UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL AND HUMAN SCIENCES

SCHOOL OF PSYCHOLOGY

Doctorate in Educational Psychology

The effectiveness of a gratitude diary intervention on primary school children's sense of school belonging

by

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Thesis for the degree of Doctorate in Educational Psychology

June 2014

Word Count:

21,006

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

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The review evaluated whether gratitude interventions can improve well-being among adults and children. A systematic search of the literature yielded 31 studies. The majority of studies used adult participants, with only four published studies using child or adolescent participants. It was found that gratitude interventions elicited desirable outcomes, such as increases in positive emotions, decreases in negative emotions and improvements in life satisfaction. The review highlights many methodological limitations within the literature, which makes it difficult to draw conclusions about the effectiveness of the intervention to promote well-being. Emerging evidence suggests that factors such as recruitment strategy, participant motivation and preference for intervention can influence the intervention's effectiveness. Finally, the literature is starting to consider how participant characteristics can influence the efficacy of gratitude interventions.

The empirical paper has examined the effectiveness of a school-based gratitude diary intervention to promote school belonging for primary school aged children ($M = 9.4$, $SD = 0.47$). The intervention took place across three primary schools for two weeks and involved participants writing a diary about things that they were either grateful for in school that day or about neutral school events. Participants who completed the gratitude intervention demonstrated a trend towards an increased feeling of belonging towards school. Supplementary analysis provided a model, which aimed to increase understanding of the process that leads to changes in school belonging, as well as the boundary conditions that influenced this process. It was found that nostalgia proneness had a significant impact both at a direct level; influencing the intervention's impact on sense of belonging, but also at an indirect level through changes in levels of felt gratitude towards school. There was no effect of baseline affective empathy at any stage of the analysis. The findings extend the evidence base concerning the use of gratitude interventions with children and the efficacy of these interventions to build social resources. It also makes a novel connection between nostalgia proneness and gratitude.

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DECLARATION OF AUTHORSHIP

I, Tara Diebel declare that the thesis entitled '**The effectiveness of a gratitude diary intervention on primary school children's sense of school belonging**' and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- 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;
- where I have consulted the published work of others, this is always clearly attributed;
- 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;
- I have acknowledged all main sources of help;
- 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;
- none of this work has been published before submission.

Signed: ……..

Date:…….

Acknowledgements

I would like to thank my supervisor Tim Wildschut for his continued support throughout the development of my thesis. His comments and feedback have been invaluable and very much appreciated. I would also like to thank Colin Woodcock for introducing me to the psychological field of gratitude and how it can be used in schools. I have enjoyed our many conversations about the potential of gratitude in our everyday lives and to enhance the wellbeing of students. I have also valued his continued support, as my field tutor at the start of my Doctorate to the role of field supervisor for my thesis.

My sincere thanks and appreciation goes to all of the children and school staff who took part in the interventions and made this research possible.

I would like to express my gratitude to my friends and family for all the love and encouragement they have given me over the past three years. They have provided me with some very welcome distractions and many happy times throughout my study. Finally, I would like to thank my husband Paul for his endless support and encouragement, but most of all I want to thank him for his unquestionable love and belief that I can succeed, which has got me through the more stressful times.

This thesis is dedicated to my mother and the memory of my wonderful father. They have always had absolute faith in my capabilities and I would never have been able to progress this far in my academic and professional career without their love and support.

Definitions and Abbreviations

d	Cohen's d
χ^2	Chi-Squared
α	Cronbach's Alpha
κ	Kappa
M	Mean
N	Number of Participants
p	Probability Level
η_p^2	Partial-eta Squared
r	Pearson's Correlation
SE	Standard Error
SD	Standard Deviation

Chapter 1: Review Paper

Do gratitude interventions improve well-being among adults and children?

Introduction

The study of gratitude sits within positive psychology, an emerging area of research that aims to enhance the understanding of "positive emotions, positive character traits and the institutions that enable them to flourish" (Seligman, Steen, Park & Peterson, 2005, p. 41). Advocates of positive psychology assert that psychological wellness is not only the absence of mental disorder, but also the presence of optimal positive psychological resources that contribute to hedonic well-being (e.g. positive emotions satisfaction) and eudemonic well-being (e.g. self-realisation and meaning in life) (Ryan & Deci, 2001; Seligman et al., 2003; Sin & Lyubomirsky, 2009). Positive psychology interventions are based on the principle that sustainable changes in well-being can be achieved through regularly engaging in simple and intentional activities (Lyubomirsky, Sheldon & Schkade, 2005). Meta-reviews have concluded that positive psychology interventions demonstrate potential to increase well-being, prevent mental health difficulties and can be used in conjunction with clinical psychological interventions to improve psychological health (Bolier et al., 2013; Sin & Lyubomirsky, 2009). The current review will explore whether gratitude interventions are an effective psychological intervention to increase well-being in this way.

Definition of Gratitude

Within the literature there are discrepancies about the operational definition of the construct of gratitude (Gulliford, Morgan & Kristjansson, 2013; Wood et al., 2010). It has been described as a positive emotion, a moral virtue, a state that is induced in response to aid and an orientation towards appreciating the positives in life (Guilford et al., 2013; McCullough et al., 2002; McCullough, et al., 2001; Watkins, Woodward, Stone & Kolts, 2003; Wood, Froh & Geraghty, 2010). Wood et al. (2010) conducted a theoretical review of the construct of gratitude and proposed the following working definition that be will adopted in the current review "gratitude arises following help from others, but also a habitual focusing on and appreciating the positive aspects of life" (p. 80).

Relationship to well-being

Gratitude has been linked with many components of subjective well-being. The research into the benefits of gratitude have been largely cross-sectional and correlational (Wood et al., 2010) and have mostly involved adults (Bono & Froh, 2009). Gratitude

has been associated with optimism and positive emotions (Hill & Allemand, 2011; McCullough, Emmons, & Tsang, 2002), positive memory bias (Watkins, Grimm & Kolts, 2004), positive reframing (Lambert, Fincham & Stillman, 2012) and life satisfaction (Park, Peterson & Seligman, 2004; Wood, Joseph & Maltby, 2008). Trait gratitude has been shown to uniquely predict levels of well-being, above the effect of 30 other personality traits (Wood, Joseph & Maltby, 2009). Gratitude has also been negatively linked to hopelessness and depression (Kleiman, Adams, Kashdan & Riskin, 2013), stress (Wood, Maltby, Gillett, Linley, & Joseph, 2008), burnout (Chan, 2010), and envy and materialism (Lambert, Fincham, Stillman, & Dean, 2009).

Gratitude is also hypothesised to strengthen social relationships and contribute to well-being through promoting the development of positive friendships (Algoe, Haidt, & Gable, 2008), increasing feelings of connectedness (Froh, Bono, & Emmons, 2010), increasing pro-social emotions such as forgiveness, compassion and empathy (Hill & Allemand, 2011; McCullough, Kilpatrick, Emmons & Larson, 2001) and increasing perception of social support (Wood et al., 2008).In addition, gratitude has been found to be a moral reinforcer, which motivates people to carry out pro-social behaviour (Froh, Yurkewicz & Kashdan. 2009; McCullough et al., 2001).

Theoretical Perspectives of Gratitude

There are several hypotheses of the psychological mechanisms that influence the positive relationship between gratitude and well-being. According to the broaden-and-build theory (Fredrickson, 2001), gratitude is a positive emotion that could broaden by promoting creative thinking, positive reflection and pro-social emotions and build by strengthening friendships and other social bonds; creating an upward spiral of related positive emotions (Emmons & McCullough, 2003; Fredrickson, 2004; Froh, Yurkewicz et al., 2009). This theory also posits that positive emotions are incompatible with negative emotions, and therefore gratitude can have an undoing effect on negative emotions (Fredrickson, 2004; McCullough et al., 2002).

Compatible with this theory is the schematic hypothesis (Wood et al., 2010), which posits that grateful people have a positive bias towards interpreting behaviour as altruistic and help as more beneficial. Gratitude is also hypothesised to promote well-being by being an adaptive coping mechanism that allows people to positively reframe and positively reflect on negative or stressful events (Lambert, et al., 2012; Watkins,

Cruz, Holben & Kolts, 2008) or seek social support (Wood, Joseph & Linley, 2007). Finally, a grateful disposition is also thought to directly counteract hedonic adaption to positive life events, positive relationships and material possessions, by prolonging and maximising the positive emotions and feelings of satisfaction associated with them (Lyubomirsky, et al,, 2005; Meyers, Woerkom & Baker, 2013).

Developmental Trajectory of Gratitude

Gratitude in children is an emerging area of research. The developmental trajectory of gratitude is largely unclear. Researchers in the field of gratitude theorise that due to the cognitive complexities of understanding gratitude, such as attributing an external source for a positive outcome, understanding the intentionality of others and empathetic emotions; gratitude is likely to emerge during middle childhood and continues to develop towards adolescence (Bono & Froh, 2010; Froh, Miller & Syder, 2007; Froh, Yurkewicz et al., 2009; Owens & Patterson, 2013). However, there has been limited empirical evidence to support this. A recent longitudinal study investigated how cognitive and emotional development influences the development of gratitude in preschool children (Nelson et al., 2013). It was found that levels of emotional development and awareness of the mental states of others at age three and four, significantly predicted the children's understanding of gratitude at age five (Nelson et al., 2013).

There is also limited empirical evidence to suggest the age at which gratitude can be understood. Graham (1998) found evidence that gratitude emerges between ages seven and ten. Nelson et al. (2013) found that there was wide variation in five-year-old children's understanding of gratitude, but most children were able to associate it with the positive feelings of receiving a benefit. Finally, Gordon, Musher-Eizenman, Holum and Dalrymple (2004) found that children as young as four were able to state something they were grateful for in response to an open-ended gratitude prompt. Gordon et al. (2004) also found that younger children (aged 4-8) were more likely to be grateful for material objects, whereas older children (aged 9-12) were more likely to express gratitude to a variety of events, people and relationships, which suggests that gratitude develops alongside cognitive and social development (Gordon et al., 2004).

A small number of longitudinal and cross-sectional studies with adolescents, suggest that the psychological benefits of gratitude appear to be comparable to adults,

for example, optimism and positive emotions (Froh, Yurkewicz et al., 2009), reduced materialism (Froh, Emmons, Card, Bono, & Wilson, 2011), feelings of life satisfaction (Chan, 2012) (Froh, et al., 2010) and pro-social behaviour (Froh, Yurkewicz et al., 2009).

Gratitude as a Psychological Intervention

The psychological literature has begun to explore if gratitude can have a causal impact on well-being by employing empirical investigations to establish whether interventions that promote gratitude can have a positive influence on variables related to well-being. Emmons & McCullough (2003) published a seminal paper on the impact of "counting one's blessings" (p. 378), an intervention that involved participants regularly writing a diary of things for which they were grateful. Seligman et al. (2005) published a study reviewing a number of positive psychology interventions, including a gratitude visit, which asked participants to write and deliver a letter of gratitude to somebody. The literature on gratitude interventions has subsequently replicated and adapted the methodology of these two studies. The current review will appraise this literature to examine the efficacy of gratitude interventions with adults and evaluate the potential of the intervention with children.

Review Methodology

Search Strategy

Studies included in this review were obtained through a systematic search of the published literature. Searches were conducted in three electronic databases: PsychINFO via EBSCO, Web of Science via Web of Knowledge and the Educational Research Information Centre (ERIC). Search terms were generated using the key terms from the review question and key words from key papers (Emmons & McCullough, 2003) (Appendix A). Further studies were identified from searching the reference list and forward citations of articles included in the review.

Inclusion and Exclusion Criteria

Studies retrieved from the systematic search were screened and subjected to the following inclusion and exclusion criteria related to the review question.

Table 1

Inclusion and Exclusion Criteria Used for the Screening of Studies

Study Item	Inclusion Criteria	Exclusion Criteria
Intervention	Interventions designed to increase levels of gratitude.	A multi-intervention approach that targeted many psychological factors, therefore the specific impact of gratitude could not be isolated from other interventions. Empirical studies which do not have a specific intervention to increase gratitude e.g. longitudinal studies or cross-sectional designs.
Comparison condition	In line with recommendations from Chambless and Ollendick (2001). Gratitude intervention is compared to an active or passive control group, or alternative intervention.	Within-subject designs with no comparison conditions.
Participants	Participants of all ages.	
Publication requirements	Published in English. Full-text access to articles published in peer-reviewed academic or professional journals.	Published in any language other than English. Book chapters, abstracts, dissertations and conference presentations.
Type of research	Empirical papers using primary data.	Review articles.

The systematic search yielded 31 results. The procedure of the systematic search is illustrated in Figure 1.

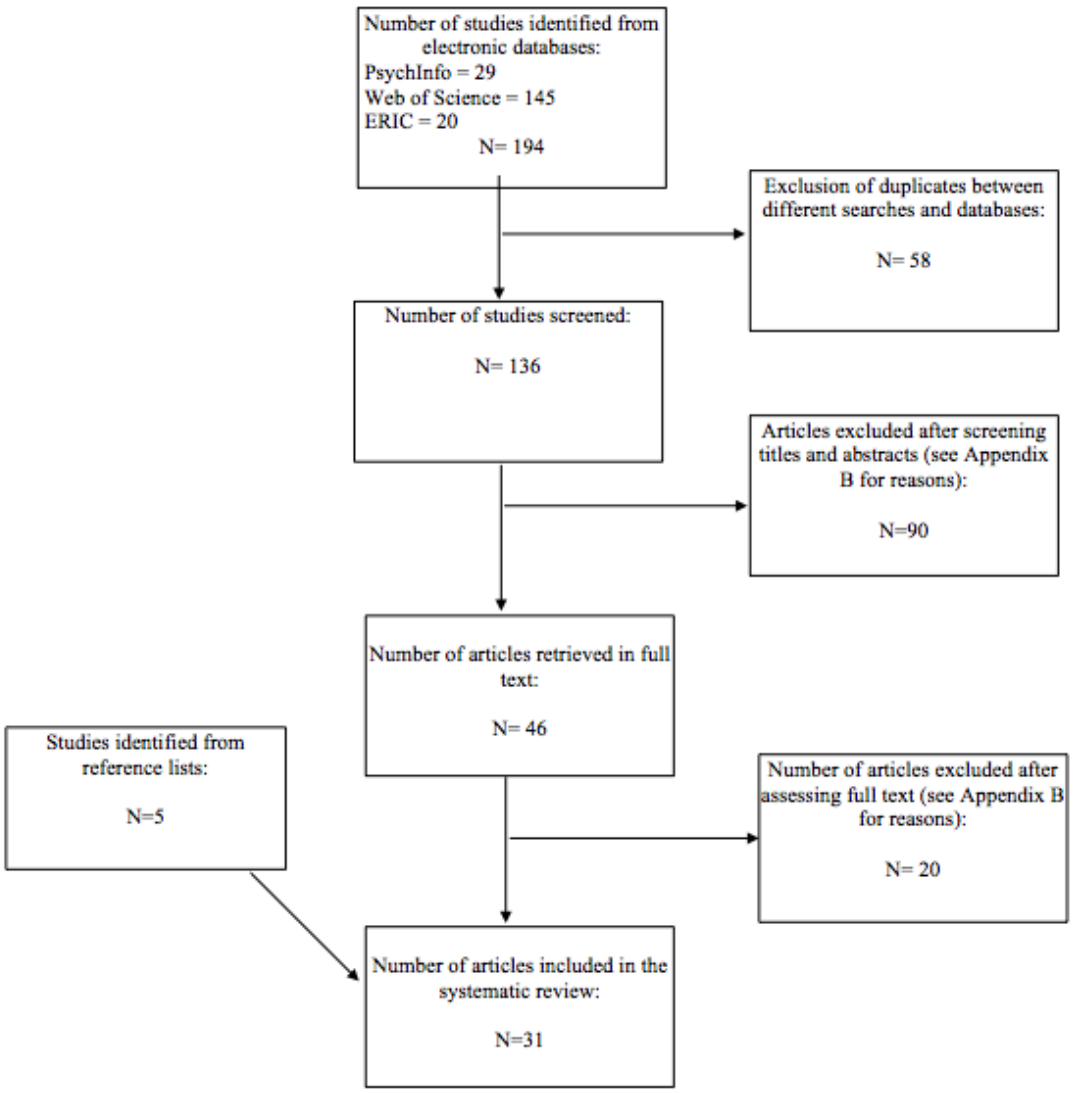


Figure 1: Flow chart showing the results of the systematic search process and application of inclusion/exclusion criteria.

Data Extraction and Synthesis

The data extracted from the eligible papers included: a) descriptive information about the population sample; b) how the study was advertised; c) information about the gratitude intervention; d) study design; e) outcome measures; f) effectiveness of the gratitude intervention and significant mediating or moderating variables (See Appendix C for completed table).

Description of Data Extraction

Study Characteristics

Participants. The majority of studies were conducted with adults and only four studies used child or adolescent participants. The majority of studies had a higher percentage of female participants, in 16 studies over 70% of the participants were female.

Recruitment strategy. Thirteen studies were advertised as investigating methods to improve well-being. One study actively disguised the purpose of the intervention. Eighteen studies did not report how studies were advertised to participants.

Research Methodology

Research design. Twenty-six studies employed an experimental design and randomly allocated participants to interventions; six studies used a quasi-experimental design and allocated different classes of students to a condition; all of the studies involving children employed a quasi-experimental design. The majority of studies used an active control group, with only six studies using a passive control group.

The most common control intervention was a neutral event diary (15 studies); other control groups included hassle diaries (writing about negative events) (4 studies), writing about early memories (2 studies), writing about plans for tomorrow (2 studies) or a neutral writing task (2 studies). Fourteen studies also investigated the impact of alternative positive psychology interventions, and directly compared them with the gratitude study. Two studies only used an alternative treatment as a comparison, and not a neutral control (Chan, 2013; Didgon & Kobie, 2011).

Methods of gratitude induction. There was a wide variation in the type of gratitude intervention. Gratitude diaries (regularly writing about events participants felt gratitude for) were the most common type of gratitude intervention (18 studies) and the majority of these studies based the instructions given to participants on those of Emmons and McCullough (2003). The number of items that had to be written in each entry varied from one to six. The frequency and length of the gratitude diary interventions range from daily interventions (lasting from five days to four weeks), twice weekly interventions (lasting three to four weeks) and weekly interventions lasting from four to twelve weeks).

Ten studies used variations of a gratitude letter. Four of these shared the letter with the recipient (a gratitude visit). Two studies posted the letter to the recipient. One study informed participants that the letter would be posted at the start of the intervention, but left it up to the participant if they chose to send it. The remaining three studies gave no information on whether or not the letter was sent or given to the recipient.

Within the remaining studies, many of the interventions were novel and have not yet been replicated. Two studies used a behavioural intervention, asking participants to increase the gratitude they expressed to a particular person or to share their gratitude diary with a friend. Prayer was used in one study as a method to increase gratitude. Another novel study was the investigation of the impact of a gratitude intervention that promoted grateful processing to bring closure on unpleasant emotional memories.

Measures. All studies used some form of published self-report measure and two studies used observer ratings of well-being. Measures included: gratitude, well-being (e.g. positive affect, happiness and life satisfaction), negative emotions (e.g. negative affect and depression), pro-social behaviour, physical well-being (e.g. physical symptoms and health behaviours) and adherence to intervention. Fifteen studies also looked at the longevity of the intervention and took measurements at follow up, this ranged from one-week to six months post intervention.

Discussion

The outcomes of gratitude interventions will be discussed within different categories that influence subjective well-being; emotional impact and life satisfaction (Ryan & Deci, 2001) and social outcomes. A separate section will consider studies that examined additional psychological outcomes. Due to the small number of studies relating to child participants, these studies will be considered as a separate section. The review will then consider factors that affect the efficacy of gratitude interventions, such as participant characteristics. Finally, it will evaluate the circumstances under which gratitude interventions have been demonstrated to be most effective.

Efficacy of Intervention to Increase Gratitude

A manipulation check to establish whether the intervention was effective in increasing levels of gratitude was only conducted in eight adult studies. This limits conclusions about whether felt gratitude contributed to increases in outcome measures.

A number of studies found that gratitude diaries increased levels of gratitude, but only in comparison to a hassle diary. Emmons and McCullough (2003) carried out three separate studies; two of which compared a gratitude diary with an event diary and a hassle diary. The third study used a population of participants with neuromuscular disease and compared a daily diary intervention with a passive control group. In the first two studies, the gratitude diary intervention significantly increased levels of gratitude compared to the hassle condition, but not relative to the event diary. It was found that the frequency of the intervention influenced the strength of this result, with the daily diary yielding a higher effect size compared to the weekly intervention (d= .88 versus d= .56). A replication of study two was conducted with a Spanish population (Martinez-Marti, Avia & Hernandez-Lloreda, 2010), which also found increases in gratitude relative to a hassle diary. However, an additional trait measure of gratitude was used, which did not show a significant increase relative to either the hassle or an event diary (Martinez-Marti et al., 2010). Chan (2013) compared a diary intervention to a hassle diary, but did not include a neutral intervention group, and no significant increase in gratitude was observed. It has been argued that a hassle group is not an effective control group, as it is designed to induce negative affect, and therefore exaggerates the difference between the two groups (Froh, Kashdan Ozimkowski & Miller 2009; Wood et al., 2010).

Other studies found a significant increase in gratitude. Kaplan et al. (2013) conducted a novel study and looked at the impact of a gratitude diary specific to work. The outcome of this study was that gratitude related to work increased relative compared to an intervention to increase social connectedness, but there was no neutral control condition to compare to this result. Emmons and McCullough (2003) found that during the third study using participants with neuromuscular disease, gratitude significantly increased compared to a passive control.

Toepfer and Walker (2009) found that a gratitude letter intervention yielded significant increases in gratitude. However, this result was not replicated in a subsequent study with a larger sample size (Toepfer, Cichy & Peters, 2011). Toepfer and Walker (2009) found that levels of gratitude decreased in the control intervention, and this could have driven the significant difference between the two groups. Another explanation could be due to the slight difference in methodology between the two studies. Toepfer et al. (2011) adapted the methodology of Toepfer and Walker (2009)

by posting the gratitude letters to the recipients at the end of the intervention, instead of throughout the intervention. This change in methodology was to control for the potential for participants to hear back from the recipient during the intervention, which may not be consistent for all participants (Toepfer et al., 2011). This confound could have influenced the significant increase in gratitude in observed in Toepfer and Walker (2009). However, a systematic investigation of the influence of participant contact with the recipient would be needed in order to isolate that as the variable that caused an increase in gratitude.

Senf and Liau (2013) found no increase in gratitude using a gratitude letter intervention that was combined with a daily exercise that instructed participants to write a diary of "three things that went well today and why" (p. 597), compared to a passive control and a signature strengths intervention. The authors note that this additional exercise was based on a similar intervention used by Seligman et al. (2005). However, Seligman et al. do not refer to this intervention as being a method to increase gratitude and in this study it was used as a general intervention to increase happiness.

One study examined the causal impact of praying on levels of gratitude (Lambert, Fincham, Braithwaite, Graham & Beach, 2009). This study found that a prayer intervention produced significant increases in gratitude, with levels of religiosity, social desirability and previous prayer frequency added as a covariate. A weakness of the study was that no other outcomes were measured to establish whether this intervention also positively impacted on well-being.

