528-3542.8.3.425

Allen, K. A., & Bowles, T. (2012). Belonging as a guiding principle in the education of adolescents. *Australian Journal of Educational and Developmental Psychology*, *12*, 108–119.

Allen, K. A., & Kern, M. L. (2017). *School belonging in adolescents: Theory, research and practice*. Singapore: Springer Singapore.

Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2016). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 1–34. http://doi.org/10.1007/s10648-016-9389-8

Anant, S. S. (1966). The need to belong. *Canada's Mental Health*, *14*(2), 21–27.

Anderman, E. M. (2002). School effects on psychological outcomes during adolescence. *Journal of Educational Psychology*, *94*(4), 795–809. http://doi.org/10.1037//0022-0663.94.4.795

Anderman, L. H. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education*, *72*(1), 5–22. http://doi.org/10.1080/00220970309600877

Battistich, V., & Hom, A. (1997). The relationship between students' sense of their school as a community and their involvement in problem behaviors. *American Journal of Public Health*, *87*(12), 1997–2001. http://doi.org/10.2105/AJPH.87.12.1997

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamential human motivation. *Psychological Bulletin*, *117*(3), 497–529.

Bono, G., & Froh, J. (2009). Gratitude in school: Benefits to students and schools. In R. Gilman, E.

S. Huebner, & M. Furlong (Eds.), *Handbook of positive psychology in schools* (pp. 77–88). New York: Routledge.

Bosworth, K., Espelage, D. L., & Simon, T. R. (1999). Factors associated with bullying behavior in middle school students. *Journal of Early Adolescence*, *19*(3), 341–362. http://doi.org/10.1177/0272431699019003003

Bowlby, J. (1969). *Attachment and loss* (Vol. 1). New York: Basic Books. http://doi.org/10.1177/000306518403200125

Bronfenbrenner, U. (1994). Ecological models of human development. In *International Encyclopedia of Education* (Vol. 3, pp. 1643–1647). Oxford: Elsevier Sciences, Ltd. http://doi.org/http://www.psy.cmu.edu/~siegler/35bronfebrenner94.pdf

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.

Carr, D. (2016). *Perspectives on gratitude: An interdisciplinary approach*. Oxon: Routledge.

Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. Atlanta, GA: US Department of Health and Human Services.

Chapman, R. L., Buckley, L., Sheehan, M. C., Shochet, I. M., & Romaniuk, M. (2011). The impact of school connectedness on violent behavior, transport risk taking behavior and associated injuries in adolescence. *Journal of School Psychology*, *49*(4), 399–410.

Chapman, R. L., Buckley, L., Sheehan, M., & Shochet, I. M. (2013a). Pilot evaluation of an adolescent risk and injury prevention programme incorporating curriculum and school connectedness components. *Health Education Research*, *28*(4), 612–625. http://doi.org/10.1093/her/cyt048

Chapman, R. L., Buckley, L., Sheehan, M., & Shochet, I. M. (2013b). School-based programs for increasing connectedness and reducing risk behavior: A systematic review. *Educational Psychology Review*, *25*, 95–114. http://doi.org/10.1007/s10648-013-9216-4

Chen, L. H., & Kee, Y. H. (2008). Gratitude and adolescent athletes' well-being. *Social Indicators Research*, *89*(2), 361–373. http://doi.org/10.1007/s11205-008-9237-4

Cho, H., Hallfors, D. D., & Sánchez, V. (2005). Evaluation of a high school peer group intervention

for at-risk youth. *Journal of Abnormal Child Psychology*, *33*(3), 363–374. http://doi.org/10.1007/s10802-005-3574-4

Connolly, J., Josephson, W., Schnoll, J., Simkins-Strong, E., Pepler, D., MacPherson, A., … Jiang, D. (2015). Evaluation of a youth-led program for preventing bullying, sexual harassment, and dating aggression in middle schools. *The Journal of Early Adolescence*, *35*(3), 403–434. http://doi.org/10.1177/0272431614535090

Converse, N., & Lignugaris, B. (2009). Evaluation of a school-based mentoring program for at-risk middle school youth. *Remedial and Special Education*, *30*(1), 33–46. http://doi.org/10.1177/0741932507314023

Coyne-Foresi, M. (2015). Wiz Kidz: Fostering school connectedness through an in-school student mentoring program. *Professional School Counseling*, *19*(1), 68–79.