The content of the gratitude diary was analysed in three of the adult studies. Emmons & McCullough (2003) analysed the content to confirm the participants were following the instructions relevant to their condition (Emmons & McCullough, 2003). Rash, Matsuba & Prkachin (2011) found that in comparison to a memorable events condition, participants in the gratitude diary intervention were more likely to write about people related experiences and less likely to write about school experiences, events or negative experiences. Diary content was not related to any of the outcome measures for either intervention. Boehm, Lyubomirsky, Sheldon (2011) established that diary content was not related to cultural background. However, participants in the gratitude condition were more likely to focus on others and the present, rather than the future or the past, in comparison to an event diary and an optimism diary.

Outcomes Relating to Positive and Negative Emotions

The majority of the studies investigated the impact of gratitude interventions on levels of positive and negative emotions. Several of the studies in this review did not include these outcome measures (Boehm et al., 2011; Digdon & Kobie, 2011; Geraghty Wood, and Hyland 2010b; Lambert, Clark, Durtschi, Fincham & Graham, 2010; Peters, Meevissen & Hanssen, 2013; Watkins et al., 2008). In addition, three studies measured positive emotions, but not negative emotions (Lambert et al., 2013; Peters et al., 2013; Toepfer & Walker, 2009). Many of the studies included in this review did not report any effect sizes for the changes observed following the intervention (see Appendix C); this puts a major limitation on reviewing their effectiveness.

Positive Emotions

A number of studies found no significant outcomes on positive emotions using gratitude diaries (Chan 2011; Chan, 2013; Rash et al., 2011; Sheldon & Lyubomirsky, 2006a) or gratitude contemplation (Koo, Algoe, Wilson & Gilbert, 2008).

Several studies using gratitude diaries found an increase in positive emotions, but only in relation to a hassle diary. Emmons & McCullough (2013) and Martinez-Marti et al. (2011) both reported that the level of positive emotions decreased in the hassle condition, which could have driven this group difference. Other studies found a significant impact on positive emotions compared to a neutral control. Sergeant & Mongrain (2011) found that a diary intervention significantly increased levels of happiness and self-esteem. Ouweneel, Le Blanc & Scaufeli (2014) found that a gratitude diary significantly increased levels of positive affect related to work, compared to an event diary. Follow-up measures were employed in this study, but this effect was not maintained one month post-intervention. Emmons and McCullough (2003) found that a gratitude diary increased levels of positive emotions for participants with neuromuscular disease, compared to a passive control group.

Lambert et al. (2013) investigated the impact of sharing the gratitude diary with a partner. This was compared to a gratitude diary (not shared) and sharing an event diary with a partner. Sharing the gratitude diary was more effective in eliciting happiness and feelings of vitality compared to the gratitude diary and the control group. For measures of positive emotions, sharing the diary demonstrated a trend towards significance. The gratitude diary condition did not increase positive emotions relative to controls. Effect

sizes for these comparisons were in the medium to high range (ranged from *d* =. 30 –. 68).

Kaplan et al. (2013) found a within-subjects increase in positive emotions towards work and that the intervention was more effective in comparison to an intervention designed to increase social connectedness.

Several interventions using gratitude letters elicited a significant impact on positive emotions. Seligman et al. (2005) and Gander, Proyer, Ruch and Wyss (2012) conducted a gratitude visit in large-scale studies conducted over the Internet. Both studies found that the gratitude visit significantly increased happiness in relation to writing about early memories. At post-test, Seligman et al. (2005) found that happiness significantly increased compared to the control condition, while Gander et al. (2012) only found a trend towards significance. However, at follow up, both studies found significant increases in happiness at one-week (Seligman et al., 2005), one month (Gander et al., 2012; Seligman et al., 2005) and three months (Gander et al., 2012). According to Cohen (1992), the effect size in Gander et al. (2012) is regarded as a small to medium effect (sizes ranged between η_p^2 =.03-.04) and the effect size in Seligman et al. (2003) is regarded as large at post-test and one week follow-up (η_p^2 =.49 and η_p^2 =.39), reducing to a medium sized effect at a one month follow up (η_p^2 =.06). A limitation of both studies is the analysis only included data for participants who had completed all of the follow up measures and did not include an intention-to-treat analysis, which is recommended to reduce bias in the analysis (Bolier et al., 2013; Gander et al., 2012).

Toepfer and Walker (2009) and Toepfer et al. (2012) used a gratitude letter intervention. Both studies increased happiness compared to a passive control group. Watkins et al. (2003) found that across all gratitude conditions (a gratitude letter, a gratitude writing task and a gratitude thinking condition) positive emotions increased compared to a neutral control condition, but did not report results for individual interventions. Senf & Liau (2013) found that a gratitude letter increased scores of happiness. Although as mentioned above, this study used a gratitude letter and positive psychology exercise.

Two studies used a composite measure of well-being, consisting of an aggregate of several standardised well-being measures (Layous, Lee, Choi, Lyubomirsky, 2013;

Lyubomirsky, Dickerhoof, Boehm, Sheldon, 2011), which limits the potential to analyse the impact of specific components of well-being. Both of these studies considered the impact of moderating variables, which will be discussed in the next section. Before moderating variables were considered, Layous et al. (2013) found that a gratitude letter intervention scored higher on the composite well-being score compared to a passive control. No difference was found in comparison to a signature strength intervention. In contrast, Lyubomirsky et al. (2011) found that a gratitude letter intervention yielded no significant increases in well-being compared to an optimism condition or a cognitive task condition.

Negative Emotions

There was wide variation in the effectiveness of diary interventions to reduce negative emotions. Many studies found a non-significant impact on negative affect (Chan, 2010; Emmons & McCullough, 2003; Flinchbaugh et al., 2011; Kaplan, 2013; Koo et al., 2008; Martinez-Marti et al., 2010; Ouweneel et al., 2014; Sergeant & Mongrain, 2011; Sheldon & Lyubomirsky, 2006a) or levels of stress (Flinchbaugh et al., 2011).

Two studies did not measure the impact of positive emotions, but did consider the impact of negative emotions related to worry and stress. Geraghty, Wood, and Hyland (2010a) found that a gratitude diary significantly reduced worry compared to a both waitlist control and a comparable diary intervention based on the principles of Cognitive Behavioural Therapy (CBT).

A number of studies found a significant decrease in negative emotions, but not any impact on positive affect (Chan, 2013; Emmons & McCullough, 2003 (study 3); Rash et al., 2011). A limitation of Chan (2013) was the lack of a neutral control group, and the decrease in negative affect was in comparison to a hassle diary. Emmons and McCullough (2003) reported that the significant effect seemed to be partly driven by an increase in negative affect in the passive control condition. However, the authors argue because a passive control group was used with a clinical population, the gratitude diary could represent a protective effect on levels of negative effect for this particular clinical sample. There has been no replication using clinical populations to further explore this hypothesis.

There was also wide variation in the effectiveness of gratitude letter interventions to reduce negative emotions. Watkins et al. (2003) found none of the three gratitude interventions yielded significant changes in negative affect, although the individual results for each gratitude intervention were not reported. Senf & Liau (2013) used a gratitude visit and an additional positive psychology exercise and found that there was no decrease in depression at post-intervention, but there was a significant effect at follow up. A weakness of this study was that no information was collected about whether participants continued with the intervention, to establish whether this influenced the significant results at follow up. Seligman et al. (2005) and Gander et al. (2012) found that a gratitude visit decreased depression in relation to writing about early memories. At post-test depression significantly decreased in both studies. This significant decrease was maintained at a one-week follow up (Seligman et al., 2005), one month follow up (Gander et al., 2012; Seligman et al., 2005) and three month follow up (Gander et al., 2012). Seligman et al. (2005) reported large effect sizes at all significant time points (ranging from η_p^2 =.29-.36). Gander et al. (2013) found small to medium effect sizes (η_p^2 =.03 at all-time points). This is consistent with effect sizes observed for levels of happiness. Toepfer et al. (2011) found that a gratitude letter shared with the recipient at the end of the study significantly decreased depression compared to a passive control.

Outcomes Related to Life Satisfaction

Emmons & McCullough (2003) used two novel questions to assess concurrent and prospective life satisfaction. The authors found that participants gave higher ratings compared to both the hassle diary and event diary (study one). These measures were also significant in study three, using participants with neuromuscular disease and compared to a passive control. Martinez-Marti et al. (2011) replicated the methodology of Emmons and McCullough (2003) but were not able to replicate this outcome.

Several studies found that gratitude diaries were effective in increasing life satisfaction compared to a hassle diary (Chan, 2013) and a memorable events diary (Rash et al., 2011). Lambert et al. (2013) found that sharing a gratitude diary with a friend was effective in increasing life-satisfaction, relative to a gratitude diary and two control conditions, with medium effect size (d = .38-.43). Flinchbaugh et al, (2011) found that gratitude diaries did not have any impact on life satisfaction, when compared with a stress management intervention or a passive control.

Two studies using gratitude letters measured the impact on life satisfaction. Toepfer and Walker (2009) found a non-significant trend of increases in life satisfaction between the gratitude intervention and a passive control. In a replication of this study with a larger sample size and a modified method, a significant impact was found (Toepfer et al., 2011). Boehm et al. (2011) also reported a significant impact on life satisfaction.

Outcomes Related to Social Behaviour

A number of interventions involved a behavioural or social component; gratitude visits (Gander et al., 2013; Seligman et al., 2005; Senf & Liau 2013), sharing the gratitude diary with a partner (Lambert et al., 2013) and increasing expressions of gratitude with a partner (Lambert et al., 2010). However, only Lambert et al. (2010) investigated the impact of the intervention on social related outcomes. Despite evidence that gratitude can influence social well-being (e.g. Algoe, et al., 2008), only two other adult studies have evaluated the impact of social related outcomes (Emmons & McCullough, 2003; Martinez-Marti et al., 2010).

In Emmons and McCullough (2003), participants in the daily gratitude diary intervention were more likely to report that they had offered emotional support compared to both control conditions. In study three (using a clinical population), the gratitude diary made no impact on social behaviour.

Martinez-Marti et al. (2010) asked participants to rate the quality of their relationship with a significant other and how sensitive they had been to other people's needs. They also included an observer report of sensitivity to others needs. A significant trend was found for the quality of relationships (p =.072) compared to both the hassle diary condition and the neutral condition. No other social outcomes were significant.

Finally, Lambert et al. (2010) investigated the impact of a gratitude intervention on communal strength, the sense of responsibility the participant feels for their partner's welfare. The study used a novel intervention and asked participants to increase the frequency that they expressed this to their partner. The results indicated that this intervention yielded significantly higher increases in communal strength compared to paying attention to grateful events or sharing positive events with a partner. No information was reported about the comparison between paying attention to grateful events and the control condition. Communal strength was the only outcome measure

used, which limits the understanding of potential pathways that lead to increased communal strength.

Other Outcomes Measures

Physical well-being was a variable that was investigated in a number of studies. Emmons and McCullough (2003) found the weekly diary intervention was effective in decreasing physical symptoms compared to both control conditions. However, this was not replicated in a daily diary intervention and Martinez-Marti et al. (2010) did not find a significant result with a daily diary intervention. Emmons and McCullough (2003) found that within the clinical population there was only a significant impact on sleep quality. The authors argued that a two-week daily intervention might not be sufficient time to improve physical well-being (Emmons and McCullough, 2003). Digdon & Kobie (2011) found that a daily gratitude diary made no significant influence on sleep quality compared to an imagery task and constructive worry condition. The lack of neutral control condition was a limitation of the study; furthermore, the study had limited power as there were only 44 participants across three conditions. Kaplan et al. (2008) found that a two-week, work related gratitude diary had no impact on number of absences due to illness at post-intervention and a four-week follow up. This study also had the limitation of only comparing the gratitude intervention with an alternative treatment intervention, and also used a short diary intervention, which could have limited the impact on physical well-being.

Watkins et al. (2008) conducted a novel intervention that aimed to bring closure to memories of unpleasant events through grateful reflection of the memory. This intervention lasted for ten days and was compared to writing about an open memory or writing about plans for tomorrow. The grateful processing condition elicited a significant impact on intrusiveness of the memory and the stressful impact of the memory. At a one-week follow up, the result of the intrusiveness of the memory remained significant. Furthermore, measures relating to memory closure and emotional impact of the memory also became statistically significant. It was hypothesized that this result might indicate that grateful people tend to be happier due to grateful processing of unpleasant memories, which reduces their negative impact (Watkins et al., 2008).

Two large-scale, internet based studies have indicated that the effectiveness of a daily gratitude diary is comparable to commonly used CBT techniques that aim to

reduce body dissatisfaction (Geraghty et al., 2010b) and worry (Geraghty, Wood, Hyland, 2010a) and significantly more effective than a waitlist control. Both interventions yielded large effect sizes in the reduction of body dissatisfaction (gratitude intervention: d =1.8, CBT intervention: d =1.2) (Geraghty et al., 2010a) and worry (gratitude intervention: d =.62, CBT intervention: d =.74). An intention-to-treat analysis was conducted to reduce bias of the participants that dropped out, which demonstrated the same significant results. An important finding was that participants were significantly more likely to complete the gratitude intervention compared to the CBT intervention.

Two studies have used observer ratings of well-being in addition to self-rated measures (Emmons & McCullough, 2003; Martinez-Marti et al., 2011). These measures were only taken post intervention. Emmons and McCullough (2003) used observer ratings for the participants with neuromuscular disease compared with a passive control and found a trend towards a significant increase in positive affect, a significant increase in life satisfaction but no impact on negative affect. Martinez-Marti et al. (2011) found an increase in observer ratings of well-being compared to the hassle condition. Observer ratings of gratitude and sensitivity to others were not significant.

Two studies looked at the impact of gratitude intervention related to outcomes linked to academic work and paid employment. Ouweneel et al. (2014) examined the impact of a gratitude diary that involved university student participants reflecting on experiences of gratitude towards different periods of their academic career (from primary school to university). The intervention was effective in increasing positive affect relative to an event diary, but no impact on academic engagement was found. Limitations of this study include a small sample size (N = 50), which decreased the power to detect a significant effect. The instructions for the diary changed each day, which also could have had an impact on the results. A replication of this study investigating the type of diary instruction would be valuable. Flinchbaugh et al. (2011) found that a gratitude diary and a gratitude diary combined with a stress management intervention, had a significant impact on levels of meaningfulness to academic study compared to a passive control. The stress management intervention did not have a significant impact on any outcome measures. The combined intervention also significantly influenced academic engagement, which was not found for the gratitude diary condition. Caution is needed in interpreting these results, as participants were not

randomly allocated to a condition. Allocation was at the class level and the lecturers timetabling and style of teaching influenced this allocation (Flinchbaugh et al., 2011).

Efficacy of Gratitude Interventions with Children

The efficacy of gratitude interventions with children is still in its infancy, as there have only been four published studies that have examined the impact of gratitude interventions with this age group.

Three studies used variations of a gratitude diary. Froh, Hempsted, Sefick, & Emmons (2008) used a diary intervention with children aged 11-13, based on the methodology of Emmons and McCullough (2003); Owens and Patterson (2013) adapted this intervention for a lower age group (5-11) and asked children to draw a picture of things that they were grateful for and describe this to an adult. Finally, Long and Davis (2011) asked participants to *"list three things that went well for you and what they meant for you"* (Long & Davis, 2013 .p 12). The authors noted that they had based these instructions on those used by Seligman et al. (2005). As mentioned above, the limitation of this specific instruction is that it has not been validated as an intervention to increase gratitude. Furthermore, Long and Davis (2013) did not measure levels of gratitude as a manipulation check. Froh, Kashdan, Ozimkowski and Miller (2009) used a gratitude visit intervention with participants over a wide age range (8-19 years old) and this represents the only behavioural intervention with children.

Findings from Froh et al. (2008) indicate that a grateful diary was successful in eliciting an increase in gratitude and optimism; however, this was only significant in relation to a hassle diary. Increases in school satisfaction were significant in relation to both a hassle diary and an event diary; moreover, this was maintained at a three-week follow up. Froh et al. (2008) note that this increase in school satisfaction was present despite participants not being instructed to write about their school experiences. It was also acknowledged that a lack of coded analysis of the diary entries to explore this further, was a limitation of this study (Froh et al., 2008). In addition, this significant measure was a single item within a published questionnaire about general life satisfaction and the overall measure was insignificant.

Owens & Patterson (2013) found no significant impact of measures relating to life satisfaction, positive and negative affect or self-esteem in comparison to an event diary or an optimism diary. Measurements of gratitude were not included as a manipulation

check of the intervention. However, a content analysis was conducted to establish themes of the things that participants were grateful for; the most frequently occurring gratitude categories were activities, people and pet/animals. There were no significant differences between the content of drawings, gender or age. The authors argue that although the gratitude intervention had no impact on the outcome measures used, this was not due to the fact that the participants were too young to understand the concept of gratitude. Conversely they argue that the pictures and verbal explanations of the participants suggest that children as young as five are cognitively mature enough to understand and can express gratitude (Owens & Patterson, 2013). The authors also reflected that the wording of the task instructions could have contributed to the non-significant outcome, as it may have encouraged the children to focus on immediate and novel experiences rather than general experiences or on-going relationships. The study used a quasi-experimental design, which meant that different day-care centres were allocated a particular intervention. Other limitations included a small sample size and a variation in how many diary entries were completed among different day care centres, which varied from 4 to 6 sessions. In addition, a relatively high number of participants did not complete the intervention or were excluded due to an insufficient number of diary entries (a total of 18 participants were excluded from an initial total of 62 participants).

Long and Davis (2011) compared a gratitude diary to an optimism diary and an event diary. They found that there were significant main effects of hope and positive affect, but no significant differences between conditions. However, as mentioned above it could be argued that the instructions given to the participants may not have increased gratitude. The study used a clinical population of young offenders living in a residential home away from their families. It could be argued that this influenced the degree to which the participants were able to independently think of positive events.

Froh, Kashdan et al. (2009) found that a gratitude letter completed over five sessions combined with a visit to the recipient was not effective in eliciting changes in positive and negative affect compared to an event diary. The age of participants was not related to any of the outcome measures. A major limitation of this study is that it was unclear whether all of the participants had carried out their gratitude visit. Although 100% of the participants reported they had conducted their visit, the majority of parents did not respond to a letter asking them to confirm this. Furthermore, when the

participants were asked about this, it was in a group setting, which could have influenced their responses. Additionally, the participants may have been aware that they were in two separate conditions, as participants in the gratitude condition had a debriefing about the gratitude visit in a corner of the classroom, with the participants in the control condition in the same room. This debriefing could have also influenced the findings, as it occurred immediately before the post intervention measurements.

Froh, Kashdan et al. (2009) found that the level of baseline positive affect significantly moderated the impact of the intervention, with only participants low in positive affect benefiting from the intervention. This moderating variable had a significant impact on gratitude immediately post intervention, a trend towards significance of positive affect at a one month follow up and a significant impact on positive affect at a two month follow up. It is not clear whether participants continued with the intervention after the intervention or whether another variable impacted on this increase over time.

The outcomes of the published literature with children as participants has been mixed, and it is difficult to make conclusions as to whether gratitude interventions are effective for younger age groups. There are several possible explanations for this. Firstly, each study uses a different variation of gratitude intervention, using different instructions and length of intervention. This makes comparison difficult and also means that the interventions have not been subjected to replication. Secondly, there are a number of major methodological limitations, such as full randomisation of condition and small sample size and efficacy of task instructions to elicit gratitude.

The limited evidence about the age in which children can understand the concept of gratitude, further adds to the difficulties in establishing the efficacy of gratitude interventions with children. In addition, none of the studies included in this review employed any measures that could examine whether hypothesised developmental prerequisites for understanding gratitude influenced the effectiveness of the intervention. For example, the current research on the developmental trajectory of gratitude suggests that understanding and attributing positive benefits to others is a fundamental prerequisite of gratitude (Nelson et al., 2013). Therefore, it would be important to assess how children were attributing positive events they had listed in their diary and whether the presence of empathy or benefit appraisal influenced outcomes.

Who Benefits Most From A Gratitude Intervention?

Many of the studies, involving adults, used undergraduate student participants, with only 11 studies using non-student, community based samples. In addition, many of the studies used populations with over 70% female participants. Replication of these studies with non-student populations may be important, as meta-reviews suggest that the findings of psychological research using student participants may not generalise to the general population (Henrich, Heine, & Norenzayan, 2010; Peterson, 2001).

Several studies have investigated the impact of individual differences between participants to establish whether moderating variables impact on the efficacy of the gratitude intervention. The outcomes of these studies have been mixed and it is unclear what theoretical mechanisms motivated the researchers' hypotheses about why particular character traits should influence the effectiveness of the intervention. As previously highlighted, Froh et al. (2009) found no significant impact of the gratitude intervention until baseline levels of positive affect were taken into account. The study found that participants low in positive affect significantly benefited from the gratitude intervention, whereas participants high in positive affect did not (Froh, Kashdan et al., 2009). Rash et al. (2011) found that levels of positive and negative affect were not significant moderators of a gratitude diary intervention. However, trait gratitude was found to be a significant moderator for one outcome variable, which suggested that participants low in trait gratitude demonstrated greater gains in life satisfaction following the intervention. Toepfer et al. (2011) also investigated the impact of trait gratitude as a moderator of intervention effectiveness, but found that it did not have an impact on happiness, depression or self-esteem outcome measures.

Studies have evaluated whether personality traits could influence the effectiveness of gratitude interventions. Sergeant and Mongrain (2011) found that participants high in self-critical trait (a subscale of a depression measure) were more responsive to a gratitude diary intervention and demonstrated larger gains in scores of happiness and physical symptoms. No impact was found on measures of depression or gratitude. Senf & Liau (2013) found extraversion and openness traits were significant moderators of a gratitude visit intervention. The intervention had a greater impact on levels of happiness for participants higher in extraversion and openness. Extraversion was also found to influence outcomes on levels of depression, with participants higher in extraversion demonstrating greater decreases in depression both at post-intervention and a one month

follow up. Longitudinal research has indicated that two of these moderating variables have differential impacts on levels of happiness and depression. Self-critical personality traits have been found to be a predictor of depression (Mongrain & Leather, 2006), whereas extraversion is associated with happiness (e.g. Furnham & Christoforou, 2010). A limitation of these studies is that it is unclear what other psychological mechanisms mediated the observed changes in well-being measures, in order to make conclusions about why different personality types exhibited differential impacts on different types of gratitude interventions. However, there were also differences in the population sample and the recruitment strategy used for each study, which could be additional variables that influence the impact of individual differences. More research is needed to explore this further. A limitation of Senf & Liau (2011) was a scheduling conflict with the data collection, which resulted in participants having a week of examinations between the end of the intervention and the post-data collection. The authors acknowledged that this could have been a stressful period and influenced the results, as the control group increased in depressive symptoms and decreased in happiness (Senf & Liau, 2011). It could be argued that this is comparable to the use of hassle diaries, which may exaggerate the differences between conditions. However, the authors posit that this represents the potential for gratitude interventions having a protective factor over periods of stress, particularly for participants high in extraversion (Senf & Liau. 2011).

Two studies have indicated that cultural differences can influence the effectiveness of gratitude letter interventions. Boehm et al. (2011) found that American participants who had identified themselves as Anglo-American demonstrated significantly larger increases in life satisfaction compared to participants who identified themselves as Asian-American. The authors conclude that this result is consistent with differences in how the two cultures value self-improvement and personal agency to improve well-being (Boehm et al., 2011). Layous et al. (2013) found cultural differences in how participants from South Korea and the USA responded to a gratitude letter intervention. Participants from the USA demonstrated significant increases in well-being, whereas participants from South Korea did not benefit from the gratitude intervention. It was also found that there were no cultural differences for the control condition or a comparison positive psychology intervention. It was hypothesised that the results were due to cultural differences in degree of dialectical thoughts and emotions. Layous et al. predicted that participants from South Korea were more likely

to experience conflicting emotions when experiencing feelings of gratitude (such as guilt and indebtedness), and therefore the intervention was not effective in improving well-being. However, a criticism of Layous et al. is that they aggregated scores of life satisfaction and levels of emotion, which makes it difficult to further examine differences in outcomes measures between scores. In addition, the methodology of both studies would be strengthened if variables associated with these hypotheses were measured, e.g. levels of gratitude and indebtedness and expectation of intervention effectiveness. These studies highlight the potential for gratitude interventions to be adapted to take into account cultural differences as well as individual differences.

Under What Circumstances are Gratitude Interventions Most Effective?

From the review of the literature, the wide variation in types of gratitude induction and methodology employed makes it difficult to establish the optimum contexts in which gratitude interventions can improve well-being. Further research is needed to systematically investigate the impact of length, frequency and type of intervention and to increase understanding of the contexts in which gratitude interventions can be effective. Two studies have examined the impact of intervention frequency on outcome variables. However, limitations in methodology employed limit the generalisations that can be made. Ouweneel et al. (2014) investigated the impact of writing gratitude letters over time and found that there was a cumulative effect of well-being, which was not significant until the fourth and fifth day of the intervention. However, a limitation is that the participants were asked to write about different topics each day, starting with events at primary school to the present day, which could have impacted on the outcomes at the start of the study. Emmons and McCullough (2003) compared outcomes from a weekly and a daily gratitude diary intervention. It was found that the increase in levels gratitude in the daily intervention yielded higher effect sizes than the weekly intervention, which was taken as evidence that a daily intervention was more effective. However, several limitations influenced this result. Firstly, many outcome variables were not used in both studies, which limits the ability for comparison. The significant increase in gratitude was only found in the hassle diary, which is argued to be an ineffective comparison group (Wood et al., 2010). Finally, significant increases were observed in physical well-being in the weekly intervention, but this was not replicated in the daily intervention.

The wide variation in methodology also makes it difficult to assess the longevity of the intervention. A limitation of the published literature is that follow up data was

only taken in 14 out of 31 studies, and this ranged from one-week post intervention to six months post intervention. Measures were found to be significant at follow up in nine of these studies and this was across a range of intervention types and follow up duration. In addition, some of the outcome measures were significant only at follow-up and not at post intervention (Froh et al., 2008; Froh et al. 2009; Gander et al., 2012; Peters et al., 2013; Watkins et al., 2008). It has been suggested that if the influence of the intervention continues to make an impact after the study has finished, the outcomes of the intervention may have more long-term benefits than short-term gains (Watkins et al., 2008). If this is the case, it is a major limitation of those studies that did not collect follow up data.

From the review of the literature, it is apparent that gratitude interventions can be divided into behavioural and cognitive interventions. The studies using gratitude diaries can be regarded as cognitive interventions. Lambert et al. (2013) have explored the impact of extending the intervention to include a behavioural and social component. It was found that sharing the gratitude diary with a partner was more effective than a gratitude diary alone, a social control and a cognitive control. No follow up data was taken to establish the longevity of the intervention. In addition, no social measures were taken to highlight whether the intervention influenced strength of relationships or pro-social behaviour. This study highlights the potential for future studies incorporating a social element to the gratitude diary.

The literature using gratitude letters has utilised a behavioural intervention (gratitude visit) and a cognitive intervention (gratitude letter). There has been no direct and systematic investigation to compare the differences in outcomes between these two types of intervention. The differences in length of intervention, recruitment strategy and age of participants between behavioural and cognitive interventions make it difficult to generalise about which type of intervention is more effective in improving well-being. Studies using gratitude visits have found significant and long-term outcomes (e.g. Gander et al., 2012; Seligman et al., 2003; Senf & Liau, 2013). This was not replicated in a study using children (Froh, Kashdan et al., 2009). It has been hypothesised that the gratitude visit may have limited impact due to the potential anxiety participants may experience about how the letter would be received (Watkins et al., 2003). This represents the potential to explore individual differences in different methodologies. For example, Senf & Liau (2013) found that only participants high in extraversion

personality trait benefited from a gratitude visit. Toepfer and Walker (2009) and Toepfer et al. (2011) used a gratitude letter intervention that was posted to recipients. Toepfer and Walker (2009) hypothesised that whether the participant had heard from recipients was a confound in the experiment and this was controlled for in Toepfer et al. (2011). However, the impact of social contact with the recipient is an important factor that may influence the outcomes observed. Toepfer et al. (2010) acknowledge that future studies should address social contact and interpersonal factors between the participant and the recipient of the letter. The impact of whether gratitude letters include social contact with the recipient is overlooked by a number of studies, as no information was provided on this variable (Boehm et al., 2011; Layous et al., 2013; Lyubomirsky et al., 2011).

Meta-reviews of positive psychology have indicated the impact of participant motivation to increase well-being and expectations of the interventions on outcome measures (Bolier et al., 2013; Kaczmarek et al., 2013; Sin & Lyubomirsky, 2006). Evidence from the literature included in the currant review suggests that gratitude interventions are more effective for participants who have chosen to be part of an intervention advertised to improve well-being. Lyubomirsky et al. (2011) found that participants who self-selected to a study advertised to improve well-being demonstrated greater outcomes compared to participants who had responded to an advert about a cognitive study. The effect of recruitment strategy was not found in the control condition, despite participants in all conditions and selection methods being informed that their particular intervention had been shown to increase well-being (Lyubomirsky et al., 2011). This led the authors to conclude that these results were not simply due to a placebo effect, relating to participants expectation about intervention. Rather, it was a combination of an effective intervention and participant motivation to increase well-being (Lyubomirsky et al., 2011). A limitation is that the results of the gratitude intervention were combined with an optimism intervention to produce one treatment condition. In addition, the outcome measures were aggregated to produce one well-being measure. This limits the conclusions that can be made about gratitude intervention and particular components of well-being.

Seligman et al. (2003) and Gander et al. (2013) were Internet based studies that were advertised as interventions to increase well-being (Seligman et al., 2003) and character strengths (Gander et al., 2013), and attribute this advertising as a contributing

factor to the high outcomes that were observed. Seligman et al. (2003) found that across the six interventions used in the study, voluntarily continuing with the intervention after the end of the study had a significant impact on happiness and depression scores at one week, three months and six month follow up. Gander et al. (2012) replicated the Seligman et al. (2005) study in a Swiss population and also found that continued practice yielded higher levels of happiness, which approached significance at one month follow up, and was significant at three month follow up. However, there was no significance on depression scores. These results were combined across all interventions and neither study reported specific information about individual interventions. Sheldon and Lyubomirsky (2006a) also examined the impact of continuing the intervention on outcome measures. It was found that levels of positive and negative affect were not influenced by whether participants had continued the gratitude intervention two weeks post intervention. However, when levels of self-concordant motivation were included as a moderator, continuing the intervention made a significant impact on negative emotions, for those participants high in self-concordant motivation.

These studies highlight the potential contribution of the recruitment strategy. More research is needed to explore whether these conclusions can be replicated for gratitude interventions, as well as across treatment conditions. Future studies would also benefit from establishing how universal interventions are communicated to participants, particularly for interventions involving children. It could also lead to adaptation of gratitude interventions to make them more effective for participants who did not select into an intervention to improve well-being. Despite reviews of positive psychology interventions highlighting the importance of self-selection in the effectiveness of the intervention (e.g. Kaczmarek et al., 2013; Sin & Lyubomirsky, 2009), nineteen of the adult studies did not provide any information on how the study was advertised. Many of the studies involving undergraduates seemed to be a course requirement or participants gained additional course credit, which could have impacted on their motivation to engage with the intervention. For studies involving children, all of the interventions were universal interventions that were given to all children within a particular cohort, if parental consent was obtained.

Lyubomirsky et al. (2011) used objective measures of participant's effort into the exercise (rated by two coders blind to hypotheses). They found that greater effort was significantly related to gains in well-being at post-interventions and at a six-month

follow-up for the treatment condition only, which suggests that effort is only important when the intervention is effective in improving well-being (Lyubomirsky et al., 2011). Layous et al. (2013) looked at participant-rated effort and found that it was a significant moderator of intervention effectiveness. This effect varied across culture, for American participants, greater effort yielded increases in well-being. In contrast, for participants in South Korea, there was no significant impact of effort. The authors argue that this difference could be rooted in differences between cultures, in whether they perceive that happiness can be changed by will or effort rather than due to being fortunate or blessed (Layous et al. 2013). A limitation of this study was that nearly 20% of participants did not report level of effort. The conclusions of these studies could have been strengthened by additional measures, such as internal locus of control that the participants had to improve their well-being or the expectancy of intervention effectiveness.

Finally, Geraghty et al. (2010a) and Geraghty et al. (2010b) found that participants taking part in the gratitude diary intervention were significantly more likely to complete the intervention compared to comparison interventions based on CBT techniques. Variables such as optimism, expectancy of the intervention and locus of control were not found to influence this relationship (Geraghty et al., 2010a; Geraghty et al., 2010b). However, levels of hope were found to significantly predict attrition in Geraghty et al. (2010b), although there was no significant difference between the CBT and gratitude interventions. This result is consistent with research that has found that participants who had higher preference for a positive psychology intervention were more likely to complete the exercise (Schuelle, 2010).

Conclusion

Gratitude as a psychological intervention to promote well-being is a new and emerging area of psychology. The published studies on this topic have elicited a wide variety of outcomes related to well-being. The limitations of the published literature make it difficult to conclude whether gratitude interventions are effective in increasing well-being in adults and children. Firstly, the methodology used varies in terms of type of gratitude intervention employed and the length and frequency that participants were asked to engage in the intervention. In addition, very few studies conducted follow-up measures to establish the longevity of the intervention. Another major limitation is that few studies employed a manipulation check to establish whether the intervention was

successful in increasing levels of gratitude, this limits the conclusion that gratitude was the mechanism that influenced the changes in the outcome measures. In addition, many studies have found that a gratitude intervention is only effective when a hassle diary is used as a control condition. Collectively, these factors make it difficult to identify specific factors of the intervention and which specific mechanisms lead to increase well-being.

Emerging evidence has suggested factors such as recruitment strategy, participant motivation, effort and preference for intervention have been shown to have an impact on intervention effectiveness. However, the wide variation between studies makes it difficult to draw conclusions about the optimum contexts of the intervention and which characteristics of participants lead to the greatest increases in well-being. The published literature on using gratitude interventions with children is limited. Currently, there is little empirical evidence that the gains found in adult populations can be replicated with children and adolescents. Replication with improved methodology is needed to further understand the impact of inducing gratitude with a younger age group.

This review highlights many directions for future research. Future studies need to consider the importance of using randomly controlled designs with a control group that is identical in all aspects to the intervention except increasing levels of gratitude. This will allow investigators to identify the effective component of the gratitude intervention that results in positive change in well-being. Systematic investigation of the impact of length and frequency of the gratitude intervention will allow conclusions to be drawn about what is the optimum methodology to elicit increases in gratitude, which can be maintained long-term. Finally, future research should consider the impact of individual differences and how they influence the effectiveness of the intervention. These investigations should use theoretical models to predict why the intervention is more effective for particular character traits and, furthermore, examine the psychological mechanisms that lead to change. This could be particularly useful when evaluating the use of gratitude interventions with children, as it would aid understanding of how the development of cognitive processes contributes to effectiveness of gratitude interventions with children.

Chapter 2: Empirical Paper

The effectiveness of a gratitude diary intervention on primary school children's sense of school belonging

Introduction

The construct of gratitude is gaining wide attention in the field of positive psychology, which is an emerging area of research that aims to gain greater understanding of how positive emotions and character traits can contribute to positive well-being (Seligman Steen, Park & Peterson, 2005). Advocates of positive psychology assert that interventions that prompt people to engage in simple intentional activities can be more effective in promoting well-being compared to striving to change their circumstances (Sheldon & Lyubomirsky, 2006b). A growing area of interest within the field of positive psychology is the potential for organisations like schools to promote the well-being and resilience of young people, as well as aid effective learning and creative thinking to increase school related outcomes (Bird & Markle, 2012; Seligman, Ernst, Gillham, Reivich & Linkins, 2009). The current study seeks to investigate the impact of a school-based gratitude intervention to increase levels of psychological belonging to school.

Gratitude is a construct that has a various definitions within the psychological literature. It has been conceptualised as a positive emotion, a moral virtue, a state that is induced in response to aid and an orientation towards appreciating the positives in life (Gulliford, et al., 2013; Emmons & McCullough, 2003; McCullough, et al., 2001; Wood et al., 2010). Wood et al. (2010) highlight that the variety of definitions fail to encapsulate the variety of sources of gratitude that are reported by participants and that discrepancies in the operational definitions of gratitude influence subsequent hypotheses in how gratitude is related to well-being. The authors conducted a theoretical review of the construct of gratitude and related scales that attempt to measure it and proposed the following working definition "gratitude arises following help from others, but also a habitual focusing on and appreciating the positive aspects of life*"* (Wood et al., 2010 p. 80).

The empirical literature concerning gratitude has mainly involved adults and has used cross-sectional and longitudinal designs to examine how gratitude is associated with a wide variety of factors related to well-being; for example, positive emotions and optimism (Hill & Allemand, 2011; McCullough, et al., 2002), positive memory bias (Watkins, et al., 2004), positive reframing (Lambert et al., 2012) and life satisfaction (Park, et al., 2004; Wood, et al., 2008). Trait gratitude has been shown to uniquely

predict levels of well-being, above the effect of thirty other personality traits (Wood, et al., 2009). Gratitude has also been negatively linked to hopelessness and depression (Kleiman, et al., 2013), stress (Wood, et al., 2008), reducing burnout (Chan, 2010) and envy and materialism (Lambert, et al., 2009). There are many hypotheses about the psychological mechanisms that influence the relationship between gratitude and well-being. Gratitude is a trait that is hypothesised to foster a positive bias towards interpreting help as more beneficial and peoples' behaviour as more altruistic (Wood et al., 2010). Gratitude is also thought to promote resilience as it provides an adaptive coping mechanism for dealing with negative life events (Lambert et al., 2012; Watkins, et al., 2008). These hypotheses are in line with the broaden-and-build theory (Fredrickson, 2001), which suggests that the evolutionary mechanism of positive emotions is to broaden people's thought-action repertoire and build personal resources. In line with this theory, gratitude is thought to be linked to well-being because it promotes creative thinking, positive emotions and positive reflection (Emmons & McCullough, 2003; Fredrickson, 2004). Research has also linked gratitude to well-being through the building of social resources such as increasing feelings of connectedness (Froh, et al., 2010), pro-social emotions such as forgiveness, compassion, trust and empathy (Dunn & Schweitzer, 2005; Hill & Allemand, 2011; McCullough, et al., 2001) and increasing perception of social support (Wood et al., 2008). In addition, gratitude has been found to be a moral reinforcer, which motivates people to carry out pro-social behaviour (McCullough et al., 2001).

The psychological literature has started to examine the causal effect of gratitude by examining the impact of interventions that increase gratitude in comparison to a control group or alternative intervention. As detailed in the literature review, there have been 31 published studies that have empirically investigated the impact of gratitude interventions. The majority of these studies have used adult participants, with only four published studies involving children and adolescents. The majority of these studies are based on two seminal papers that investigated the impact of gratitude interventions. Firstly, Emmons and McCullough (2003) used gratitude diaries and asked participants to regularly reflect on things that they were grateful for, on a weekly or a daily basis. Secondly, Seligman et al. (2005) investigated the impact of a gratitude visit and asked participants to write and deliver a letter of gratitude to somebody from their past that they felt gratitude towards.

The studies using adults have found that gratitude interventions have the potential to increase levels of positive emotions (Emmons & McCullough, 2003; Martinez-Marti et al., 2011; Ouweneel et al., 2014) and happiness (Gander et al., 2012; Lambert et al., 2013; Sergeant & Mongrain, 2011; Seligman et al., 2005). They have demonstrated some efficacy to reduce levels of negative affect (Chan, 2013; Emmons & McCullough, 2003) and depression (Gander et al., 2012; Seligman et al., 2005). Studies have also found that gratitude interventions can increase participants' levels of life satisfaction (Chan, 2013; Emmons & McCullough, 2003; Lambert et al., 2013). Despite gratitude having a strong association with the building of social resources, only four studies have investigated the impact of a gratitude intervention on pro-social behaviours (Emmons & McCullough, 2003; Froh et al. 2008; Martinez-Marti et al., 2011) and feelings of communal strength towards a partner (Lambert et al., 2011). The current study aims to extend this research by investigating the impact of a gratitude diary intervention to increase feelings of belonging, which is a psychological need to form and maintain social bonds (Baumeister & Leary, 1995).

As highlighted in the literature review, published literature investigating the impact of gratitude interventions has many limitations, which makes it difficult to generalise about the effectiveness of inducing gratitude to promote well-being. For example, many of the gains were only in relation to a 'hassle diary', first used in Emmons and McCullough (2003) (e.g. Chan, 2013; Emmons & McCullough, 2003; Froh et al. 2008; Martinez-Marti et al., 2011). It has been argued that the hassle diary is not an effective control group as it is designed to induce negative affect, and therefore it exaggerates the differences between groups (Froh, Kashdan et al., 2009; Wood et al., 2010). Another limitation in the literature is that many studies did not find any significant impact on components of well-being. The variation in type, length and frequency of intervention makes it difficult to draw conclusions about the contexts in which interventions are more effective than others. In addition, the literature has overlooked the importance of factors such as motivation and participants self-selecting to an intervention aimed to improve well-being, so direct comparison between interventions is problematic. Finally, a manipulation check to ensure that the intervention is effective in increasing gratitude was only administered in eight studies, which limits conclusions as to whether felt gratitude was the mechanism that mediated the observed increase in outcome measures.

Gratitude Interventions with Children and Adolescents

The outcomes of gratitude interventions with children and adolescents have been mixed and suffer from many of the limitations observed in the adult literature. For example, Froh et al. (2008) investigated a gratitude diary intervention with young adolescents aged 11-13 years old. The gratitude diary was effective in eliciting an increase in gratitude and optimism, but only in relation to a hassle diary. However, a noteworthy outcome in Froh et al. was that participants in the gratitude diary condition reported a significant increase in school satisfaction compared to the hassle and event diary conditions. These significant effects were maintained at a three-week follow up. This notable increase in school satisfaction was present despite participants not being asked specifically to write about their school experiences. The authors acknowledged that the lack of a coded analysis of the diary entries to further investigate this effect, was a limitation of the study (Froh et al., 2008). Owens and Patterson (2013) also used a gratitude diary intervention, with children aged 5-11 years old. One strength of the study was that the intervention was adapted to reflect the academic skills of the participants and involved drawing pictures of things they were grateful for instead of writing. The study found that the intervention was not effective in eliciting increases in life satisfaction, positive and negative affect or self-esteem compared to a neutral diary or an optimism diary. The authors suggest that the instructions of the gratitude task may have impacted on the effectiveness of the intervention, as it could have led them to focus on immediate or novel experiences, rather than on continuing general experiences or relationships (Owens & Patterson, 2013). The contents of the diaries were analysed in this study, however this hypothesis were not directly investigated. Another limitation of this study was that levels of gratitude were not measured as a manipulation check of the intervention. Long and Davis (2001) carried out a diary intervention with adolescents aged 13-17 and found that the intervention was not effective in yielding increases in satisfaction, hope or positive affect compared to an event diary or an optimism diary. This study also did not employ a manipulation check, which was relevant as the authors used a gratitude diary instruction that has not been previously validated to increase levels of gratitude.

A limitation for all of the studies using gratitude diaries with children is that the majority employed a quasi-experimental design and did not randomly allocate individual participants to an intervention. Long and Davies (2011), Froh et al. (2008)

and Owens and Patterson (2013) allocated conditions to whole classes, which represents a potential confound, as it does not control for systematic differences between classes. Furthermore, none of the studies employed analysis to investigate whether there were any differences in the impact of the intervention between classes. The current study will extend the evidence base by being the first study to use a random allocation of condition for child-aged participants using a gratitude diary intervention.

Froh, Kashdan et al. (2009) is the only study using children to investigate the effectiveness of a gratitude visit, using participants aged 8-19 years old. A strength of the study was that participants were randomly allocated to conditions. However, the study had limited power due to the small sample size ($N = 89$) (Froh, Kashdan et al., 2009). It was found that the gratitude intervention was not effective in eliciting gains in gratitude, positive affect or decreasing negative affect until baseline positive affect was included as a moderating variable. The moderation analysis suggested that participants lower in positive affect were more likely to benefit from the intervention and yield increases in gratitude at post-test and increase levels of positive affect at a one month follow up. A major limitation of the study was the treatment integrity, as it was not clear whether all participants had carried out the gratitude visit (Froh, Kashdan et al., 2009).

The current study builds on the work of Diebel, Woodcock, Brignell and Cooper (2014), a paper that has been submitted for publication. Diebel et al. used a novel school-based gratitude diary intervention with participants aged 8-11 years old. In this intervention participants were instructed to write a gratitude diary specifically related to school. The study hypothesised that the effect of reflecting on and experiencing gratitude about positive events in school could be a mechanism that enhanced participants' level of a sense of belonging towards school. School belonging is a construct that involves a sense of being accepted and an included member of the school community, a positive perception of teacher-pupil and peer relationships and commitment to school and belief that school in important (Goodenow, 1993; Prince & Hadwin, 2012; Osterman, 2000). Diebel et al. found that the gratitude intervention produced a significant increase in school belonging compared to a neutral event diary. A trend of an increase in gratitude was also observed. A limitation of the study was that the participants in the control condition showed significantly decreased levels of belonging post-intervention, which could have exaggerated the effect of the gratitude

intervention. In addition, no other outcome measures were measured, which limits understanding of the mechanisms that lead to increases in felt belonging.

A difficulty of using gratitude interventions with children is the lack of a clear evidence base to suggest the developmental trajectory of gratitude and establish at what age the concept of gratitude can be understood. The limited empirical evidence base suggests that the impact of gratitude interventions with children does not differ across age groups (Diebel et al. 2014; Froh et al. 2009; Owens et al. 2013). Researchers assert that understanding and benefitting from the concept of gratitude involves pre-requisites of attributing an external source for a positive outcome, empathy and theory of mind (Emmons & McCullough, 2003; Froh, Miller & Syder, 2007; Froh et al., 2011a; McCullough et al., 2001; Owens & Patterson, 2013). Empirical evidence has suggested that the understanding of gratitude develops alongside these cognitive mechanisms. For example, in a cross-sectional study Gordon et al. (2004) found that younger children (aged 4-8) tended to report being grateful for material items, whereas older children (aged 9-12) were more likely to express gratitude about a variety of events. The difference in types of events was attributed to the cognitive and social development of the participants. Nelson et al. (2013) found that participant levels of emotional awareness at age three significantly predicted children's understanding of gratitude at age five. It is argued that in order to generate further research, more studies are needed to validate psychological scales that measure gratitude in children (Froh et al., 2011a).