Datu, J. A. D. (2014). Forgiveness, gratitude and subjective well-being among Filipino adolescents. *International Journal for the Advancement of Counselling*, *36*, 262–273. http://doi.org/10.1007/s10447-013-9205-9

Diebel, T. (2014). *The effectiveness of a gratitude diary intervention on primary school children's sense of school belonging* (Doctoral Thesis, University of Southampton, Southampton, UK).

Diebel, T., Woodcock, C., Cooper, C., & Brignell, C. (2016). Establishing the effectiveness of a gratitude diary intervention on children's sense of school belonging. *Educational and Child Psychology*, *33*(2), 117–129.

Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality of health care interventions. *Journal of Epidemiological & Community Health*, *52*(6), 377–384.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, *84*(2), 377–389. http://doi.org/10.1037/0022-3514.84.2.377

Espelage, D. L., Rose, C. A., & Polanin, J. R. (2016). Social-emotional learning program to promote prosocial and academic skills among middle school students with disabilities. *Remedial and Special Education*, *37*(6), 323–332. http://doi.org/10.1177/0741932515627475

Fagley, N. S. (2016). The construct of appreciation: It is so much more than gratitude. In D. Carr (Ed.), *Perspectives on gratitude: An interdisciplinary approach* (pp. 70–83). Oxon: Routledge.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. http://doi.org/10.3758/BF03193146

Frederickson, J., & Cameron, R. J. (1999). *Psychology in education portfolio*. Windsor: NFER-Nelson.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*(3), 300–319. http://doi.org/10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2004). Gratitude, like other positive emotions, broadens and builds. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 145–166). New York: Oxford University Press.

Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in Experimental Social Psychology*, *47*, 1–53. http://doi.org/10.1016/B978-0-12-407236-7.00001-2

Froh, J. J., Bono, G., & Emmons, R. (2010). Being grateful is beyond good manners: Gratitude and motivation to contribute to society among early adolescents. *Motivation and Emotion*, *34*(2), 144–157. http://doi.org/10.1007/s11031-010-9163-z

Froh, J. J., Bono, G., Fan, J., Emmons, R. A., Henderson, K., Harris, C., … Wood, A. M. (2014). Nice thinking! An educational intervention that teaches children to think gratefully. *School Psychology Review*, *43*(2), 132–152. http://doi.org/10.1007/s10902-005-3648-6

Froh, J. J., Emmons, R. A., Card, N. A., Bono, G., & Wilson, J. A. (2011). Gratitude and the reduced costs of materialism in adolescents. *Journal of Happiness Studies*, *12*, 289–302. http://doi.org/10.1007/s10902-010-9195-9

Froh, J. J., Fan, J., Emmons, R. A., Bono, G., Huebner, E. S., & Watkins, P. (2011). Measuring gratitude in youth: Assessing the psychometric properties of adult gratitude scales in children and adolescents. *Psychological Assessment*, *23*(2), 311–324. http://doi.org/10.1037/a0021590

Froh, J. J., Kashdan, T. B., Ozimkowski, K. M., & Miller, N. (2009). Who benefits the most from a gratitude intervention in children and adolescents? Examining positive affect as a moderator. *Journal of Positive Psychology*, *4*(5), 408–422. http://doi.org/10.1080/17439760902992464

Froh, J. J., Sefick, W. J., & Emmons, R. A. (2008). Counting blessings in early adolescents: An

experimental study of gratitude and subjective well-being. *Journal of School Psychology*, *46*, 213–233. http://doi.org/10.1016/j.jsp.2007.03.005

Froh, J. J., Yurkewicz, C., & Kashdan, T. B. (2009). Gratitude and subjective well-being in early adolescence: Examining gender differences. *Journal of Adolescence*, *32*(3), 633–650. http://doi.org/10.1016/j.adolescence.2008.06.006

Garcia, C., Pintor, J., Vazquez, G., & Alvarez-Zumarraga, E. (2013). Project wings, a coping intervention for Latina adolescents. *Western Journal of Nursing Research*, *35*(4), 434–458. http://doi.org/10.1177/0193945911407524

Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: Insights from the broaden-and-build theory and affective neuroscience on the treatment of emotion dysfunctions and deficits in psychopathology. *Clinical Psychology Review*, *30*(7), 849–864. http://doi.org/10.1016/j.cpr.2010.03.002

Goldweber, A., Waasdorp, T., & Bradshaw, C. (2013). Examining the link between bullying behaviors and perceptions of safety and belonging among secondary school students. *Journal of School Psychology*, *51*, 469–485. http://doi.org/10.1016/j.jsp.2013.04.004

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools*, *30*(1), 79–90.

Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education*, *62*(1), 60–71.

Gulliford, L., Morgan, B., & Kristjánsson, K. (2013). Recent work on the concept of gratitude in philosophy and psychology. *The Journal of Value Inquiry*, *47*(3), 285–317. http://doi.org/10.1007/s10790-013-9387-8

Hamm, J. V., Farmer, T. W., Dadisman, K., Gravelle, M., & Murray, A. R. (2011). Teachers' attunement to students' peer group affiliations as a source of improved student experiences of the school social-affective context following the middle school transition. *Journal of Applied Developmental Psychology*, *32*(5), 267–277. http://doi.org/10.1016/j.appdev.2010.06.003

Harbaugh, C. N., & Vasey, M. W. (2014). When do people benefit from gratitude practice? *Journal*

of Positive Psychology, *9*(6), 535–546. http://doi.org/10.1080/17439760.2014.927905

Harris, K. M. (2009). *The national longitudinal study of adolescent health (add health), waves I & II, 1994-1996*. North Carolina.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: The Guilford Press.

Holt, L. J., Bry, B. H., & Johnson, V. L. (2008). Enhancing school engagement in at-risk, urban minority adolescents through a school-based, adult mentoring intervention. *Child & Family Behavior Therapy*, *30*(4), 297–318. http://doi.org/10.1080/07317100802482969

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. http://doi.org/10.1080/10705519909540118

Johnson, V. L., Holt, L. J., Bry, B. H., & Powell, S. R. (2008). Effects of an integrated prevention program on urban youth transitioning into high school. *Journal of Applied School Psychology*, *24*(2), 225–246. http://doi.org/10.1080/15377900802089999

Jose, P. E., Ryan, N., & Pryor, J. (2012). Does social connectedness promote a greater sense of well-being in adolescence over time? *Journal of Research on Adolescence*, *22*(2), 235–251. http://doi.org/10.1111/j.1532-7795.2012.00783.x

Karcher, M. J. (2011). *The Hemingway: Measure of adolescent connectedness (adolescent version 5.5 and child "pre-adolescent" version 5)*. Retrieved from: http://adolescentconnectedness.com/media/HemingwayManual2012.pdf.

Karcher, M. J. (2014). Cross-age peer mentoring. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring* (2nd ed., pp. 233–257). Thousand Oaks, CA: Sage.

King, K. A., Vidourek, R. A., Davis, B., & McClellan, W. (2002). Increasing self-esteem and school connectedness through a multidimensional mentoring program. *Journal of School Health*, *72*(7), 294–299.

Ladd, G. W., & Price, J. M. (1987). Predicting children's social and school adjustment following the transition from preschool to kindergarten. *Child Development*, *58*(5), 1168–1189.

Laurent, J., Cantanzaro, S. J., Joiner Jr, T. E., Rudolph, K. D., Potter, K. I., Lambert, S., … Gathright, T. (1999). A measure of positive and negative affect for children: Scale development and

preliminary validation. *Psychological Assessment*, *11*(3), 326–338.

Law, P. C., Cuskelly, M., & Carroll, A. (2013). Young people's perceptions of family, peer, and school connectedness and their impact on adjustment. *Australian Journal of Guidance and Counselling*, *23*(1), 115–140. http://doi.org/10.1017/jgc.2012.19

Lewis, K. M., Sullivan, C. M., & Bybee, D. (2006). An experimental evaluation of a school-based emancipatory intervention to promote African American well-being and youth leadership. *Journal of Black Psychology*, *32*(1), 3–28. http://doi.org/10.1177/0095798405283229

Li, D., Zhang, W., Li, X., Li, N., & Ye, B. (2012). Gratitude and suicidal ideation and suicide attempts among Chinese Adolescents: Direct, mediated, and moderated effects. *Journal of Adolescence*, *35*(1), 55–66. http://doi.org/10.1016/j.adolescence.2011.06.005

Libbey, H. P. (2004). Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health, 74*(7), 274–283.

Long, J. J., & Davis, J. O. (2011). Pen and paper: A prescription for adolescents' emotional and psychological well being? *Journal of Correctional Education*, *62*(1), 7–25.

Lott, J. L., & Antony, J. S. (2012). *Multilevel modelling techniques and applications in institutional research*. San Francisco: Wiley Periodicals, Inc.

Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science*, *22*(1), 57–62. http://doi.org/10.1177/0963721412469809

Mann, M. J., Smith, M. L., & Kristjansson, A. L. (2015). Improving academic self-efficacy, school connectedness, and identity in struggling middle school girls. *Health Education & Behavior*, *42*(1), 117–126. http://doi.org/10.1177/1090198114543005

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*(4), 370–396. http://doi.org/10.1037/h0054346

McAleer, S. (2012). Propositional gratitude. *American Philosophical Quarterly*, *49*(1), 55–66.

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, *82*(1), 112–127. http://doi.org/10.1037//0022-3514.82.1.112

McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral

affect? *Psychological Bulletin*, *127*(2), 249–266.

McCullough, M. E., Tsang, J. A., & Emmons, R. A. (2004). Gratitude in intermediate affective terrain: Links of grateful moods to individual differences and daily emotional experience. *Journal of Personality and Social Psychology*, *86*(2), 295–309. http://doi.org/10.1037/0022-3514.86.2.295

Mcloughlin, C. S. (2009). Positive peer group interventions: An alternative to individualized interventions for promoting prosocial behavior in potentially disaffected youth. *Electronic Journal of Research in Educational Psychology*, *7*(3), 1131–1156.

Mcloughlin, C. S. (2010). An exploratory case-study research report incorporating service learning. *New Horizons in Education*, *58*(1), 53–64.

McNeely, C. a, Nonnemaker, J. M., & Blum, R. W. (2002). Promoting school connectedness: Evidence from the national longitudinal study of adolescent health. *The Journal of School Health*. http://doi.org/10.1111/j.1746-1561.2002.tb06533.x

Mellanby, A. R., Newcombe, R. G., Rees, J., & Tripp, J. H. (2001). A comparative study of peer-led and adult-led school sex education, *16*(4), 481–492.

Miller, C. F., Kochel, K. P., Wheeler, L. A., Updegraff, K. A., Fabes, R. A., Martin, C. L., & Hanish, L. D. (2017). The efficacy of a relationship building intervention in 5th grade. *Journal of School Psychology*, *61*, 75–88. http://doi.org/10.1016/j.jsp.2017.01.002

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, *6*(7). http://doi.org/10.1371/journal.pmed.1000097

Murray, C., & Greenberg, M. T. (2000). Children's relationship with teachers and bonds with school an investigation of patterns and correlates in middle childhood. *Journal of School Psychology*, *38*(5), 423–445. http://doi.org/10.1016/S0022-4405(00)00034-0

Neel, C. G. O., & Fuligni, A. (2013). A longitudinal study of school belonging and academic motivation across high school. *Child Development*, *84*(2), 678–692. http://doi.org/10.1111/j.1467-8624.2012.01862.x

O'Rourke, J., & Cooper, M. (2010). Lucky to be happy: A study of happiness in Australian primary students. *Australian Journal of Educational and Developmental Psychology*, *10*, 94–107.

OECD. (2013). *PISA 2012 Results: Ready to learn: Students' engagement, drive and self-beliefs (Volume III)*. http://doi.org/10.1787/9789264201170-en

Owens, R. L., & Patterson, M. M. (2013). Positive psychological interventions for children: A comparison of gratitude and best possible selves approaches. *Journal of Genetic Psychology*, *174*(4), 403–428. http://doi.org/10.1080/00221325.2012.697496

Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: The development and validation of the Values in Action Inventory of Strengths for Youth. *Journal of Adolescence*, *29*(6), 891–909. http://doi.org/10.1016/j.adolescence.2006.04.011

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press.

Portwood, S. G., Ayers, P. M., Kinnison, K. E., Waris, R. G., & Wise, D. L. (2005). YouthFriends: Outcomes from a school-based mentoring program. *The Journal of Primary Prevention*, *26*(2), 129–145. http://doi.org/10.1007/s10935-005-1975-3

Pryce, S., & Frederickson, N. (2013). Bullying behaviour, intentions and classroom ecology. *Learning Environments Research*, *16*(2), 183–199. http://doi.org/10.1007/s10984-013-9137-7

Renshaw, T. L., & Olinger-Steeves, R. M. (2016). What good is gratitude in youth and schools? A systematic review and meta-analysis of correlates and intervention outcomes. *Psychology in the Schools*, *53*(3), 286–305. http://doi.org/10.1002/pits

Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., … Udry, J. R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association*, *278*(10), 823–832. http://doi.org/10.1001/jama.1997.03550100049038.