Within the field of positive psychology, there is increasing evidence that individual differences can contribute to the effectiveness of interventions (Sin & Lyubomirsky, 2009). The literature evaluating gratitude interventions has found that levels of participants' baseline positive affect (Froh, Kashdan et al., 2009), personality types (Sergeant & Mongrain, 2011; Senf & Liau 2013) and cultural differences influenced the effectiveness of a gratitude intervention (Boehm et al., 2011; Layous et al. 2013). The investigation of individual differences is in line with arguments from Hayes (2013), who asserts that simply evaluating the impact of interventions through establishing significant differences between the control and experimental conditions gives limited understanding of which factors lead to positive change. Hayes (2013) argues instead, that empirical investigations should aim to understand whether there are any boundaries that exist which suggest that individual differences or contextual factors could influence the strength or size of the effect of the intervention. In addition, he

argues that investigations should also focus attention on the underlying psychological processes that lead to positive change (Hayes, 2013). This type of approach is also reasoned to have important applied and clinical applications, as it can provide a framework for tailoring interventions to specific populations (Karazsia, Berlin, Armstrong, Janicke, & Darling, 2013). The current study aims to extend the empirical literature on gratitude interventions by investigating the effectiveness of a gratitude intervention, as well as the psychological mechanisms that lead to change and whether individual differences can influence this.

Research Questions and Hypotheses

The rationale of this study aims to extend the research that has found an association between gratitude and the building of social resources, such as feelings of connectedness (Froh et al., 2010), pro-social emotions such as forgiveness (McCullough, et al., 2001) and trust (Dunn & Schweitzer, 2005), perception of social support (Wood et al., 2008) and pro-social behaviour (Froh, Yurkewicz et al. 2009). The building of social resources is in line with the broaden-and-build theory, which theorises that gratitude is related to positive well-being through the building of social resources (Fredrickson, 2004). Despite this research, there has been limited evaluation of the potential of gratitude interventions to promote the building of social resources, in order to foster social well-being. The available evidence suggests that gratitude interventions have the potential to increase pro-social behaviours (Emmons & McCullough, 2003; Froh et al. 2008; Martinez-Marti et al., 2011) and feelings of communal strength towards a partner (Lambert et al., 2011). The current study will use a school-based intervention that induces participants' feelings of gratitude specifically related to school, and examine whether this can lead to an increased perception of psychological belonging towards school.

It is hypothesised that completing a gratitude diary will lead participants to positively and gratefully reflect on their school experiences, which would have a positive impact on their perceptions of staff-pupil relationships and peer relationships. Completing the diary could also lead to an increased awareness of pro-social and positive behaviour from staff and peers, the perception of being supported by others, the strengthening of friendships with peers and an appreciation of positive behaviour from staff. This has the potential to produce an increase in school belonging, as it could enhance the child's positive appraisal of relationships with staff and peers and lead to a

greater sense of connectedness with others, together with an increased sense of being accepted and included at school. The gratitude diary could also elicit participants to positively reframe their school experiences, countering negative events in the school day, which could also lead to an increased sense of belonging, as it would increase positive emotions associated with the school day and increase their perceptions of how the action of others have contributed to positive events in school. This relates to the broaden-and-build theory, which states that the experience of positive emotions precludes that of negative emotions (Fredrickson, 2001).

A secondary aim of the current study is to extend the evidence base in how schools can promote pupils' sense of belonging to school. School belonging has been linked to a range of positive emotional, social and academic outcomes (see Chapman, Buckley, Sheehan & Shochet, 2013; Maddox & Prinz, 2003; Osterman, 2000 for an integrated review). However, there is a limited evidence base that evaluates how schools can promote pupils' school belonging (Chapman et al. 2013; O'Briena & Bowles, 2013; Osterman, 2000). Many of the programs reviewed in the literature involve widespread school-system cultural change, which can be complex and time-consuming (Chapman et al. 2013; Osterman, 2000) and involve staff training to develop teachers' classroom practices (Osterman, 2000). Emerging research suggests that brief pupil-focused interventions have the potential to increase school belonging. Walton and Cohen (2011) implemented an intervention that aimed to increase American college student's sense of belonging towards the college community. The intervention focused on reframing participant's negative views of marginalisation and social discomfort upon transition to college, as short-lived and shared by other students. The intervention provided participants with fictional narratives from previous students, who had initially experienced negative feelings upon transition to college, but had since felt an increased sense of belonging. Participants were then asked to write an essay, which asked them to reflect on these narratives and write how their experiences and feelings about college had changed since they had arrived. Researchers emphasised that this essay would be useful to new students starting, who may have similar experiences to them. The intervention was compared with two control conditions, which had similar procedures but focused on perceptions of physical environment of the college or social and political attitudes. The belonging intervention elicited significant increases in felt belonging towards the college community and association with its culture, decreased feelings of adversity and also produced increased academic outcomes. The study also found that

participants of ethnic minorities were more likely to benefit from the intervention, as these participants demonstrated greater positive outcomes over the three-year follow up period (Walton & Cohen, 2013). The current study will use a brief, pupil-focused intervention that aims to increase school belonging by asking pupils to complete a gratitude diary related to their school experiences. The main hypothesis is that inducing gratitude specific to school (compared to a control condition), will cause participants to positively and gratefully reflect about events and people in their school lives, and increase the level of psychological belonging that they feel towards school.

The current study will also extend the literature by examining the underlying processes that lead to positive changes in gratitude and belonging in terms of individual differences and whether the induction of felt gratitude is a mediating factor that leads to increases in psychological belonging. Firstly, it will investigate whether the gratitude intervention is more beneficial for participants who have higher levels of nostalgia proneness. Nostalgia proneness is a personality trait that describes propensity to think positively about the past (Routledge, Arndt, Sedikides, & Wildschut, 2008). Nostalgia is a sociable trait that has been found to counteract feelings of loneliness, strengthen perceptions of social support (Zhou, Sedikides, Wildschut, & Gao, 2008) and is positively associated with feelings of connectedness (Wildschut, Sedikides, Arndt, & Routledge, 2006). There has been no previous investigation of the link between nostalgia and gratitude. However, a study by Watkins et al. (2004) proposes that gratitude is associated with a positive memory bias, suggesting that positive memories are more accessible for grateful individuals. Watkins et al. used a cross sectional design and found that grateful individuals recalled significantly more positive memories when asked to think about both positive life events and negative life events, compared to less grateful individuals. This pattern of results was maintained after controlling for levels of depression. It is hypothesised that the gratitude induction could provide an impetus for participants higher in nostalgia proneness, to link positive reflections about their current circumstances with positive memories about school from the past, which would lead to a stronger effect on school belonging compared to participants who are low in nostalgia.

The study will also explore whether participants' level of emotional empathy impacts on the effectiveness of the diary intervention. This builds on the work of Nelson et al. (2013), who demonstrated that participants' level of emotional and mental-state knowledge of others was a developmental prerequisite for children's understanding of

gratitude. It is hypothesised that in line with gratitude as an other-orientated emotion that is dependent on skills of empathy (e.g. McCullough et al., 2001), the gratitude intervention will be more beneficial for participants with higher levels of emotional empathy.

Finally, the study will overcome limitations of previous literature and employ a manipulation check to establish whether the intervention is successful in increasing gratitude. It will also seek to explore whether changes in felt gratitude are responsible for changes in school belonging. A small number of studies have employed mediation analysis to explore whether changes in outcome measures can be attributed specifically to increases in felt gratitude. Emmons and McCullough (2003) found that gratitude completely mediated the increases observed in positive affect. However, this result was not replicated by Kaplan et al. (2013) or Martinez-Marti et al. (2010). The current study will go further than the current published literature and use a unified approach to moderation and mediation, as recommended by Hayes (2013) and Edward and Lambert (2005), with the aim of establishing a comprehensive understanding of how the intervention produces positive change in well-being, in the context of individual differences in nostalgia proneness and empathy.

Method

Participants

Participants were recruited from three primary schools in the south east of England. In total, seven classes ($N = 161$) were included in the study, six of these classes were year five pupils (aged 8-9) and one class was year six pupils (aged 9-10) ($M = 9.4$, $SD = 0.47$). The head teacher at each school agreed to an opt-out procedure. Parents of the pupils were given detailed information about the study and given the opportunity to opt out (Appendix E); fourteen parents took this option. Assent was gained from the pupils themselves and they were informed that they were free to drop out of the study at any point: six pupils chose to opt out of the study. In addition, after discussion with the class teachers, data from six participants were excluded from the analysis, as it was reported that due to their level of special educational need, the pupils were not able to write the diary entries without a significant level of adult support. Hence, the support from staff may have influenced what they wrote and felt about their experiences at school. The teachers also felt that these pupils may have had difficulty understanding the vocabulary used in the measurements. Finally, the data of eleven

participants were excluded due to missing data in the post-intervention or follow up. This resulted in a total sample of 124 pupils (60 girls and 64 boys). This was an efficient sample size to obtain a medium effect (Cohen, 1992) and carry out the moderation analysis (Preacher, Rucker & Hayes, 2007).

Design

All participants were randomly assigned to a gratitude diary or an event diary condition. Within each class, both interventions were completed at the same time, but participants were not made aware that there were two different conditions. The event diary and gratitude diary had identical front covers, but contained different instructions inside. In addition, although teachers were aware that there were two separate diary conditions, they were not informed about which students were assigned to each group. Measures were taken at baseline, post-intervention and at two week follow up.

Measures

At baseline participants completed scales measuring school belonging, school gratitude, nostalgia proneness and empathy. At post intervention and follow up, measures of gratitude, school gratitude and school belonging were repeated.

The Belonging Scale (Frederickson and Dunsmuir, 2009)

This 12-item scale measures the extent to which there is a sense of belonging to school. This particular scale was chosen because it has been validated on a British population for children as young as eight years old. The scale was adapted from the 18-item Psychological Sense of School Membership Scale (Goodenow, 1993) designed for American adolescents. The scale is a self-report questionnaire that consisted of seven positively worded items, for example "Most teachers at my school like me" and five negatively worded items that were reversed scored, for example "Sometimes I feel as if I shouldn't be at my school". The original scale used a three-point response scale: 'no, not true', 'not sure' and 'true'. This was adapted to a seven-point rating scale (*1= strongly disagree, 7=strongly agree*) to make it consistent with the other measures. The Belonging Scale has been reported to have high alpha reliability and consistency (Frederickson, Simmonds, Evans & Soulsby, 2007). In the current study, these items formed a reliable index at pre-test (α = .84, *M* =5.14, *SD* = 1.00), post-test (α = .84, M = 5.13, SD =1.19) and follow up (α = .86, M = 5.1, SD =1.17).

Gratitude to School Scale (Appendix F)

To enable the measurement of this construct, an adapted version of the GQ-6 (McCullough et al., 2002) was used. The GQ-6 is a six-item self-report scale of gratitude using a 7-point rating scale (*1 = strongly disagree, 7 = strongly agree*). The GQ-6 has demonstrated properties of convergent validity and reliability ($\alpha = 0.86$) and test/retest reliability (McCullough et al., 2002) when used with adults. It has also been validated with younger participants aged 10-19 (Froh, Fan et al., 2011) and was found to resemble similar properties of reliability and internal consistency ($\alpha = .88$ for participants aged 10-11 years old). The word 'school' was added to each question, to enable measurement of felt gratitude specifically towards school. Question six was considered to be potentially too abstract for participants for this age group. This is consistent with the findings from Froh, Fan et al. (2011), who removed this item from the analysis. In the current study this measure was simplified 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 about school". Subsequent analysis justified the inclusion of this item, as the factor loading for the item was high and removal did not improve reliability. Participants rated items on a seven-point rating scale (*1= strongly disagree, 7 = strongly agree*). Four items were positively worded, for example "I have so much in school to be thankful for" and two items were negatively worded and reversed scored, for example "When I think about school, I can't think of many things to be grateful for"**.** In the current study, these items formed an index with adequate reliability at pre-test ($\alpha = .62$, M =5.07, SD = 1.01), post-test ($\alpha = .69$, M = 5.15, SD =1.03) and follow up ($\alpha = .83$, M = 5.01, SD =1.23).

Southampton Nostalgia Scale for Children (SNS-C) (Appendix G).

The SNS is designed to measure nostalgia proneness, a personality trait that describes propensity to think positively about the past (Routledge et al. 2008). This measure has demonstrated good reliability with adults ($\alpha = .92$) (Routledge et al., 2008) and with children in China as young as eight years old ($\alpha = .93$) (Zhou et al., 2008). Zhou et al. (2008) reported that all participants were familiar with the Chinese translation of nostalgia as it was part of their general vocabulary. To ensure British child participants were able to understand the construct of nostalgia, the following adaptions to the scale were made. Firstly participants were advised, "Nostalgia is a feeling that

children have when they think about things that happened when they were younger". Next the participants were presented with two vignettes, which gave examples of children experiencing feelings of nostalgia. These vignettes contained central features of nostalgia and were adapted from those used in Hepper, Ritchie, Sedikides and Wildschut (2012). The vocabulary used in original SNS scale was also adapted to ensure that it could be understood by participants of that age group. The vignettes were read to the participants while they looked at the corresponding picture. After listening to the vignettes, participants rated each of the seven questions on a 7-point rating scale (*1 = never, 7 = all the time*). In the current study, these items formed a reliable index at pre-test (α = .87, M = 4.28, SD = 1.37).

Index of Empathy for Children and Adolescents (Bryant, 1982).

This scale is a measurement of emotional empathy and has shown adequate internal consistency (ranging from α = .68-.79) and strong convergent validity with other affect based empathy scales (*r* = .76) (Bryant, 1982). This self-rated scale consists of 22 statements, which were recorded on a 7-point rating scale (*1 = strongly disagree*, 7 = *strongly agree*). Eleven items were positively worded e.g. "I get upset when I see a boy being hurt" and eleven items were negatively worded and reversed scored e.g. "Kids who have no friends probably don't want any". In the current study, these items formed a reliable index at pre-test (α = .62, M = 4.11, SD = .74).

Content of diaries

An initial set of categories was created to reflect possible areas of gratitude that could impact on school belonging. Several categories were also taken from those used in Owens & Patterson (2013) and Gordon et al. (2004). The final codes used reflected social factors related to school (interactions with teachers and peers at school), social factors outside school (interactions with adults or peers outside of school), school-related activities (related to learning or whole-class activities) and self-focused activities (sedentary activities or material items). See Table 4 for examples of diary entries related to each category. The researcher coded each category of a 5-point scale (*1 = not at all or no evidence in the writing, 3 (midpoint) = somewhat or some evidence in the writing, 5 = very much or clear evidence in the writing*). Inter-rater reliability was measured by an independent researcher blind to the hypothesis, for 20 randomly selected diary entries and rating found to be highly correlated (Cohen's κ = .87). Each diary entry was coded and a mean rating was calculated for each participant.

Procedure

Ethical approval was obtained from the University of Southampton's School of Psychology Ethics Committee and Research Governance (see Appendix E). See Figure 2 for visual representation of procedure.

Pilot Study

Prior to collecting the baseline data, instructions for all the measures were piloted. These pupils were one year younger than the participants in the study and none of the pupils were included in the main study The piloting revealed that pupils were able complete the adapted measures with minimal input. Three participants asked for further clarification about the concept of nostalgia, it was found that re-reading the vignette to them individually and not elaborating from the written text was adequate to facilitate their understanding. Therefore, the vignettes and measures remained unchanged from the piloting process.

Collection of Data

The method of data collection was identical at each time point. Baseline measures were collected one week before the start of the intervention, post-data was collected one day after the intervention and follow up data collection was taken two weeks after the end of the intervention. Prior to collecting the baseline data set, the author delivered a semi-scripted introduction to each class on the meaning of gratitude and gave instructions on how to fill out rating scales (Appendix H). To control for reading difficulties, the researcher read out each question whilst each participant completed their questionnaire independently. The order of completion for each measure was identical at each time point.

Intervention

On the first day of the intervention, the researcher introduced the diary task to participants within each class. This session was delivered in groups of six or seven participants, who had all been allocated to the same diary condition. The task was introduced in a quiet space outside the classroom. Participants in each condition were were given semi-structured instructions on how to complete their diary and completed their first entry with the researcher present. The remaining entries were completed as a whole class, without the researcher present.

Experimental Condition: Gratitude Diary

The researcher read out a definition of gratitude, which was also printed inside the gratitude diary.

Definition of grateful and thankful: Thankful means feeling happy and pleased about something nice that happened to you. This could be someone saying something nice to you or doing something nice for you. It could be that you got to do something that you enjoyed.

Participants were then given the following instruction: *For the next two weeks your class will be filling out a diary about school. On each page there is a reminder of what you need to write about in your diary.* Participants were then asked to turn to the first blank diary entry page and were read the instruction at the top of the page "w*rite down 2 or 3 things that you are thankful or grateful for today at school."*

Control condition: event diary

Participants were then given the following instruction: *For the next two weeks your class will be filling out a diary about school. On each page there is a reminder of what you need to write about in your diary.* Participants were then asked to turn to the first blank diary entry page and were read the instruction at the top of the page *"write down 2 or 3 things that happened in school today."*

Participants then completed their first diary entry and were instructed that the remaining diary entries would be completed with their teacher, as a whole class. Each teacher was given the instruction that the diaries were to be completed in the afternoon teaching session, and as a whole class. The diaries were completed on alternate days, three times a week for a total of two weeks and one day, resulting in seven diary entries. Table 2 gives examples of diary entries for each condition.

Table 2
Examples of diary entries for the gratitude diary and the event dairy

Gratitude Dairy	**Event Diary**
"I am thankful for my friends being supportive when I felt miserable"	*"Today we were talking about what we did on our holidays"*
"I am thankful for my teacher teaching us the timetables in a fun way"	*"I done PE"*
"That our teacher let us have hot chocolate at golden time"	*"Today we did maths and it was about measurement"*
"Having a fun and exciting lesson"	*"We had wet break"*
"For having such great friends who always play with me"	*"Maths"*
"People at school help you if you are stuck and you haven't got any friends"	*"Today we done reading skills"*
"My teacher was kind when I was upset. I feel safe in this school because of the nice teachers"	*"Went on laptop"*
"I made friends with someone that I have never played with before"	*"Today we did gymnastics"*
"I am grateful for the trips we have been on and the places we get to go to"	*"Assembly"*

Note. All names have been changed.

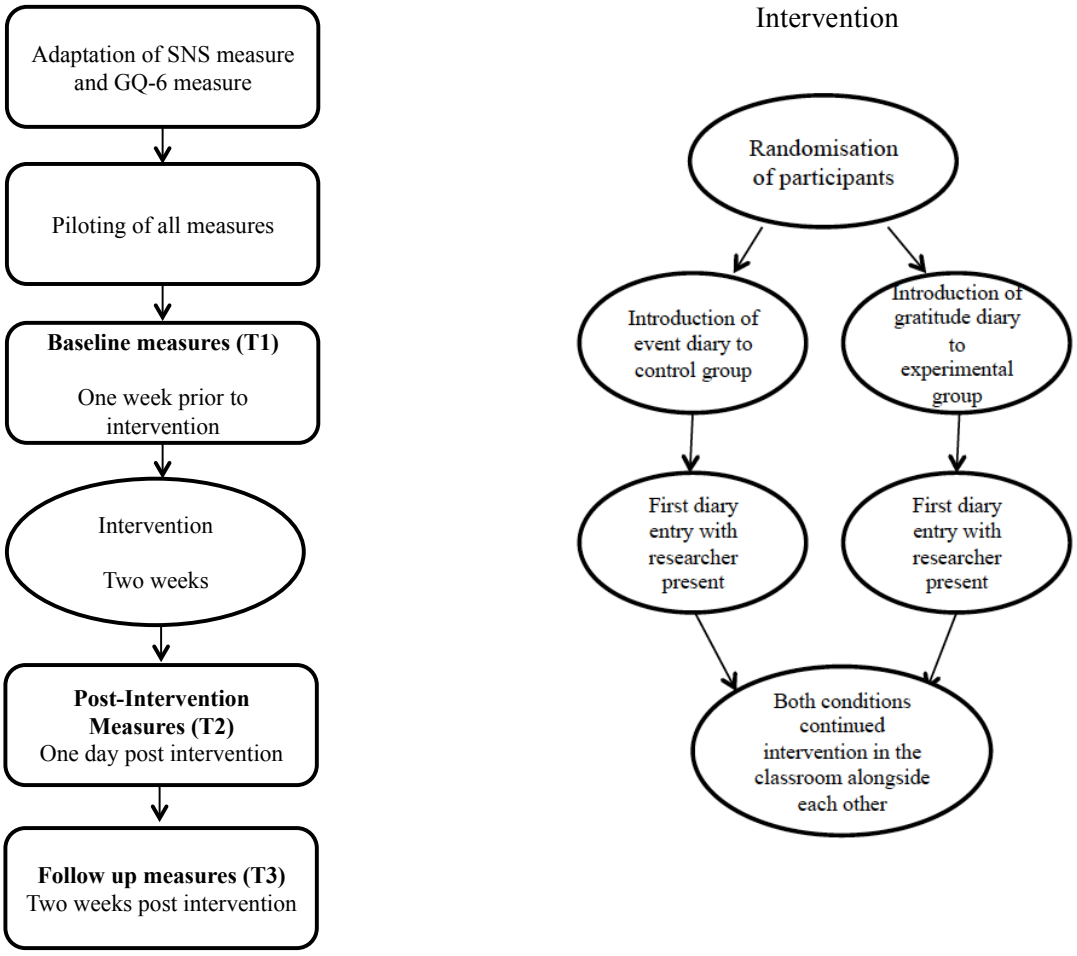


Figure 2. Visual model of procedure and the intervention

Analytic Approach

The first stage of the analysis used hierarchical modelling to establish whether the data were nested within naturally occurring hierarchies (e.g. students belong to classes which are nested within schools). This analysis sought to determine whether the impact of the diary intervention varied across classrooms or schools.

A manipulation check was carried out to determine whether the intervention had the intended effect on levels of gratitude. This included analysing the content of the diaries to determine if there were differences between the gratitude condition and the control in the types of things that the participants' wrote about and if both diary types were related to school.

The analysis then focused (a) on examining the main hypothesis that the intervention will have an impact on sense of school belonging, and (b) on examining the

moderating influence of individual differences in nostalgia proneness and levels of empathy on the postulated effect of the gratitude intervention. I then implemented a conditional process model (see Hayes, 2013), which entails that an integration of mediation and moderation should be used to provide a complete understanding of the mechanisms that underlie the impact of an intervention (Hayes, 2013; Karazsia, et al., 2013; Murphy et al., 2013).

Results

All data were checked for the assumptions of normal distribution, homogeneity of variance and homogeneity of regression slopes. There was no evidence that any of these assumptions were violated. In addition, for the conditional process analysis, assumptions relating to normality of residuals, homoscedasticity and linearity were met.

Multi-level Analysis

The first stage of the analysis used a hierarchical modelling methodology as outlined by Singer (1998), to establish whether there was any class-level or school-level variability relating to the outcome measures (level 1: participants within classes and level 2: classes within schools). Results showed that there was no significant between-class or between-school variance in any of the outcome measures, suggesting that participants were not significantly influenced by their membership to specific classes or schools. Accordingly, individual students were treated as independent observations.

Descriptive Statistics

Preliminary analyses confirmed that there were no significant differences between the gratitude intervention and control group prior to the intervention in terms of baseline scores of school gratitude, $F(1, 130) = .38$, $p = .536$, $\eta_p^2 = .003$, school belonging, $F(1, 130) = .01$, $p = .940$, $\eta_p^2 = 0.00$, nostalgia proneness, $F(1, 130) = 2.79$, $p = .097$, $\eta_p^2 = .021$, or empathy $F(1, 130) = 1.29$, $p = .258$, $\eta_p^2 = .01$. There was also no difference in frequency of gender between the two conditions $\chi^2(1, N = 124) = 2.17$, $p = .14$. In addition, no gender effects were found at any stage of the analysis. The number of diary entries also did not relate to any of the outcome measures.

Table 3

Raw and adjusted Means and Standard Deviations of outcome measures as a function of time and condition.

Time	**Measure**	**Condition**	
		Event diary	**Gratitude diary**
		Mean (SD)	Mean (SD)
Baseline	School gratitude	5.12 (0.98)	5.01 (1.05)
	School Belonging	5.14 (1.10)	5.13 (1.27)
	Nostalgia proneness	4.48 (1.49)	4.08 (1.23)
	Empathy	4.19 (0.78)	4.05 (0.71)
Post-intervention	School gratitude	5.04 (0.94)	5.24 (1.11)
	School Belonging	5.06 (1.12)	5.24 (1.09)
Follow up	School gratitude	5.15 (1.02)	4.99 (1.49)
	School Belonging	5.19 (1.13)	5.10 (1.40)

Table 4

Adjusted means (least squares) following the analysis of covariance: Post-intervention ratings as a function of intervention condition, controlling for baseline ratings.

Measure	**Condition**	
	Gratitude diary	**Event diary**
School Gratitude	5.30	4.98
School Belonging	5.26	5.03

Manipulation Check

The first part of the analysis examined whether the gratitude intervention had a significant effect on school gratitude compared to the control condition. An analysis of covariance controlling for baseline school gratitude revealed a significant main effect of condition on post intervention gratitude, $F(1, 121) = 4.81$, $p = .030$, $\eta_p^2 = .02$, indicating that the intervention produced significantly higher levels of gratitude in the gratitude diary condition compared to the control condition. This significant difference was not maintained at a two-week follow up, suggesting that the intervention did not have any discernible long-term effects.

Individual differences

In supplementary analyses, nostalgia proneness and empathy were not found to be significant moderators of the intervention's effect on school gratitude, suggesting that

the intervention was effective at increasing levels of gratitude irrespective of participants' levels of nostalgia proneness or empathy.

Diary content

The content of 99 diaries was coded and analysed. Diaries excluded from this analysis had either been lost by the participants, were not available on the day of collection or due to the clarity of the participant's handwriting, were not readable.

Table 5

Examples of codes and mean and standard deviations of diary content as a function of condition

Code	Description of code	Condition	
		Event diary	Gratitude diary
Social content within school		Mean (SD)	Mean (SD)
Peer relationships	Description of an interaction with other pupils whilst at school	2.17 (0.98)	3.20 (1.14)
Teacher Positive	Description of a positive interaction with a teacher or adult in school	1.13 (0.30)	2.63 (1.16)
Teacher Negative	Description of a negative interaction with a teacher or adult in school	1.04 (0.19)	1.03 (0.13)
Social factors outside of school:			
Peers	Description of an interaction with a peer outside of school	1.03 (0.15)	1.04 (.015)
Adults	Description of an interaction with an adult outside of school	1.03 (0.14)	1.06 (0.18)
School related content:			
Learning/ Academic	Description of a learning or academic activity	3.73 (0.90)	2.64 (1.12)
Whole-class activity	Description of a whole class activity e.g. assembly, PE or school play	2.19 (0.76)	1.66 (0.75)
Self-focused or material content:			
Sedentary activity	Description of a solitary activity e.g. a type of food eaten at lunch	1.43 (0.59)	1.2 (0.29)
Material objects	Description of a material object e.g. birthday present, using a laptop computer	1.19 (0.33)	1.60 (0.77)
Total word count of diaries		77.77 (39.33)	106.96 (47.00)

Analysis determined that the gratitude diaries contained significantly higher ratings for codes relating to peer relationships within school, $t(1, 107) = 5.07$, $p < .001$, $d = 0.97$, positive teacher interactions $t(1, 107) = 9.35$, $p < .001$, $d = 1.77$ and material objects $t(1, 107) = 3.62$, $p = .001$, $d = 0.69$.

The content of the event diaries were significantly higher for codes related to solitary activities, $t(1, 107) = 2.52$, $p = .014$, $d = 0.49$, learning activities, $t(1, 107) = 5.61$, $p < .001$, $d = 1.07$ and class activities $t(1, 107) = 3.91$, $p < .001$, $d = 0.70$.

No significant difference was found for the content related to negative teacher interactions, $t(1, 107) = 0.47$, $p = .638$, $d = 0.06$, peer interactions outside school, $t(1, 107) = 0.11$, $p = .916$, $d = 0.07$, or adult relationships outside of school, $t(1, 107) = 0.72$, $p = .48$, $d = 0.19$.

Finally the total length of the diary (sum of all of the diary entries) was found to be significantly higher in the gratitude diary compared to the event diary, $t(1, 107) = 3.57$, $p = .001$, $d = 0.67$.

Individual differences

Supplementary analysis demonstrated that nostalgia proneness and empathy were not significant moderators of the intervention's effect on diary content. Furthermore, the content of the diaries was not related to any of the outcome measures.

School Belonging

The first stage of analysis was to determine whether the intervention had a direct effect on school belonging. An analysis of covariance, controlling for baseline school belonging (i.e., the covariate), revealed a descriptive trend towards a main effect of the intervention on post-intervention, $F(1, 121) = 2.43$, $p = .121$, $\eta_p^2 = .01$. The gratitude intervention yielded a numerical increase in school belonging, but this increase was not statistically significant. There was no significant impact at two-week follow-up, suggesting that the intervention did not have a long-term impact.

Individual differences

To investigate the potential moderating influence of nostalgia proneness and empathy on the intervention's effect on school belonging, the Johnson-Neyman (J-N) technique was used. This approach overcomes a number of the limitations of using the separate regression approach, often used to test interactions (Hayes, 2013; Hayes & Matthews, 2009). Using the MODPROBE macro for SAS (see Hayes & Matthews, 2009), results revealed a significant Intervention (diary vs. control) × Nostalgia Proneness interaction effect on post-intervention school belonging (controlling for pre-intervention school belonging), $F(1,119) = 7.21$, $p = .008$. Further examination of the

results revealed that for values below 4.42 on nostalgia proneness (i.e., low nostalgia proneness) the intervention effect was non-significant. However, above the value of 4.42 on nostalgia proneness (i.e., high nostalgia proneness) the intervention effect was significant and positive. That is, those who are higher in nostalgia proneness significantly benefited from the intervention and demonstrated increases in school belonging, whereas participants low in nostalgia proneness did not show any increases in school belonging (see Figure 3). Unlike nostalgia proneness, empathy was not found to be a significant moderating variable. Furthermore, nostalgia proneness remained a significant moderator of the intervention effect on school belonging even when controlling for empathy.

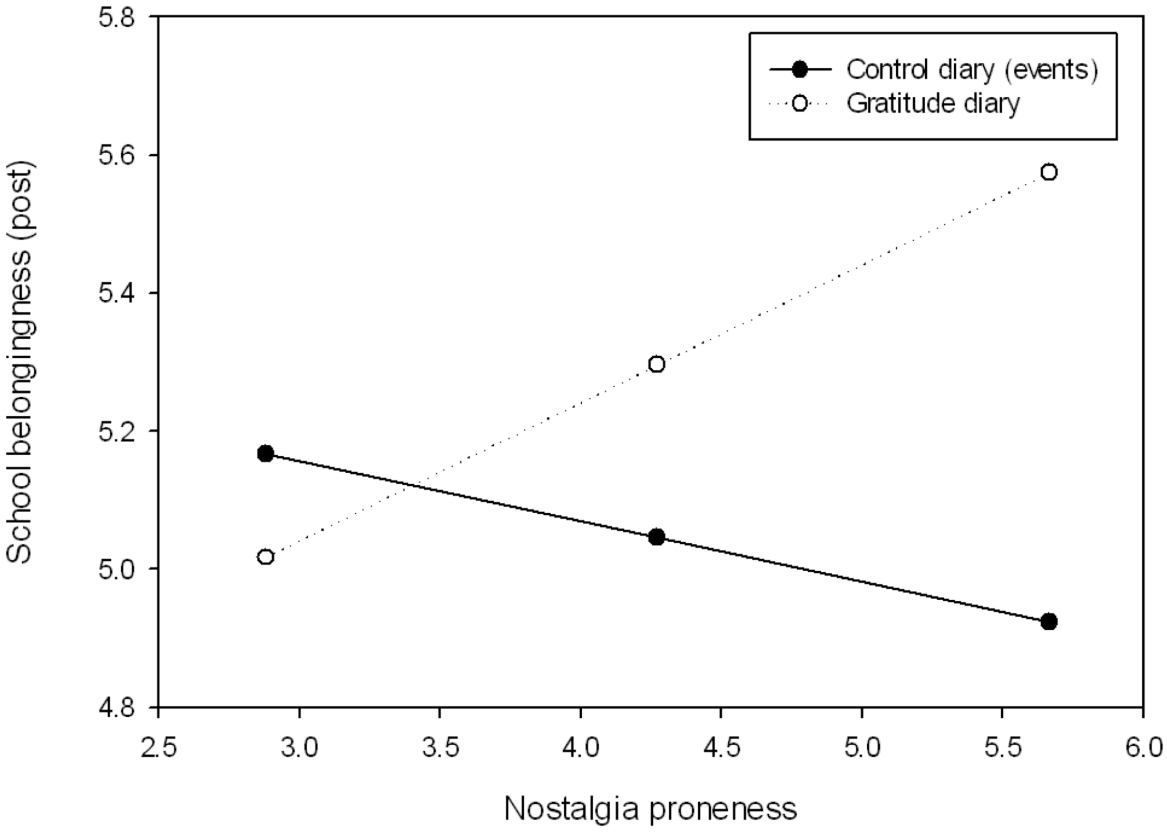


Figure 3. School belongingness scores a function of nostalgia proneness (low, medium, high) and intervention condition (event diary [control] vs. gratitude diary).

Conditional Process Analysis

The next stage of analysis used conditional process modelling, which is an integration of moderation and mediation analysis into a unified analytical model (Hayes, 2013). The aim of this analysis was to determine the conditional nature of the

mechanisms that mediated the intervention effect on school belonging. It extended the findings of the moderation analysis, which demonstrated that nostalgia proneness was not a significant moderator of the intervention's impact on school gratitude, but was a significant moderator of the intervention's impact on school belonging. The hypothesized model, as illustrated in Figure 4, explored whether participant's change in school gratitude mediated the interventions' impact on school belonging and whether this indirect effect was dependent on the moderating variable of nostalgia proneness.

Following the methodology of moderated mediation (Edwards & Lambert, 2007), the PROCESS macro for SAS (Hayes, 2012) was used to directly test the hypothesized model. This model (see Figure 4), labeled Model 15 in Hayes (2012) signifies a direct effect and second stage moderation, first outlined in Edwards and Lambert (2007). It represents a situation in which a moderating variable (nostalgia proneness) moderates the direct effect of the intervention on an outcome variable (school belonging), and also moderates the association between the mediator (school gratitude) and the outcome variable (school belonging) (i.e. nostalgia proneness moderates the second stage of the indirect or mediated effect of the intervention on school belonging via school gratitude). The conditional nature of this process means that the indirect effect of the intervention on school belonging via felt gratitude is conditional of the level of the moderating variable, nostalgia proneness.

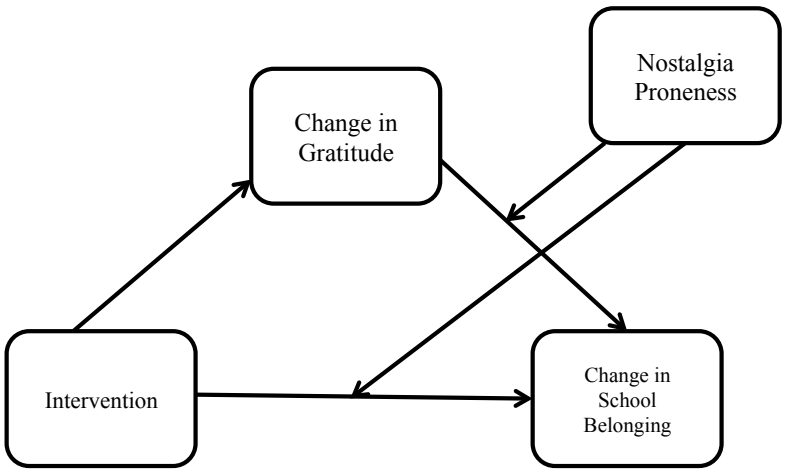


Figure 4. The conditional process model corresponding to the indirect effect of change of gratitude and the direct and second order moderation effect of nostalgia proneness.

The analysis illustrated that the model was significant, $F(6, 117) = 30.48$, $p < .001$, accounting for 61% of variance in post-intervention school belonging (controlling for baseline school belonging). The calculation of bias-corrected 95% bootstrap confidence intervals (CIs) and bootstrap standard errors for direct and indirect effects (5,000 bootstrap samples), conditional upon nostalgia proneness. Indirect effects are denoted as *ab*. When nostalgia proneness was high (+1 *SD*), there was a significant indirect effect of the intervention on post-intervention school belonging via increased gratitude, *ab* = .225, *SE* = .110, 95% CI = .05, .48. When nostalgia proneness was high, controlling for the mediator (i.e. increased gratitude) rendered the previously significant direct effect of the intervention on school belonging non-significant, *B* = .327, *SE* = .20, 95% CI = -.07, .73. When nostalgia proneness was low (-1 *SD*), there also was a significant indirect effect of the intervention on post-intervention school belonging via increased gratitude, *ab* = .115, *SE* = .066, 95% CI = .02, .28. However, this indirect effect was smaller than when nostalgia proneness was high. When nostalgia proneness was low, the direct effect of the intervention on school belonging remained non-significant when the mediator (i.e. increased gratitude) was controlled, *B* = -.182, *SE* = .188, 95% CI = -.55, .19.

These results suggest that, when nostalgia proneness was high, there was a significant direct effect of the intervention on school belonging. This significant direct effect was rendered non-significant when controlling for increases in felt school gratitude, indicating that, for high-nostalgia participants, the intervention effect on school belonging was mediated by increased school gratitude. When nostalgia proneness was low, the direct effect of the intervention on school belonging was not significant. However, the conditional process analysis revealed that, for low-nostalgia participants, there was a significant indirect effect of the intervention on school belonging via increased gratitude. Yet, this significant indirect effect among low-nostalgia participants was smaller than the indirect effect among high-nostalgia participants. This pattern of results is due to the finding that the link from increased levels of gratitude to increased levels of school belonging was stronger among participants who were high in nostalgia proneness (i.e., nostalgia proneness moderated the link between school gratitude and school belonging; see Figure 4). This, in turn, explains why the intervention produced a stronger increase in school belongingness when nostalgia proneness was high (compared to low).

Discussion

Psychologists have begun to examine the potential of school-based interventions to promote the development of well-being and school-based outcomes (Seligman et al., 2009). The present study represents one of very few studies to use a school-based gratitude intervention with primary school aged children. The outcome of the study was that a gratitude diary intervention was successful in raising gratitude towards school, in comparison with a control diary that asked participants to write about general experiences in school. The content of the diaries also significantly differed between conditions. Participants in the gratitude diary condition were more likely to write about peer relationships, positive teacher interactions and material objects. In contrast, participants in the control condition were more likely to write about learning activities, whole-class activities or solitary activities. Diaries in both conditions were focused on school experiences and there were no differences between conditions in the frequency that participants wrote about events or relationships outside of school.

Participants who completed the gratitude intervention demonstrated a trend towards an increase in feelings of psychological belonging towards school. Supplementary analysis found that participants with higher levels of nostalgia proneness benefited more from the intervention and demonstrated a significant increase in school belonging compared to participants lower in nostalgia proneness. Participants' levels of affective empathy did not influence the effectiveness of the intervention.

An important outcome of the study was that it moved beyond simply investigating if the intervention was able to produce significant outcomes in relation to a control group. Instead it provides a model that aims to increase understanding of what processes lead to the intervention producing positive change, and of the boundary conditions that influenced this process (Hayes, 2013; Murphy, Cooper, Hollon & Fairburn, 2013). The study found that nostalgia proneness had a significant impact both at a direct level; influencing the intervention's impact on sense of belonging, but also at an indirect level through changes in levels of felt gratitude towards school. The psychological mechanism that lead the intervention to elicit changes in school belonging was found to be an increase in levels of gratitude towards school. However, this relationship was stronger for individuals who were high in nostalgia proneness. This pattern of results suggests that, although the intervention was successful in

increasing levels of gratitude for all participants, the link between these increased levels of gratitude and school belonging was stronger when nostalgia proneness was high (compared to low). Participants high in nostalgia proneness demonstrated significant gains in gratitude, which led to significant increases in school belonging. Participants low in nostalgia proneness also demonstrated increases in gratitude, but this had a weaker impact on school belonging.

A link between gratitude and feelings of psychological membership has not previously been established in the psychological literature. The outcome that a simple gratitude intervention has the potential to significantly increase levels of school belonging for particular pupils is an important finding and builds on those of Diebel et al. (2014), who also found that a school gratitude diary can positively influence sense of belonging to school. Within the literature, school belonging has been associated with many positive outcomes for well-being, motivation, academic success and reducing school dropout and risk-taking behaviour (see Chapman et al. 2013; Maddox & Prinz, 2001; Osterman, 2000 for an integrated review). Furthermore, there is currently a limited evidence base evaluating proactive and school-based interventions designed to increase pupils' school belonging (Chapman et al. 2013; O'Briena & Bowles, 2013; Osterman, 2000). The findings of this study also links to the outcomes obtained by Froh et al. (2008), who found that a gratitude diary intervention with pupils aged 11-13 increased levels of school satisfaction, compared to both an event diary and a hassle diary, at the end of a two week intervention and at a three week follow up. This effect was present despite the participants not being asked to write about their school experience. A mediation analysis was carried out of by Froh et al. (2008), which suggested that the participants' gratitude in response to aid was a significant mediator between the intervention and levels of gratitude. However, level of gratitude and gratitude in response to aid were measured concurrently, which means that the relationship between them could be interpreted in either direction (Froh et al. 2008). In addition, this relationship only included data from the hassle diary and the event diary, which limits the conclusions that can be drawn from the analysis. Unfortunately, Froh et al. (2008) did not conduct any specific analysis about the psychological processes that contributed to the increases in school satisfaction.

The Role of Nostalgia

Nostalgia proneness is a personality trait that describes propensity to think positively about the past (Routledge et al., 2012)**.** The concept of nostalgia proneness has not previously been associated with gratitude or found to influence factors associated with increases in gratitude. An important area for future research will be to consider the role of pupils' propensity to think of positive past events, how this links to gratitude and whether this can be extended to other social factors or measures of well-being. The outcome from Watkins et al. (2004) provided the basis of the initial hypothesis that nostalgia proneness would influence the outcome of a gratitude intervention. Watkins et al. found that gratitude was associated with a positive memory bias, suggesting that positive events come to mind more easily for grateful individuals. The second interesting finding was that these memories had more of a positive impact for grateful individuals compared to less grateful individuals, even after controlling for the original impact of the event. This particular study used a cross-sectional design and so the direction of causality is inconclusive. For example, it is not clear whether grateful people are more likely to recall positive events, or whether they simply have more positive events to recall (Watkins et al. 2004). The hypothesis in the current study was that participants higher in nostalgia proneness would be more likely to benefit from the intervention, as the diary would provide an impetus for them to retrieve positive memories and link their current grateful experiences with events from the past. The findings were consistent with this hypothesis and nostalgia proneness was found to be a direct moderator of the intervention. However, an additional finding was that when participants' change in gratitude was considered as a mediator, nostalgia proneness also moderated the indirect effect of the intervention on school belonging through a mediator (i.e. moderated mediation). Contrary to expectations, nostalgia proneness did not have a moderating effect on the interventions' ability to increase levels of gratitude, as the intervention increased gratitude irrespective of nostalgia proneness. However, the association between increased gratitude and increased school belonging was stronger for participants who were high (compared to low) in nostalgia proneness. Participants' level of empathy was measured and was not found to be a significant moderator of the intervention at any stage of the analysis, therefore this rules out the potential for levels of empathy driving the pattern of results.

There are several possible explanations for this observation, but these would need

to be explored in future research. For instance, it could be argued that as school belonging is a complex psychological process that involves feelings of connectedness, inclusion and a positive perception of social relationships (e.g. Prince & Hadwin, 2012), increases in gratitude about current events may not be sufficient to increase perceptions of increased belonging to school. It could be that nostalgia proneness is needed as an additional mechanism to link positive reflections about current events, with positive events and grateful feelings about the past. This could create a mechanism whereby feelings of gratefulness increase the availability and impact of positive memories of the past, which in turn contribute to increases in school belonging. In contrast, although participants low in nostalgia proneness experienced increases in feelings of gratefulness towards school, this increase in gratefulness did not produce the same result in school belonging. These participants might be less likely to retrieve positive memories about the past and therefore would be less likely to link grateful reflection about current events to positive memories about the past.

A second possible explanation links to the content of the participants' grateful experiences. The unique contribution of nostalgia proneness could relate to the type of things that participants felt grateful towards. The results of the current study suggest that neither nostalgia proneness nor empathy were related to the content of the diaries. However, the quality of the diaries could be responsible for this non-significant outcome. The diary entries were relatively short, which could have limited the quality of the analysis and the conclusions that can be drawn from them. Future studies could investigate this further by using participants with higher literacy levels, who could be asked to write longer diary entries.

Gratitude Interventions with Children

The current study builds on the small number of gratitude interventions with children. It has found that, for high-nostalgia participants, a gratitude diary specific to school yielded significant increases in school belonging via increased levels of school gratitude. The longevity of the intervention was investigated by conducting follow-up measures two weeks after the end of the intervention. The results indicated that there were no discernible long-term effects for any of the outcome measures. This suggests that a two-week intervention is not sufficient to maintain the outcomes observed at post-test. From the review of the literature, the wide variation in types of gratitude induction and methodology employed makes it difficult to establish the optimum contexts in

which gratitude interventions can improve well-being and have long-term impacts. There have only been two studies, which have systematically investigated the impact of the length and frequency of the intervention. The results from Ouweneel et al. (2014) indicated that the intervention had a cumulative effect on well-being. However, the gratitude diary varied in its instructions each day to reflect different periods of the participants' life, which could have also influenced this cumulative result. Emmons and McCullough (2003) compared outcomes from a weekly and a daily gratitude diary intervention. It was found that the increase in levels gratitude in the daily intervention yielded higher effect sizes than the weekly intervention, which was taken as evidence that a daily intervention was more effective. However, their study had several limitations. Many of the outcome variables were not used in both studies, which limits the ability to make comparisons. Furthermore, the significant increase in gratitude was only found in the hassle diary, which is argued to be an inappropriate comparison group (Wood et al., 2010). Future research should systematically investigate the impact of varying the length and frequency of the intervention, to establish whether an intervention of a longer duration could increase the longevity of outcome measures. Within the existing literature using adult participants, it has been found that significant outcomes at follow-up testing are influenced by participants continuing with the intervention after the study had finished (Seligman et al., 2005; Gander et al., 2012). However, continued practice was not found to impact on follow-up measures for Sheldon and Lyubomirsky (2006a). One should be cautious when generalising from these studies, as all three advertised their study as being investigations into improving well-being. Therefore, participants may have 'self-selected' into an intervention to improve wellbeing, which could have influenced the results. Furthermore, Seligman et al. (2005) and Gander et al. (2012) did not report the effect of continued practice for individual interventions. Therefore it is not clear whether a significant result of continued practice was specific to the gratitude intervention. The interventions with children have been universal interventions for entire cohorts of participants, who did not elect to participate in an intervention to improve well-being. In addition, a school-based environment with teacher directed curriculum is not conducive to pupils having the opportunity to engage in a gratitude intervention voluntarily. Future research could consider whether teachers could give continued practice as an optional activity to pupils after the intervention has finished.