Rhodes, J. E. (2002). *Stand by me: The risks and rewards of mentoring today's youth*. Cambridge, MA: Harvard University Press.

Rose, K., Hawes, D. J., & Hunt, C. J. (2014). Randomized controlled trial of a friendship skills intervention on adolescent depressive symptoms. *Journal of Consulting and Clinical Psychology*, *82*(3), 510–520. http://doi.org/10.1037/a0035827

Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2008). A blast from the past: The terror management function of nostalgia. *Journal of Experimental Social Psychology*, *44*(1), 132–

140. http://doi.org/10.1016/j.jesp.2006.11.001

Ruttledge, R., Devitt, E., Greene, G., Mullany, M., Charles, E., Frehill, J., & Moriarty, M. (2016). A randomised controlled trial of the FRIENDS for Life emotional resilience programme delivered by teachers in Irish primary schools. *Educational and Child Psychology*, *33*(2), 69–89.

Ryan. (1991). The nature of the self in autonomy and relatedness. In J. Strauss & G. R. Goethals (Eds.), *The Self: Interdisciplinary Approaches* (pp. 208–238). New York: Springer-Verlag. http://doi.org/10.1007/978-1-4684-8264-5

Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55*(1), 68–78. http://doi.org/10.1037/0003-066X.55.1.68

Sánchez, B., Colón, Y., & Esparza, P. (2005). The role of sense of school belonging and gender in the academic adjustment of Latino adolescents. *Journal of Youth and Adolescence*, *34*(6), 619–628. http://doi.org/10.1007/s10964-005-8950-4

Schall, J., Wallace, T. L. B., & Chhuon, V. (2016). “Fitting in” in high school: How adolescent belonging is influenced by locus of control beliefs. *International Journal of Adolescence and Youth*, *21*(4), 462–475. http://doi.org/10.1080/02673843.2013.866148

Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *The American Psychologist*, *55*(1), 5–14. http://doi.org/10.1037/0003-066X.55.1.5

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress empirical validation of interventions. http://doi.org/10.1037/0003-066X.60.5.410

Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *Journal of Positive Psychology*, *1*(2), 73–82. http://doi.org/10.1080/17439760500510676

Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical and Adolescent Psychology*, *35*(2), 170–179. http://doi.org/10.1207/s15374424jccp3502

Solomon, D., Watson, M., Battistich, V., Schaps, E., & Delucchi, K. (1996). Creating classrooms that students experience as communities. *American Journal of Community Psychology*, *24*(6),

719–748. http://doi.org/10.1007/BF02511032

Suldo, S. M. (2016). *Promoting student happiness: Positive psychology interventions in schools*. New York: Guilford Press.

Swearer, S. M., & Espelage, D. L. (2004). Bullying in American schools: A social-ecological perspective on prevention and intervention. In D. L. Espelage & S. M. Swearer (Eds.), *Introduction: A social-ecological framework of bullying among youth* (pp. 1–12). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Thomas, N., & Watkins, P. (2003). Measuring the grateful trait: Development of the revised GRAT. Poster presented to the Annual Convention of the Western Psychological Association, May, 2003, Vancouver, BC.

Tian, L., Du, M., & Huebner, E. S. (2015). The effect of gratitude on elementary school students' subjective well-being in schools: The mediating role of prosocial behavior. *Social Indicators Research*, *122*(3), 887–904. http://doi.org/10.1007/s11205-014-0712-9

van Eeden, C., Wissing, M. P., Dreyer, J., Park, N., & Peterson, C. (2008). Validation of the values in action inventory of strengths for youth (via-youth) among South African learners. *Journal of Psychology in Africa*, *18*(1), 143–154. http://doi.org/10.1080/14330237.2008.10820181

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality*, *31*(5), 431–452.

Watson, D., & Clark, L. A. (1999). The PANAS-X: Manual for the positive and negative affect schedule - expanded form. *Iowa Research Online*, *277*(6), 1–27. http://doi.org/10.1111/j.1742-4658.2010.07754.x

Wilson, D. (2004). The interface of school climate and school connectedness and relationships with agression and victimization. *The Journal of School Health*, *74*(7), 293–299. http://doi.org/10.1017/CBO9781107415324.004

Wingspread declaration. (2004). Wingspread declaration on school connections. *Journal of School Health*. http://doi.org/10.1111/j.1746-1561.2004.tb08279.x