A limitation in the literature using gratitude interventions with children is the lack of evidence to indicate the developmental trajectory of gratitude and the developmental pre-requisites that influence children's understanding of gratitude. The current study has demonstrated that a diary intervention is effective in eliciting increases in gratitude for participants aged 8-10 years old. The level of participants' affective empathy was not a significant moderator at any stage of the analysis. This could suggest that all the participants had the required level of affective empathy to understand and experience gratitude. Alternatively, it could also indicate that the measure was not sensitive enough to detect differences in empathy related to changes in gratitude. Participant's empathy was also not related to the diary content. It was found that participants in the gratitude diary condition were more likely to write about peer relationships and positive teacher interactions than material objects. This contrasts with previous research that suggests that participants of this age group are likely to report being grateful for material items (Gordon et al., 2004; Owens & Patterson, 2013). A criticism of Owens & Patterson (2013) was that there was no analysis that examined whether the content of the diaries influenced the outcome measures. An area for future research could be to measure participants' level of cognitive empathy in addition to affective empathy, to establish whether this influences the effectiveness of the intervention or is related to the content of the diaries.

Conclusion, limitations and directions for future research

Gratitude has been conceptualised as an other-orientated emotion (e.g. McCullough et al., 2001) and is hypothesised to promote well-being through increases in positive emotions, positive reframing and the building of social resources. Cross-sectional and longitudinal analysis has demonstrated that gratitude is associated with increased feelings of connectedness (Froh, et al., 2010), increasing pro-social emotions such as forgiveness, compassion and empathy (Hill & Allemand, 2011; McCullough, et al., 2001), and increasing perception of social support (Wood et al., 2008). The current study has extended the evidence base by examining the impact of gratitude on psychological membership of school. Recent evidence suggests that sharing the gratitude diary with a partner is more effective than a gratitude diary alone (Lambert et al., 2013). The design of the current study meant that it was not possible to add a behavioural element to the study, as the control group and experimental group were within the same class. This represents an interesting area for future research. As school

belonging is concerned with positive perception of teacher-pupil and peer relationships (Osterman, 2000), sharing the gratitude diary could be a powerful contributor to elicit increases in belonging, connectedness or pro-social behaviour. Furthermore, this represents the possibility of the teacher being directly involved with the gratitude intervention. An area for future research could also be to measure other social factors that are associated with gratitude such as pro-social behaviour (Emmons & McCullough, 2003; Froh, Yurkewicz et al. 2009), feelings of communal strength (Lambert et al., 2010), as well as other social emotions such as compassion or forgiveness (McCullough et al., 2001). If the use of gratitude diaries can be shown to prompt pupils and teachers to positively reflect upon their school experiences, causing an increase in pro-social behaviours and pro-social emotions, this could create a positive feedback loop that fosters stronger bonds to school and increases in well-being for both staff and pupils.

The current study has demonstrated the effectiveness of a school-based gratitude intervention in eliciting increases in felt gratitude towards school and school belonging. It has extended the evidence base in several key respects: used a randomly controlled gratitude intervention with children, investigated the longevity of the intervention, explored how individual differences can impact on the efficacy of the intervention and used an advanced analytical approach to examine specific processes that lead to the intervention producing positive change, as well as which boundary conditions influence this process. However, there are a number of limitations that need to be considered. Two of the measures used were adapted to suit the age group of the participants or to make them specific towards school. Although both of the measures demonstrated either adequate or good reliability, they would benefit from being used with different age groups and compared against similar measures to ensure they have adequate construct validity. The study did not measure other outcome variables such as positive affect or satisfaction. These variables could have aided understanding about additional psychological mechanisms that could have influenced the observed outcomes. Finally, the design of the intervention meant that the gratitude and control conditions were implemented simultaneously within each class. This could have resulted in some participants being aware that there were two different conditions and perhaps changing what they wrote in their diaries.

Practical Implications

The motivation of the literature review and empirical study was to increase the evidence-base of positive psychology, the scientific study of positive emotions and well-being, and how institutions such as schools could actively promote the well-being of pupils (Seligman et al. 2009). This has several practical implications for educators. Firstly, that gratitude should not be regarded as simply a verbal expression taught to children, reflecting a social politeness, but rather as a psychological mechanism that can promote positive reframing, positive emotions and social well-being. Secondly, the gratitude diary reflects a straightforward, low cost and low resource intervention that can be used by school staff to increase pupils' felt gratitude towards school and has the potential to promote school belonging. If this intervention can be shown to promote positive outcomes over the long-term, it has the potential to be a proactive intervention that can support pupils' well-being and ability to manage school transitions and other challenges that arise. Finally, recent research has found that the sharing a gratitude diary can be more effective than completing it alone (Lambert et al., 2013), which represents the potential for school staff to also be involved in the gratitude intervention. This could lead to an eco-systemic intervention, promoting positive habits of mind for both staff and pupils and create a positive feedback loop, where an individual's increase in gratitude and positive reflection about school could create a thriving school environment.

The current study employed a school-based intervention with the aim of increasing the evidence base for psychological interventions that promote the well-being of children. The study has strong relevance, therefore, for the work of Educational Psychologists (EPs), as it could form part of their psychological evidence-based practice to improve academic and emotional outcomes for children. The current study found that participants high in nostalgia proneness benefitted more from the intervention and demonstrated a larger increase in school belonging compared to participants low in nostalgia proneness. When EPs are advising schools about implementing a gratitude intervention, they could also consider how they could support schools to promote children's capacity to think about positively about events in the past. A crucial theme across both the literature review and empirical paper was the limited published literature on gratitude in children and adolescents. It is vital that interventions recommended by EPs are evidence-based. However, the profession is also involved in evidence

generation and are in an ideal position to carry out applied research in this area and extend the results of this study.

Appendix A: List of search terms

Search terms were applied and then limiters applied to meet the inclusion and exclusion criteria.

1. Psychoinfo via EBSCO (1887-2014):

Search terms:

(Gratitude OR Thankful) AND intervention

The search term *Counting Blessings* was also included as an additional search term as first search did not retrieve key papers (Emmons & McCullough, 2003 and Froh et al., 2008).

Limiters applied:

Language: 'English language', Source type: 'Peer Reviewed Journals' and Exclude dissertations.

2. Web of Science via Web of Knowledge (1959-2014):

Search terms:

(Gratitude OR Thankful) AND intervention

Counting Blessings

Limiters applied:

Language: 'English', Document type 'Article' and 'Peer reviewed Journal'

3. The Educational Research Information Centre (ERIC):

Search terms:

(Gratitude OR Thankful) AND intervention

Counting Blessings

Limiters applied:

Peer reviewed Journal

Appendix B: Criteria for excluding papers

Following the searches 194 articles were identified, 58 papers were excluded due to duplicates between different databases. Following the screening of titles and abstracts 90 papers were excluded. Following the reading of the full text, a further 20 were excluded. Reasons for exclusions are listed below:

1. Article not a peer reviewed paper e.g. book chapter or conference speech (n=4)
2. Paper presents a review of the literature or a meta-analysis (n=21)
3. Study did not include a gratitude intervention (e.g. case study, cross sectional or longitudinal study or character strengths intervention) (n=49)
4. Paper did not include a control or comparison condition (n=3)
5. Paper not related to Gratitude (e.g. study about resilience, signature strengths, qualitative study about life threatening illness or spirituality) (n=33)

Appendix C: Data extraction table of included studies

Note: Effect size detailed when reported. Non-significant results denoted as *ns*

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
Emmons and McCullough (2003) Study 1	**Characteristics:** Undergraduate psychology students in USA **N (%male):** 201 (27%) **Age range:** Not given **Mean age:** Not given **Drop out/incomplete data:** 9 participants	Course requirement. No description of how study described/advertised to participants	**Gratitude intervention:** • Gratitude diary (list 5 things) (G) **Control:** • Hassle diary (C^1) • Event diary (C^2) **Length and frequency:** Weekly for 10 weeks (10 entries) **Follow up:** no	Experimental design. Random assignment of condition Measures taken, pre, post and during intervention, an aggregate score was calculated from these thee time points and used in analysis	**Gratitude** (Gratitude Adjective Checklist (GAC)) **Positive and negative affect** (27 composite adjectives) **Grateful emotions in response to aid** (Checklist) **Time spent exercising** (Single item) **Global appraisal** (Single item) **Global appraisal: expectations for upcoming week.**	**G > C^1 $p < .05$, $d = .56$** Positive affect as a mediator of gratitude *ns*. *ns* Only reported across conditions. Significant correlation with ratings of joy and happiness $p < .01$; life appraisal $p < .01$ and global appraisal of upcoming week $p < .01$. **G>C^1 $p < .01$, $d = .34$** **G >C^1 $p < .05$, $d = .36$** **G >C^2 $p < .05$, $d = .30$** **G >C^1 $p < .05$, $d = .35$** **G >C^2 $p < .05$, $d = .29$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
					(Single item)	
					Physical symptoms (Checklist)	**G >C[1] $p < .05$, d=.31** **G >C[2] $p < .05$, d= .30**
Emmons and McCullough (2003) Study 2	**Characteristics:** Undergraduate psychology students in USA **N (%male):** 166 (25%) **Age range:** Not given **Mean age:** Not given **Drop out/incomplete data:** 9 participants	Course requirement. No description of how study described/advertised to participants	**Gratitude intervention:** • Gratitude diary (list 5 things) (G) **Control:** • Hassle diary (C[1]) • Social comparison (C[2]) **Length and frequency:** Daily for two weeks (13 entries) **Follow up:** no	Experimental design Random assignment of condition Measures taken, pre, post and during intervention (aggregate score)	**Gratitude** (GAC)	**G>C[1] $p < .05$, d=.88**
					Positive affect (Composite of adjectives)	**G>C[1] $p < .05$**
					Negative affect (Composite of adjectives)	*ns*
					Physical symptoms (Checklist)	*ns*
					Time spent exercising (Single item)	*ns*
					Health behaviours (Type of exercise, amount of caffeine, number of painkillers, quality of sleep)	*ns*
					Pro social behaviours Offered emotional support	**G> C[1] and C2 $p < .05$,**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
					Pro social behaviours Help someone with a problem	**Trend: G> C[1] p = .08,**
Emmons and McCullough (2003) Study 3	**Characteristics:** People with neuromuscular disease in USA **N (%male):** 64 (23%) **Age range:** 22-77 **Mean age:** 49 **Drop out/incomplete data:** none	Through mailing list of University research clinic. Description of advertisement not given.	**Gratitude intervention:** • Gratitude diary (list 5 things) (G) **Control:** • Passive control (C) **Length and frequency:** Daily for 3 weeks (21 entries) **Follow up:** no	Experimental design Random assignment of condition Measures taken, pre, post and during intervention (aggregate score) Observer rating and self rated measures.	**Gratitude** (GAC)	**G > C p < .01, d = .78**
					Positive affect (Composite of adjectives)	**G > C p < .05, d = .56** Positive affect decreased for control and increased for gratitude
					Negative affect (Composite of adjectives)	**G < C p < .05, d = -.51** Negative affect increased for control and decreased for gratitude
					Global Appraisal (Single item)	**G > C p < .01**
					Global Appraisal: expectations for upcoming week. (Single item)	**G > C p < .05**
					Appraisal: connection with others (Single item)	**G > C p < .01**
					Physical well-being (Hours of sleep, refreshed on waking, physical pain, pain,	**Hours of sleep: G > C p < .05 How refreshed on waking: G > C p < .05**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
					amount of exercise)	
					Observer reports of positive and negative affect (Composite of adjectives)	**Trend of positive affect: > C $p = .06$** Negative affect: *ns*
					Observer reports of Life Satisfaction (Satisfaction With Life Scale (SWL-S))	**G> C $p < .05$**
Watkins, Woodward & Stone (2003) Study 4	**Characteristics:** Undergraduate psychology students in USA **N (%male):** 157 (not given) **Age range:** Not given **Mean age:** Not given **Not given Drop out/incomplete data:** 1 participant	**Partial course credit.** No description of how study described/advertised to participants	**Gratitude interventions:** • Thinking about person grateful to (G_1). • Write about person grateful to (G_2). • Write a letter (not mailed) (G_3). **Control:** • Write about lay out of living room (C). **Length and**	Experimental design. Random assignment of condition. Laboratory study at single time point. Researcher phoned participant to ask if had sent letter.	**Gratitude (**Gratitude and Resentment Appreciation Test (GRAT)) **Positive and negative affect** (Positive and Negative Affect Scale (PANAS))	No statistical analysis to determine interaction of GRAT scores between different conditions. **Positive affect: $G_{(1+2+3)}$>C $p < .05$, $\eta_p^2 = .119$** Descriptive analysis using change scores: G_1> G_2> G_3. No statistical for individual gratitude interventions reported. **Negative affect**: *ns*

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			frequency: Single time point **Follow up:** no			
Seligman, Steen, Park and Peterson (2005)	**Characteristics:** Community sample in USA **N (%male):** 577 (42%) **Age range:** Not given **Mean age:** Not given **Drop out/incomplete data:** 166 participants	People who had registered to positive psychology website authentichappiness.org Advertised as "happiness exercise" Told they might receive a placebo.	**Gratitude intervention:** • Gratitude letter-write and deliver the letter in person. (G) **Control:** • Writing about early memories (C) **Other interventions in study:** • Six other happiness interventions also tested **Length and frequency:** Each exercise delivered through internet and could be completed within one week.	**Internet based intervention** Experimental design. Random assignment of condition. Measures taken, pre, post and follow up	**Happiness** (Steen Happiness Inventory (SHI)) Depression (Centre for Epidemiological Studies Depression Scale (CES-D)) **Adherence to exercise** (Participant report to continuing intervention beyond intervention period)	**Post test:** G> C $p < .05$, $\eta_p^2 = .49$ **1 week follow up**: G> C $p < .05$, $\eta_p^2 = .39$ **1 month follow:** G> C $p < .05$, $\eta_p^2 = .06$ **Post test:** G> C $p < .05$, $\eta_p^2 = .36$ **1 week follow up**: G> C $p < .05$, $\eta_p^2 = .29$ **1 month follow:** G> C $p < .05$, $\eta_p^2 = .32$ Impact on happiness scores**:** Significant interaction for all interventions and across all time periods. Impact on depression scores: Significant impact on all interventions and at one month follow up.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			Follow up: 1 week and 1, 3, 6 months			Specific information of level of significance and for individual interventions not reported.
Sheldon and Lyubormirsky (2006a)	**Characteristics:** Undergraduate psychology students in USA **N (%male):** 67 (25%) **Age range:** Not given **Mean Age:** Not given **Drop out/incomplete data:** 3 participants	Signed up online. Researchers gave instruction to all participants "*In this study we are studying positive mood and factors that sustain it….we will ask you do something that might affect your mood. This "something" has already shown to have a significant*	**Gratitude intervention:** • Gratitude diary. "Outline in as much as detail as they can" and several lines provided**. (G)** **Intervention compared with gratitude:** • Best possible self intervention (I) **Control:** • Write about a typical day (C) **Length and frequency:** 4 week intervention. Given instructions to try to complete at	**Completed at home.** Experimental design. Random assignment of condition. Measures taken, pre, post and follow up	Positive and negative affect **(PANAS)** **Self concordant motivation (SCM)** **(**Four-item scale, measuring internal and external motivation) **Exercise performance (**Single item asking whether participants continuing with intervention)	**Positive affect:** **I >C *p* < .05** G and I = ns G and C =ns Downward trend in control group **Negative affect**: Main effect over time p <.01 Interactions between interventions= ns. **I > C *p* <.05, *d* = .38** G and I = *ns* G and C = *ns* Regression analysis to establish whether SCM predicted exercise performance in each condition= ns Regression analysis to establish whether exercise performance predicted level of positive affect post intervention: G= *ns* (*p* =.8). I *p* = .057. Regression analysis to establish whether

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
		impact on peoples' lives, and we want to examine its potential"	least twice a week. **Follow up:** no Average completion. 3?			exercise performance predicted level of negative affect post intervention: G= *ns*. I= *ns* **SCM as a moderator of interaction between exercise performance and level of affect.** **For positive affect** = *ns* **For negative affect:** performing exercise regularly lead to reduced negative affect and this was stronger for participants higher in higher in self concordant motivation ($p < .05$)
Froh, Hempsted, Sefick, and Emmons (2008)	**Characteristics:** Middle school students. 11 classes in USA **N (%male):** 221 (49%) **Age range:** 11-13 **Mean Age (SD):** 12.17 (0.67) **Drop out/incomplete data:**	All students enrolled in a mandatory curriculum: Family and Consumer Science. Authors hoped to get a representative sample of	**Gratitude intervention:** • Gratitude diary (list 5 things) (G) **Control:** • Hassle diary (C_1) • Event diary (C_2) **Length and frequency:** Daily for two weeks (13 entries)	Quasi-experimental design. Random assignment of condition by class. 11 classes in total. 4 classes received the gratitude, 4 hassles condition, no-treatment control	**Positive affect** (Composite of adjectives) **Negative affect** (Composite of adjectives)	*ns* **8 day aggregate:** G<C_1 $p < .01$ and $C_2 < C_1$ $p < .01$ **Post test:** G<C_1 $p < .05$ and $C_2 < C_1$ $p < .05$ **Post test:** G<C_1 $p < .05$ and $C_2 < C_1$ $p < .01$ **No significant differences between G**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	3 participants	academic **ability.**	**Follow up:** 3 weeks	Measures taken, pre, post, during and follow up intervention (aggregate score)		**and C_2**
					Gratitude (GAC)	**Post test: G>C_1 *p* = .01**
						Follow up: G>C_1 *p* = .01
						8 day aggregate = ns
						No significant differences between G and C_2
					Global appraisal (Single item)	At post: G>C_1 *p* = .063 (trend)
					Global appraisal: expectations for upcoming week. (Single item)	**At follow up**: G>C_1 *p* < .05
					Life satisfaction (Brief Multidimensional Students life Satisfaction Scale (BMSLSS))	Post test:
						Total BMSLSS = *ns*
						School experience subscale: G > C_1
						p < .05 and G > C_2 *p* <.05

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
						Follow up: Total BMSLSS = *ns* **School experience subscale: G > C_1 *p* < .05 and G > C_2 *p* <.05** **Residency subscale: G > C_1 *p* < .05 and C_2 > C_1 *p* < .05**
					Physical symptoms	*ns*
					Reactions to aid	**Post intervention:** *ns* **Follow up: G > C_1 *p* < .01 and C_2> C_1 *p* <.01** No significant differences between G and C_2 Feeling grateful in response to aid mediated the relationship between experimental condition and general gratitude at follow up.
					Pro social behaviour	*ns*
Koo, Algoe, Wilson and Gilbert	**Characteristics:** Undergraduate students in USA	**Course credit or small gift**	**Gratitude intervention:**	Experimental design. Random	**Affective states** (13 adjectives)	**I_2> (G, I_1 and C) *p* = .02** (significant levels not reported for each planned contrast)

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
(2008) Study 1	**N (%male):** 65 (30%) **Age range:** Not given **Mean age (SD):** Not given **Drop out/incomplete data:** 5 participants	**No description of how study described/advertised to participants**	• Write about event for which they felt grateful from 1 of 7 categories (G) **Intervention compared with gratitude:** • Presence condition (why is this not surprising) (I_1) • Absence condition (why is this surprising) (I_2) **Control:** • **Passive control** **Length and frequency:** Single time point **Follow up:** no	assignment of condition. Measures taken, pre and post intervention Gratitude condition only used in study one (out of 4 in total) as response was similar to presence condition Double blind researcher coded whether participants had followed instructions for their condition	**Level gratefulness for event they described** (Single item)	No significant difference between C, G and I_1 *ns*
Toepfer & Walker 2009	**Characteristics:** Undergraduate students in USA **N (%male):** 85 (15%)	Class assignment and resulted in a grade for	**Gratitude intervention:** • Gratitude letter-mailed to	Quasi-experimental design. Condition randomly	**Gratitude** (Gratitude questionnaire-6 (GQ6))	Across all time points: **G>C $p < .05$** Control group decreased in gratitude At specific time points: **T2 and T3= *ns*, at T4 G>C $p < .01$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	Age range: 18-52 **Mean age (SD):** 26.7 (8.44) **Drop out/incomplete data:** None	participation.	recipient by researcher throughout experiment (G) **Control:** • Passive control (C) **Length and frequency:** 8 week period, 3 letters written **Follow up:** 3 weeks	allocated to 6 classes. Letters checked by researchers to check against basic guidelines (non-triviality, author identification, stamped envelope) Measurements taken at baseline (T1) after writing each letter (T2,T3 and T4)	**Life satisfaction** (SWLS) **Happiness** (SHI) **General perceptions of process** (Exit survey to establish participants general perceptions of the process)	Ns (trend) Across all time points: **G>C $p < .05$** At specific time points: **T2 and T3= ns, at T4 G>C $p < .01$** No information given about this measure.
Watkins, Cruz, Holbern and Kolts (2008)	**Characteristics:** Undergraduate Psychology students at an American University **N (%male):** Not reported **Age range:**	Voluntary participation and received extra course credit. Study described as recollecting an unpleasant open memory	**Gratitude intervention:** • Write about positive consequences of open memory that they are grateful for (G) **Control:**	Participants asked to recall an open memory and record description of open memory and then completed baseline	**Memory Closure** (Single item) **Emotional impact of memory** (Single item)	**Post test: No significant difference between conditions** **Follow up:** G>C_1 p < .03 and G> C_2 $p < .05$ $\eta_p^2 = .078$ **Post test:** *ns* **Follow up: G>C_1 p < .03 η_p^2 =.019**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	Not reported **Mean age (SD):** Not reported **Drop out/incomplete data:** No information given.	and given an example of an open memory.	• Write about plans for tomorrow (C_1) • Write about open memory (C_2) **Length and frequency:** Three sessions of 20 minutes, within period of 10 days. **Follow up:** 1 week	questionnaires. Then randomly assigned to condition. Measures taken during the post intervention and at follow up	**Intrusiveness of memory** (Novel measure-number of thoughts about open memory while recalling positive life events) **Stressful impact of memory** (Novel measure adapted from the Impact of Event Scale)	and C and C_2 = *ns* **Post test: G>C_2 $p < .01$ η_p^2 =.019 and C and C_1 = *ns*** **Follow up: G>C_1 $p < .05$ and G> C_2 $p < .01$ η_p^2 =.067** **Post test: G<C_2 $p < .01$ η_p^2 =.067 and C and C_1 = *ns*** Follow up: No significant difference between conditions
Froh, Kashdan Ozimkowski and Miller (2009)	**Characteristics:** Students in a Christian school in USA **N (%male):** 89 (49%) **Age range:** 8-19	Parental consent for children in each class. Student assent gained.	**Gratitude intervention:** • Gratitude letter: write and deliver the letter in person. Talk about how they felt after	Quasi-experimental design. Matched by grade and then randomly assigned to condition.	**Gratitude (**GAC)	No significance at any time points Positive affect as a moderator (low PA versus high PA**):** **Post test: Low PA G > C $p < .01$.** High PA = *ns* 1 month follow up**:** *ns* 2 month follow up: *ns*

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	Mean age (SD): 12.74 (3.48) **Drop out/incomplete data:** None	No description of how study described/advertised to participants	delivering the letter. (G) **Control:** • Write about events from yesterday and emotions associated with events. (C) **Length and frequency:** 5 sessions of 10-15 minutes over two weeks. One session to talk about experience of delivering the letter. **Follow up:** 1 and 2 month	Measures taken, baseline, post and follow up intervention Measures counterbalanced via all possible orders to control for order effects.	**Positive and negative affect** (Positive and Negative Affect Sale for Children (PANAS-C)) **Treatment integrity** (Asked parents and students if they had delivered the letter)	**Positive affect:** *ns* Positive affect as a moderator (low PA versus high PA**):** Post test**: *ns*** **1 month follow up: Low PA: G >C *p* = .09. High PA= *ns*** **2 month follow up: Low PA: G > C *p* < .01. High PA *ns*** **Negative affect:** *ns.* PA not a significant moderator. Student feedback 100% reported they had read the letter. No parent response from 2/3 of classes.
Lambert, Fincham, Graham and Braithwaite, (2009) Study 4	**Characteristics:** Undergraduate students in USA **N (%male):** 112 (13%) **Age range:** 18-34 **Median age:**	**Option to earn extra credit** **Inclusion criteria:** Involved in a romantic	Gratitude intervention: •Prayer for partner and write description (G_1) •Prayer in general and write	Experimental design. Random assignment of condition. Measures taken, baseline and post	**Gratitude** (GQ6)	**$G_{(1+2)} > C_{(1+2)}$ $p < .05$, $\eta_p^2 = .04$ (with religiosity, social desirability and prior prayer frequency added as covariates)** Small effect size- maybe because some participants reported some level of praying at pre-test.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	19 **Drop out/incomplete data:** 8 participants	relationship Minimum level of religious prayer No description of how study described/advertised to participants	description (G_2) Control: • Event diary (C_1) • Positive thoughts about partner and write thoughts (C_2) Length and frequency of intervention: **Daily for 4 weeks.** Follow up: no	intervention. No significant differences between G_1 and G_2 or between C_1 and C_2 so combined to give one experimental group and one control group	**Religiosity** (Two-item scale) **Social desirability (**Marlowe-Crowne Social Desirability Scale**)** **Prayer** (3 item measure of prayer frequency) **Level of engagement in activity** (2 item self-report measure)	Added as a covariate Added as a covariate Established that no relationship between prayer and level of engagement = ns Added as a covariate
Geraghty, Wood, and Hyland (2010a)	**Characteristics:** Inclusion criteria: Ages over 18 and not currently undergoing treatment for a psychological disorder in UK.	Study advertised on internet and radio as opportunity to take part on internet administered	**Gratitude intervention:** • Gratitude diary (list 6 things) (G) Intervention compared with gratitude:	Internet based study Experimental design. Random assignment of condition.	**Worry** **(**The Penn State Worry Questionnaire (PSWQ)) **Anxiety** **(**The Brief Generalized	**G > C *p* < .001, *d* = 1.8** **I > C *p* < .001, *d* = 1.2** **G =I, *ns*** Intention to treat analysis carried out and both interventions remained significantly superior to control Non significant predictor of attrition

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	N (%male): 247 (14%) **Age range:** 18-47 **Mean age (SD):** 37 (not given) **Drop out/incomplete data:** 111 participants Using clinical cut off points 65% classified as depressed and 81% anxious.	self-help study to reduce worry. Information in diary of both conditions described as a technique that could reduce worry.	• Worry diary (CBT technique) (I) **Control** •Waitlist (C) Length and frequency of intervention: Daily for 14 days. Follow up: **None**	Waitlist control Measures taken, baseline and post intervention.	Anxiety Disorder Scale **(**GAD-7))	
					Depression **(**Patient Health Questionnaire –Nine **(**PHQ-9))	Non significant predictor of attrition
					Hope (Adult Hope Scale (AHS) Made of two components: agency and pathways)	**Across all conditions: The components of hope significantly predicted attrition in opposite directions. Agency predicted completion, *p* =.004 and pathways predicted dropout *p* =.003. No significant difference between interventions**
					Dispositional optimism **(**Life Orientation Test Revised (LOT-R))	Non significant predictor of attrition
					Expectancy (Single item scale)	Non significant predictor of attrition
					Self control **(**The Brief Self-Control	Non significant predictor of attrition

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
					Scale (BSCS)	
					Attrition (Did participant complete the intervention)	**G < I *p* < .05** (G group 2.24 times more likely to complete intervention than I group) Age and gender non-significant predictor of attrition.
Geraghty, Wood and Hyland (2010b)	**Characteristics:** Inclusion criteria: Ages over 18 and not currently undergoing treatment for a psychological disorder in UK. **N (%male):** 479 (4%) **Age range:** 18-76 **Mean age (SD):** 36 (10) **Drop out/incomplete data:** 297participants (62%)	Advertised on weight-loss websites and local newspapers. Described as a free internet administered self-help study. Information in diary of both conditions described as a technique that could reduce body dissatisfaction	**Gratitude intervention**: • Gratitude diary (list 6 things) (G) **Intervention compared with gratitude:** • Automatic thought records (CBT technique) (I) **Control:** • Waitlist (C) **Length and frequency of intervention:** Daily for 14 days	Internet based study Experimental design. Random assignment of condition. Waitlist control Measures taken, baseline and post intervention.	**Body dissatisfaction** (Multidimensional Body-Self Relations Questionnaire (MBSRQ) and The Appearance Evaluation subscale (AE) Intention to treat analysis = ITT **Expectancy of intervention efficacy** (Single item) **Locus of control (**Multidimensional Health Locus of Control Scale	AE Scale **G > C *p* < .001, *d* = .71 (ITT *p* <. 001))** **I > C *p* < .001, *d* = .48 (ITT *p* < .05)** **I = C *p* = .36 (ITT *p* = .051)** MBSRQ **G > C *p* < .001, *d*= .62 (ITT *p* <.001)** **I > C *p* < .001, *d* = .74 (ITT *p* < .05)** **I =C *p* = *ns* (ITT = *ns*)** Low expectancy significantly predicted attrition P< .05, no significant impact of intervention **Low internal Locus of Control significantly predicted attrition P<.05,** no significant impact of intervention

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
		.	Follow up: None		(MHLC))	
					Attrition (Did participant complete the intervention)	**G < I $p < .05$** (G group 2.13 times more likely to complete intervention than I group) Age and gender or baseline severity non significant predictor of attrition.
					Adherence to intervention (single item asking about time spent on intervention)	No significant difference between interventions (mean number of entries G=11.6 or I= 10.5) No significant impact on body dissatisfaction outcome measure.
					Task difficulty (Single item)	Non significant predictor of attrition
Lambert, Clark, Durtschi, Fincham and Graham (2010) Study 3	**Characteristics:** Undergraduates enrolled in family development course in USA **N (%male):** 75 (20%) **Age range:** 18-23	Voluntary participation for extra credit. No description of how study described/advertised to	**Gratitude intervention:** • Increase expressions of gratitude to a partner (G_1) • Pay attention to events that make one feel grateful	Internet based study Experimental design. Random assignment of condition	**Communal strength** (Sense of responsibility for partners welfare)	**$G_1 > G_2$ $p = .01$, $d = .34$** **$G_1 > C_1$ $p = .05$, $d = .48$** **$G_1 > C_2$ $p = .05$, $d = .67$** No information given about planned comparisons between G_2 and control conditions**.**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	Median age 19 **Drop out/incomplete data:** 22 participants	participants	(but not express it). (G_2) **Control:** • Pay attention to neutral activities. (C_1) • Pay attention to positive events and talk about them with a partner (C_2) Length and frequency of intervention: Report on efforts and success twice a week for three week (6 reports) Follow up: None	Measures taken, baseline and post intervention.		

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
Martínez-Martí-Marti and Hernandez (2010)	**Characteristics: Spanish undergraduate psychology students.** **N (%male): 159 (16%)** **Age range: 18-23** **Mean age (SD): 20.7 (1.48)** **Drop out/incomplete data: 54 participants**	Voluntary participation for extra credit. Participants told it would be a study regarding mood.	**Gratitude intervention:** • Gratitude diary (list 5 things) (G) **Control:** • Hassle diary (C_1) • Event diary (C_2) **Length and frequency of intervention: Daily for 15 days.** **Follow up:** 2 weeks	Repetition of Emmons & McCullough in Spanish Sample Experimental design. Random assignment of condition Measures taken, pre, post and during intervention (aggregate score)	**Gratitude** (GAC) **Positive and negative affect** (27 composite adjectives)	Using aggregate measure (as used in Emmons & McCullough, 2003) **G > C_1 $p < .05$, $d = .61$** Inclusion of baseline and follow up measure = *ns* **Positive affect** Using aggregate measure (as used in Emmons & McCullough, 2003) **G > C_1 $p < .05$, $d = .69$** **G =C_2,** *ns* Inclusion of baseline and follow up measure: **Post test: G > C_1 $p < .01$ (however within group analysis of $C_1$from baseline to post $p = .05$ and G = ns)** Follow up: *ns* Gratitude and positive a significant mediator **Negative affect** *ns* Pre-test measures of both variables not

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
						significant moderators of positive affect
					Global appraisal (Single item)	*ns* Pre-test measure not significant moderator of positive affect
					Global appraisal: expectations for upcoming week. (Single item)	*ns* Pre-test measure not significant moderator of positive affect
					Physical symptoms (Checklist)	*ns*
					Pain relief (Single item)	*ns*
					Sleep quality (Checklist)	*ns*
					Quality of relationship with significant other (4 item checklist)	**Trend G > C_1 and C_2 p = .072** Pre-test measure not significant moderator of positive affect
					Sensitivity to others needs. (Single item)	*ns*
					Trait gratitude (GQ-6)	*ns* Pre-test measure not significant

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
						moderator of positive affect
					Observer reports of participants well-being (Global subjective well-being (GSW-S))	**G > C_1 p < 01, d =.76** Trend significant persons rating of well-being > participants rating of well-being p = .05
					Observer reports of participants gratitude (single item)	*ns*
					Observer reports of participants sensitivity to others (Single item)	*ns*
Boehm, Lyubomirsky and Sheldon, (2011)	Characteristics: Participants from community. 49% identified ethnicity as Asian American, 51% identified as Anglo-American. N (%male): 387 (47%) Age range:	Participants recruited through advertisements on community-based websites, fliers and Chinese language	**Gratitude intervention** • Gratitude letter-not sent to recipient. (G) **Intervention compared with gratitude:** • Optimism journal (write about best possible self) (I)	Experimental design. Random assignment of condition. Measures taken baseline and post intervention at follow up.	**Strength of identification to cultural heritage and American culture** (Single item)	**Anglo Americans reported stringer identification with American culture p < .001 Asian Americans more identification with heritage culture p < .001**
					Essay Content (Coded by two judges to determine if content could explain expected difference in condition	**Focused on others G > I and C p < .001 Focused on self G < I and C p <.001** No significant difference between cultural background

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	20-71 Mean age (SD): 35.6 (11.36) Drop out/incomplete data: 220 participants	newspapers. The study described as potentially improving mental and physical health. If participants completed 7/8 sessions they received $60	**Control:** • Event diary (C) **Length and frequency of intervention:** 10 minute weekly sessions for 6 weeks. **Follow up:** **One month**		and cultural background) **Life satisfaction** (SWL-S)	**For post and follow up:** **G > C $p < .01$** **I > C $p < .05$** Trend of cultural background as a moderator ($p = .57$) with Asian Americans displaying very little change over time in both G and I compared with Anglo Americans. However, this effect more pronounced for I (ns change over time) than G (trend towards significant change $p = .09$) **Within subjects increase over time:** **$p < .05$, $\eta_p^2 = .083$** **$H_{High} > H_{Low}$ $p < .05$, $d = .54$**
Digdon and Kobie (2011)	**Characteristics:** Undergraduate students who met inclusion criteria of poor sleep due to disruptive	Self-selection through recruitment through posters and electronic	**Gratitude intervention:** • Gratitude diary (G) **Intervention compared with**	Internet based study Experimental design. Random	**Sleep quality** (Sleep Quality Scale (SQS)) **Pre-sleep arousal** (Pre-Sleep Arousal Scale (PSAS))	*ns* *ns* Across interventions pre-sleep arousal decreased $p < .01$, $d = .63$

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	thoughts and worries. **N (%male):** 41 (22%) **Age range:** Not reported **Mean age (SD):** 23.2 (6.11) **Drop out/incomplete data:** 20 participants	newsletters. Participants told that intervention may have positive impact on sleep or no effect on it.	**gratitude:** • Constructive worry (I_1) • Imagery distraction (I_2) **Length and frequency of intervention:** Daily for 7 days. **Follow up:** None	assignment of condition Measures taken baseline and post intervention.	**Daily sleep log** **(**Time taken to fall asleep, duration of night awakenings**)**	*ns*. Across interventions total time asleep increased $p < .001$, $d = .6$
Flinchbaug, Moore, Chang and May (2011)	**Characteristics:** Undergraduate students in business management course in USA. **N (%male):** 117 (59%) **Age range:** 21-30+ **Mean age (SD):** Not given **Drop out/incomplete**	Course requirement. No description of how study described/advertised to participants.	**Gratitude intervention:** • Gratitude Diary (list 5 things) (G) **Intervention compared with gratitude:** • **Stress management training (I_1)** • **Combined stress management and gratitude (I_2)** **Control:**	Quasi-experimental design. Conditions allocated to researchers based on lecturers timetable and style of teaching. Measures taken baseline and post	**Stress** (Perceived Stress Scale (PSS)) **Meaningfulness** (Ten items adapted from a published scale) **Engagement** (Ten items adapted from a published scale)	Main effect of condition $p < .05$ $\eta_p^2 = .08$ no significant differences between treatment group. $I_2 > C$ $p < .05$ $I_2 > I_1$ $p < .01$ $G > I_1$ $p = .05$ $I_2 > I_1$ $p < .05$ $I_2 > C$ $p = .01$

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	data: None reported Participant classes based on instructors willingness to take part in study.		• **Passive control** **Length and frequency of intervention:** Weekly for 12 weeks **Follow up:** None	intervention.	**Life satisfaction (SWL-S)** **Manipulation check (**Coded by two independent coders to check adherence to instructions)	*ns* Written accounts matched intended category. Neutral list was 29.7% pleasant, 12% unpleasant and 58.2% neutral.
Long and Davis (2011)	**Characteristics:** Juvenile offenders living in residential homes in USA. **N (%male):** 25 (100%) **Age range:** 13-17 **Mean age (SD):** 15.00 (1.26) **Drop out/incomplete data:** None reported	Description of study was given to staff and parents and consent gained. Assent gained from participants. No detailed information about how study was described.	**Gratitude intervention:** • Gratitude diary with instructions (G) "*list three things that went well for you and what they meant for you*" **Intervention compared with gratitude:** • Expressing optimism (write about best possible self) (I) **Control:** • Listing expectations for	Mixed methods design. Conditions allocated to researchers based o schedule of group leaders and their preference of intervention. Measures taken, pre and post intervention Content Analysis of diary content.	**Life satisfaction** (SWL-S) **Hope** (Children's Hope Scale (CHS)) **Positive and negative affect** (PANAS-C) **Length of diary entry** (Average length of entry**)** **Diary content** (Coded by three researchers and analysed by content analysis)	ns *ns.* *ns* No significant difference between interventions **Themes of G vs. C** Program activities/goals 29% (G) vs. 11% (C) Personal accomplishments 26% (G) vs. 0% (C) Career material success 26% (G) vs.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			tomorrow (C) **Length and frequency of intervention:** Daily for 5 days. **Follow up:** None			0% (C) Family 15 % (G) vs. 23% (C)
Lyubomisky, Dickerhof, Boehm and Sheldon (2011)	**Characteristics:** Undergraduate students in USA **N (%male):** 335 (30%) **Age range:** Not reported **Mean age (SD):** 23.2 (6.11) **Drop out/incomplete data:** 153	Volunteered in exchange for course credit and $40 for completing follow up measures. Self-selected students signed up for a happiness intervention. Other participants signed up for a cognitive exercise study	**Gratitude intervention:** • Thinking about and writing letters to someone the felt grateful to (not sending it) (G) **Intervention compared with gratitude** • Expressing optimism (in 6 different categories e.g. education, physical health etc. (best possible self) (I)	Internet based study except for initial introduction. Experimental design. Factorial design of intervention and self-selection variables. Random assignment of intervention. Measures taken baseline and post intervention. Using change	**Well-being rating** Combined scores from several scales**:** • **Positive and negative affect** (PANAS) • **Life satisfaction** (SWLS) • **Happiness** (Subjective Happiness Scale (SHS))	**Post test:** No significant differences between interventions**.** **Select selection vs. non-self selection** • Across all intervention conditions: Self select > non-self-selected participants $p < .01$, r = .14 • Self-select G and self-select I > (non-self-select G), (non-self-select I), (non-self-select C) and (self-select C) $p < .05$, r =.12 **Follow up:** Trend G+I > C, $p = .11$, $r = .11$ **Select selection vs. non-self selection** • Across all intervention conditions: trend self select > non-self-selected participants $p = .11$ $r = .14$

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			Control: • Mental outline of events of past week (described as an intervention to improve organizational skills) (C) **Length and frequency of intervention:** Weekly for 8 weeks **Follow up:** 6 month	scores as dependent variable	**Effort** Objective coders rated single item "how much effort did participant put into exercise". This did not involve rating quality or writing skill.	• **(Self-select G and self-select I) > (non-self-select G), (non-self-select I), (non-self-select C) and (self-select C) p <.05, r =.14** Hierarchical regression analysis to test the impact of coder rated effort on well-being in the context of intervention: (**G +I) p < .001** but not for C p =.95
Rash, Matsuba, Prkachin and (2011)	**Characteristics:** Adults from small urban area in British Columbia, Canada. **N (%male):** 56 (53%) **Age range:** Not reported **Mean age (SD):** 22.5 (3) **Drop**	**Study** advertised on local radio and posters. Study described as The HEW Study: Health, Emotions, and Well-being with the purpose of examining the	**Gratitude intervention:** • Gratitude induction in Laboratory (bring to mind grateful experience) • Gratitude reflection and diary (G) **Control:** •Memorable events	Experimental design Random assignment of condition Measures taken, pre, post and during intervention Mixed methods:	**Gratitude** (GQ-6) **Positive and negative affect (aggregated daily scores)** (PANAS) **Life Satisfaction** (SWL-S)	Investigated impact as a moderator: G_{high} vs. G_{Low} **Positive affect:** ns **Negative affect: G <C p < .01** Affect non-significant moderator on outcome measures. **G> C p <.05,**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	out/incomplete data: 9 participants	impact that emotions associated with past events have on physical and psychological health and well-being**.**	reflection and diary (C) **Length and frequency of intervention:** One off in laboratory. Twice a week for 4 weeks (8 entries) **Follow up:** None	Content Analysis of diary content.	**Self-Esteem** (Rosenberg Self Esteem Scale (RSE)) **Diary content (**Open coding of diary entries and frequency of category compared)	**Trait gratitude as a moderator of life satisfaction $G_{Low} > G_{High}$ $p < .05$** **G> C $p < .05$,** Trait gratitude as a moderator = *ns* **Categories** People related experiences: G>C $p < .01$ School C> G $p < .001$ Events C > G $p < .001$ Negative emotions/experiences C> G $p < .01$ Content not a significant predictor of outcome
Sergeant and Mongrain (2011)	**Characteristics:** Nationwide community sample. Moderated level of depression as measured on standardized	Participants were recruited from newspaper advertisements and postings on a large Internet social	**Gratitude intervention:** • Gratitude Diary (list 5 things) (G) **Intervention compared with gratitude** •Listen to uplifting	Conducted over the internet Experimental design Random assignment of condition	**Depression** (CES-D and Depressive Experience Questionnaire **(**DEQ)) **Gratitude** (GQ-6)	Neediness, Self critical and Efficacy are 3 orthongonal factors. Tested as moderators Intervention effect = *ns* **Moderators SC and neediness = *ns*** **Trait gratitude as a moderator of life satisfaction $G_{Low} > G_{High}$ $p < .05$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	depression scale. In Canada **N (%male):** 772 (17%) **Age range:** 18-72 **Mean age (SD):** 34 (not given) **Drop out/incomplete data:** 489 participants	networking website. No description of how study described/advertised to participants.	music (I) **Control:** • Writing about early memories (C) **Length and frequency of intervention:** Daily for 6 days. **Follow up:** 1,3 and 6 months	Measures taken, pre, post and during intervention Personality types as moderators. Analyses for changes over all time points. No details reported on just post intervention. Authors notes *"results of the 1 week effects were generally consistent with long term effects and several new group differences emerged that reinforced significantly*	**Physical symptoms** (Checklist) **Self-esteem** (RSE) **Happiness** (SHI) **Adherence** (Number of days completed)	*ns* intervention effect **Role of SC** High SC G>C $p < .01$ (compared to low SC) High SC I>C $p < .01$ (compared to low SC) No interaction effect for SC for G and I *ns* intervention effect **Role of SC and neediness** Trend of high SC G>C p = .087 (compared to low SC) Trend of high SC G>C p = .089 (compared to low SC) **G > C $p < .05$** **I > C $p = .01$** **Role of SC** **For high SC G>C $p < .05$ (compared to low SC)** **For high SC G>I $p < .05$ (compared to low SC)** Used as a covariate (assumptions met)

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
				better in gratitude condition"	**Manipulation check (**Coded by two independent coders to check adherence to instructions)	Written accounts matched intended category. Neutral list was 30% pleasant, 13% unpleasant and 57% neutral.
Toepfer, Cichy and Peters (2011)	**Characteristics:** Students and staff at an American University across three campuses **N (%male):** 219 (14%) **Age range:** 18-65 **Mean age (SD):** 25.7 (11) **Drop out/incomplete data:** None reported	Participation voluntary and received extra course credit. No description of how study described/advertised to participants**.**	**Gratitude intervention:** • Gratitude letter-posted at end of intervention. **Control:** • Passive control **Length and frequency of intervention:** Weekly for 3 week (3 different letters written**)** **Follow up:** none	Experimental design. Randomly allocated to condition. Letters checked by researchers to check against basic guidelines (non-triviality, author identification, stamped envelope) Measurements taken at baseline (T1) after writing each letter (T2, T3 and T4)	**Gratitude** (GQ6) **Life satisfaction** (SWL-S) **Depression** (CES-D) **Happiness** (SHS)	ns intervention effect Initial gratitude as a moderator = ns **G >C *p* < .001** Baseline gratitude as a moderator = ns **G < C *p* < .001** Baseline gratitude as a moderator = ns **G > C *p* < .001** Baseline gratitude as a moderator = ns

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
Chan (2013)	**Characteristics:** Chinese school teachers attending evening classes. **N (%male):** 81 (18%) **Age range:** 22-58 **Mean age (SD):** 33.7 (7.2) **Drop out/incomplete data:** 3 participants	Advertisement on evening class website to recruit volunteers to participate in an eight-week self-improvement project to enhance their well-being through self-reflection.	**Gratitude intervention:** • Gratitude diary (list 3 things) Included Naikan mediation questions to further reflect on the meaning the events had on them (slightly different emphasis from Chan (2010) (G) **Intervention compared with gratitude:** • Coping Intervention. Similar to Hassel diary used in Emmons & McCullough with Naikan meditation questions which asked participants to reflect of	Experimental design. Random assignment of condition Measures taken, pre, post and during intervention	**Life Satisfaction** (SWL-S) **Positive and negative affect** (PANAS) **Gratitude** (GAC)	**G >I $p < .001$ $d = .85$** **Positive affect: *ns*** **Decrease in negative affect: G >I $p < .01$, $d = .51$** **G> I $p < .05$, $d = -.38$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			positive outcomes from the negative event. **Length and frequency of intervention:** Weekly for 8 weeks **Follow up:** None			
Gander, Proyer, Ruch and Wyss (2012)	**Characteristics:** Community based sample in Switzerland. **N (%male):** 2374 (5.4%) **Age range:** 19-79 **Mean age (SD):** 44.9 (10.1) **Drop out/incomplete data:** 1448 (61%)	Advertisement in magazine and online advertisement. Described as a online training program for cultivating character strengths.	**Gratitude intervention:** • Gratitude letter-write and deliver the letter in person (G_1) • Gratitude letter and 3 good things exercise (G_2) **Control:** • **Writing about early memories (C)** Other interventions tested in study: • 8 happiness interventions also	Internet based intervention Experimental design. Random assignment of condition. Measures taken, pre, post and follow up Analysis of participants who	**Happiness** (Authentic Happiness Inventory (AHI)) **Depression** (CES-D)	**At post test** **Trend $G_2 > C$ $p < .10$, $\eta_p^2 = .02$** 1 month follow up **$G_1 > C$ $p < .05$, $\eta_p^2 = .03$** **$G_2 > C$ $p < .05$, $\eta_p^2 = .03$** 3 month follow up **$G_1 > C$ $p < .05$, $\eta_p^2 = .03$** **$G_2 > C$ $p < .05$, $\eta_p^2 = .04$** At post test **$G_2 < C$ $p < .01$, $\eta_p^2 = .03$** 1 month Follow up **$G_1 < C$ $p < .05$, $\eta_p^2 = .03$** **$G_2 < C$ $p < .05$, $\eta_p^2 = .03$** 3 month follow up **$G_1 < C$ $p < .05$, $\eta_p^2 = .02$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			tested **Length and frequency of intervention:** Each exercise delivered through internet and could be completed within one week **Follow up:** 1,3 and 6 month	dropped out- but no ITT analysis	**Continued practice** (Single item at follow up)	**Trend $G_2 < C$ $p < .10$, $\eta_p^2 = .02$** Continued intervention yielded increase in happiness at 1 month **($p = .063$, $\eta_p^2 = .01$, 3 months ($p = .042$, $\eta_p^2 = .03$)** compared to those who had stopped after one week. No significant impact on depression scores.
Kaplan, Bradley-Geist, Ahmad, Anderson, Hargrove and Lindsey (2013)	**Characteristics:** Staff members from two American Universities **N (%male):** 112 (13%) **Age range:** 18-65 **Mean age (SD):** 43 (12.3) **Drop out/incomplete data:** 45 participants	A recruitment email advertised as a study, which aimed to explore avenues to increase well-being at work. Participants received $10 gift certificate.	**Gratitude intervention:** • Gratitude diary related to work (list as many things) (G) **Control:** • Engage in specific strategies with aim to increase social connectedness. (I) **Length and frequency of**	Internet based intervention Experimental design. Random assignment of condition. Measures taken, pre, post and follow up	**Positive and negative affect related to work** (Job-Related Affective Well-being Scale (JAWS). **Gratitude at work** (Adapted GAC)	Within subject comparison over time in G: **Increase in Positive affect $p < .05$** Negative affect = *ns* **Comparisons between conditions** Positive affect: G > I $p < .05$ Positive affect as a mediator of interventions impact on gratitude = ns Within subject comparison over time in G: **Increase in gratitude $p < .05$** Comparisons between conditions G > I $p < .01$

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			intervention: 3 days a week for 2 weeks (6 entries) **Follow up:** I month		**Belonging to work** (Selected items from published measure of social connectedness)	Within subject comparison over time in G = ***ns*** Between subject comparisons = ***ns***
					Absence due to illness (Number of absences in 2 weeks)	Within subject comparison over time in G: **Decrease in absences $p < .05$** Between subject comparisons = ***ns***
					Adherence to intervention (Number of diary entries)	Adherence related to intervention outcomes = ***ns***
Lambert, Gwin, Baumeister, Strachman, Washburn, Gable and Fincham, (2013) Study 4	**Characteristics:** Undergraduate students on a course on families and lifespan in USA **N (%male):** 158 (15%) **Age range:** 17-31 **Median age:** 20	Participation voluntary and received extra course credit. No description of how study described/advertised to participants.	**Gratitude intervention:** • Gratitude diary and share with friend/partner (G_1) • Gratitude diary(G_2) **Control:** • Event journal and share with friend/partner (C)	Experimental design. Random assignment of condition. Measures taken, pre, post and follow up	**Happiness** (SHS)	**$G_1 > G_2$ $p < .05$, d=.30** **$G_1 > C$ $p < .01$, d=.35** **G_2 and C= *ns***
					Life satisfaction (SWLS)	**$G_1 > G_2$ $p < .05$, d =.38** **$G_1 > C$ $p < .01$, d =.48** **G_2 and C= *ns***
					Positive affect (PANAS)	**Trend $G_1 > G_2$ p = .06, d=.38** **$G_1 > C$ $p < .05$, d=.38** G_2 and C= *ns*

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	Drop out/incomplete data: 24 participants (Analysis confirmed no differential attrition by condition and dependent variables)		**Length and frequency of intervention:** 4 week daily journal and share with friend twice a week **Follow up:** None		**Vitality** (Vitality Scale)	**Vitality** **$G_1 > G_2$ $p < .05$, $d = .44$** **$G_1 > C$ $p < .01$, $d = .67$** G_2 and C= *ns*
Layous, Lee, Choi and Lyubomirsky (2013)	**Characteristics:** 520 undergraduate students from USA and South Korea **N (%male):** Not reported **Age range:** Not reported **Mean age (SD):** Not reported **Drop out/incomplete data:** No information	Online study. No description of how study described/advertised to participants.	**Gratitude intervention:** • Gratitude letter (G) **Intervention compared with gratitude:** • 3 acts of kindness (I) **Control:** • Event diary (C) Half of participants swapped activity	Internet based intervention Experimental design Random assignment of condition Culture as a moderator of gratitude intervention (Participants from the USA	**Well-being** Composite score from two scales: • Life satisfaction (SWL-S) • Level of emotion (Modified Differential Emotions Scale • (mDES))	**G > C $p < .05$** **Trend I > C $p = .056$** **Impact of culture as a moderator (US versus SK) significant** **US participants increased in well-being G > C $p = .006$ and I > C $p < .05$** **USA G condition > South Korean (SK) in G condition $p = .002$.** No significant differences between USA and SK in I condition. Significance remained at follow up.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	on dropout 109 did not give effort score		halfway through intervention **Length and frequency of intervention:** 6 weeks **Follow up:** 1 month	versus participants from South Korea (SK)) Measures taken pre, post and during intervention	**Effort** (Single item)	**Impact of effort as a moderator:** **Across the sample effort predicted linear gains in well-being $p = .0001$.** **This varied across culture. For US participants greater effort yielded increases in well-being $p = .0001$, but this relationship was not significant for SK participants**. No information reported about relationship of effort and well-being between G and I conditions.
Owens and Patterson (2013)	**Characteristics:** Children attending afterschool and summer day camp programs in USA **N (%male):** 62 (48%) **Age range:**	Information for parental consent given for every child. No description of how study described/adv	**Gratitude intervention:** Gratitude drawing about day and description to adult scribe **(G)** **Intervention compared with gratitude:**	Quasi-experimental design. Five after school centers randomly allocated one of three conditions. Measures taken	**Life satisfaction** (BMSLSS) **Positive and negative affect** (PANAS-C) **Self Esteem** (Perceived Competence Scale for Children)	*ns* ns **I > C $p = .004$**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
	5-11 **Mean age (SD):** 7.35 (1.7) **Drop out/incomplete data:** 18 participants	ertised	• Best possible self drawing and verbal description to adult scribe (I) **Control:** • Event drawing and description to adult scribe (C) **Length and frequency of intervention:** Weekly for 4-6 weeks (differed between sites). In addition participants absence resulted in difference in number of sessions. Statistical analysis on number of sessions not significant between conditions. However, in order to have data included in analysis more than 4 sessions completed. **Follow up:** None	at baseline and post intervention. Age in years as a covariate	**Content of drawings (**Two independent raters coded description using codes developed by Gordon et al. (2004))	Most frequent occurring gratitude categories were activities (e.g. playing sports), people (e.g. family members, friends) and pets/animals. Statistical analysis confirmed that there was no relationship between content of drawings and gender or age.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
Peters, Madelon, Mevissen and Hanssen (2013)	**Characteristics:** Graduate students from a Dutch University. **N (%male):** 90 (16%) **Age range:** 18-65 **Mean age (SD):** 22.8 (not reported) **Drop out/incomplete data:** 8 participants	**Participation voluntary and received extra course credit or a gift voucher.** **True purpose of intervention disguised. Participants were informed they would** practice imagery to improve spatial orientation skills for one week.	**Gratitude intervention:** • Gratitude writing task and then daily imagery task in three domains: personal, professional and relational (G) **Intervention compared with gratitude:** • Best possible self writing task then daily imagery task in the three domains (I) **Control:** • Events in daily life writing task, then daily imagery task (C) **Length and frequency of intervention:** 1 hour introductory session including writing session then daily imagery	Experimental design Random assignment of condition. One hour intro session and one week of daily imagery Measures taken, pre, post intervention and follow up. Change scores to result in two scores to establish change over time a post intervention score and follow up score.	**Life satisfaction** (SWL-S) **Optimism** (Life Orientation Test (LOT-R) and Attributional style Questionnaire (ASQ)) **Adherence check (**Checklist about timing and content of imagery, how motivated they were to perform exercise and how easy it was to focus on imagery).	At post test: **Trend I > C p = .10, η^2 = .116** Follow up: **Trend I > C p = .057, η^2 = .116** **LOT-R** At post test: all ns Follow up: **Trend I > C p = .057, η^2 = .066** **Trend I > G p = .055, η^2 = .065** ASQ At post test: **I > C p < .05, η^2 = .091** Follow up: **I > C p < .05, η^2 = .08** No difference between interventions on any items in checklist. No significant change in scores throughout intervention.

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			sessions for 7 days. **Follow up:** 1 week			
Senf and Liau (2013)	**Characteristics:** Undergraduates from a private Malaysian College enrolled in a human personality class. **N (%male):** 146 (33%) **Age range:** 18-33 **Mean age (SD):** 20.3 (1.6) **Drop out/incomplete data:** 24 participants Attrition analysis using pre-intervention scores = ns	Participation voluntary and received extra course credit. No description of how study described/advertised	**Gratitude intervention:** • Gratitude letter and visit and daily journal with instructions "three things that went well and why" (G) **Intervention compared with gratitude:** • Signature strengths exercise and daily task (I) **Control:** • Passive control (C) **Length and frequency of intervention:** Daily for 1 week **Follow up:**	Experimental design Random assignment of condition. All participants were aware that there were three conditions (control condition allowed to leave following allocation) Measures taken, pre, post intervention and follow up.	**Gratitude (**GAC) (Manipulation check**)** **Adherence check** (Self report on how closely instructions were followed) **Personality** (International Item Personality Pool (IPIP-PI)) **Happiness** (SHI)	*ns* *ns* Measured to assess personality type as moderator on intervention Post: **G > C $p < .05$** **Personality as moderators of G intervention:** **Extraversion $p < .05$** **Openness $p < .05$** Participants with higher levels of

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
			1 month	Prompts given over email Due to scheduling of exams post measures taken one week after end of intervention (immediately after exams)	**Depression** (CES-D)	extraversion and openness benefited more than those with low levels. **Follow up**: *ns* impact of intervention and no significant moderation effects Post: *ns* **Personality as moderators of G intervention:** **Extraversion $p < .05$** Participants with higher levels of extraversion had greater decrease in depression compared to lower levels of extraversion. **Follow up:** **G < C $p < .01$** **I < I $p < .05$** **Personality as moderators of G intervention:** **Extraversion $p < .05$** Participants with higher levels of extraversion had greater decrease in depression compared to lower levels of extraversion.
Ouweneel, Le Blanc, Wilmar and Schaufeli	**Characteristics:** Students at a Dutch University **N (%male):** 50 (28%)	Internet recruitment.	**Gratitude intervention:** • Gratitude journal towards specific people from	**Internet based intervention** To emails	**Study related positive and negative affect** (JAWS)	**Positive affect:** **Post** (using aggregate score of days 1-5 compared to baseline) **Trend of G > C $p = .09$ $\eta_p^2 = .24$** At day 4 vs. baseline

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
(2014) **Study 1**	**Age range:** Not given **Mean age (SD):** 21.26 (1.93) **Drop out/incomplete data:** No information given.	Participation voluntary and received extra course credit. No description of how study described/advertised	different time periods. (Primary school, secondary, school, high school then current day) **Control:** •Event journal **Length and frequency of intervention:** Daily for 5 days **Follow up:** 1 month	reminders sent everyday. Experimental design Random assignment of condition. Measures taken at baseline, during intervention and follow up.	**Academic Engagement** (Utrecht Work Engagement Scale-Study Survey (UWES-S))	**G> C *p* < .01** **At day 5 vs baseline** **G >C *p* < .01** Follow up: ns Negative affect: *ns* *ns*
					Gratitude (GAC)	**G > C *p* <. 05, η_p^2= .04**
					Behavioural measure of gratitude- Post test (Number of thank you cards written following a neutral school presentation. All children given option to write card if they wished).	G**>C *p* <.05.**

Study	Participants	Recruitment Strategy	Intervention	Design	Outcome measures	Significant results /interactions
					Gratitude (GAC)	12 weeks: **G > C *p* < .05, *d* =.41** 20 weeks: **G > C *p* < .05, *d* =.48**
					Positive and negative affect (PANAS-C)	Post affect: 12 weeks: **G > C *p* < .05, *d* =.40** 20 weeks: **G > C *p* < .001, *d* =.55** Negative Affect- *ns*
					Life satisfaction (BMSLSS)	*ns*

Appendix D: Ethical Approval

Monday, 19 May 2014 16:44:32 British Summer Time

Subject: Your Ethics Submission (Ethics ID:6468) has been reviewed and approved
Date: Friday, 12 July 2013 09:30:49 British Summer Time
From: ERGO
To: td11g11@soton.ac.uk

Submission Number: 6468
Submission Name: thesis gratitude diary
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

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

DO NOT REPLY TO THIS EMAIL

Appendix E: Letter to Parents

Dear Parent/Guardian,

My name is Tara Diebel 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, the amount of positive emotions that are experienced about school and their satisfaction with school. The project will involve year five students and will last for two 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 two-week diary intervention about children's experiences in school, can have a positive impact on children's sense of belonging towards school, the amount of positive emotions that are experienced about school and their satisfaction with school.

Why has my child been invited?

The diary study will be a whole class project and every child from year five has 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 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 year five children, and will involve them filling out a daily diary for two weeks. This diary should take them 5-10 minutes to complete. Children will be given either an event diary that will ask them to list three things that happened in the school day, or a gratitude diary that will ask them to write down three things they are grateful happened in the school day.

The diaries will be collected in at the end of the study to be analysed further. They will then be returned to each pupil.

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 in groups of three.

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 in school which is an area of great interest to Educational Psychologists and schools. The findings of this project will be fed back to your school and the Educational Psychology team in Southampton.

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 two-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 and they will all be told that no one will mind if they don't fill it in.

To safe guard all children who participate, a named member of school staff will be available to any child who wanted 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. The findings will be shared with Southampton Educational Psychology service. 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, Tara Diebel, the Building 44a University of Southampton, SO16 7PB, Tel: 02380 59532. If you wish to make a formal complaint, you can also write to the Chair of the Ethics Committee, School of Psychology, University of Southampton, Southampton, SO17 1BJ, email slb1n10@soton.ac.uk, or phone 02380 594663.

Will the results of this study be kept confidential?

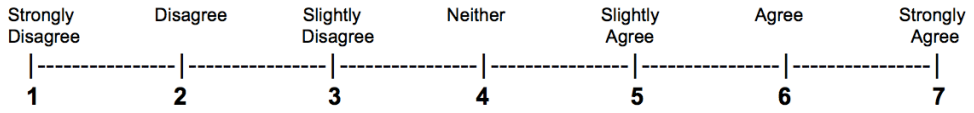
All information collected will be held in accordance with the Data Protection Act 1988. All data will be anonymised and will be stored securely on a password protected computer for ten years before it is destroyed.

Who has reviewed this study?

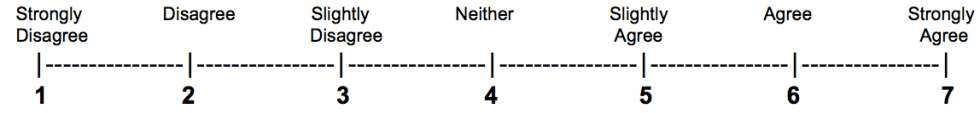
This study has been reviewed and approved by the University of Southampton, School of Psychology Ethics Committee. All necessary safeguarding checks and references have been successfully completed.

Appendix F: Adapted GQ-6

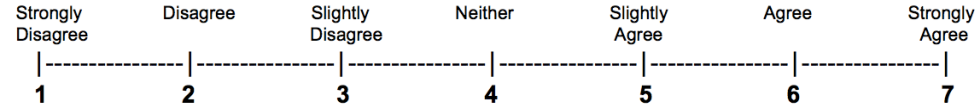
1. I have so much in school to be thankful for.



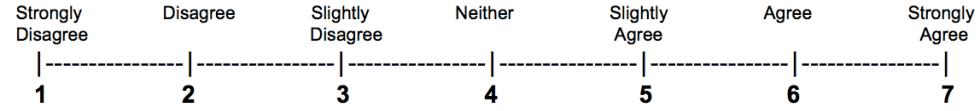
2. If I had to make a list of everything I felt grateful for in school, it would be a very long list.



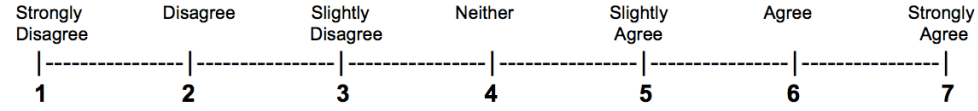
3. When I think about school, I can't think of many things to be grateful for.



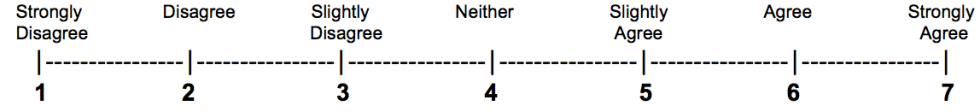
4. I am grateful to lots of different people at school.



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 G: Adapted SNS

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.

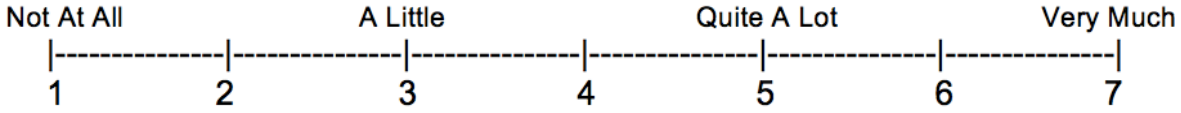
Leah is looking at a photo and thinking about the past

Daniel hears a song on the television that makes him remember a time from when he was younger. As Daniel thinks about this song, he thinks about the games he used to play with his friends when he was little and the fun times they used to have 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.

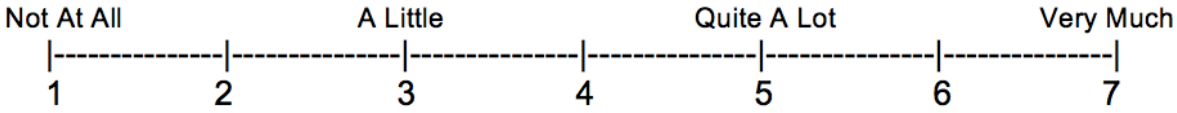
Daniel is listening to a song and thinking about the past

Now, we would like to know if you feel nostalgia

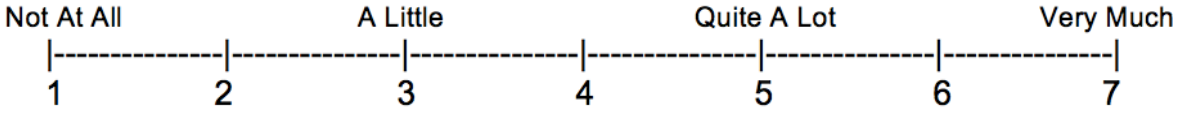
1. How much do you like to feel nostalgia?



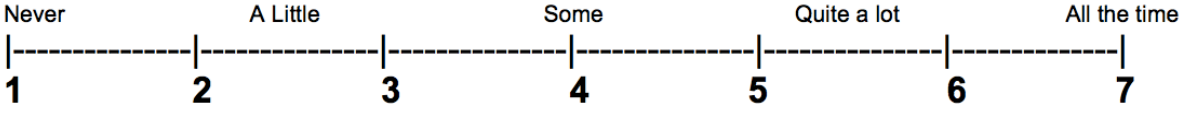
2. How important is it for you to feel nostalgia



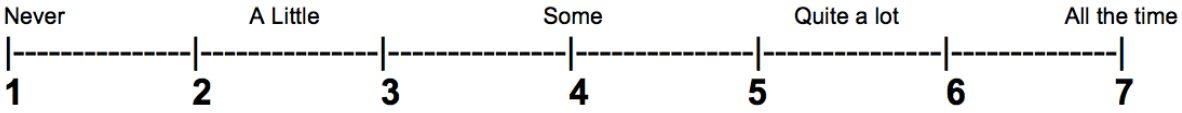
3. How much do you enjoy to feel nostalgia?



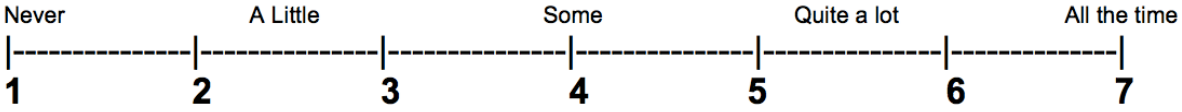
4. How typical is it for you to have nostalgia when you think about the past?



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 H: Semi-structured script to introduce concept of gratitude and the 7-point rating scale

"Hello everyone, I am here today to ask for you to be some special helpers for my research. I need your help to make sure that the tasks and questionnaires that I am using can be understood and that other children will be enjoy completing them. What we are going to do for the next twenty minutes or so is to learn about some new words and fill out some questionnaires".

"Firstly we are going to talk about what it means to be thankful/grateful. Can anyone tell me what the word thankful or grateful means?

Possible responses may include: "feeling grateful, saying thank you, feeling appreciative, appreciate, and feeling satisfied or content." If answers such as "happy or excited" are given ask students "why?". The definitions should have a theme that students are aware that something beneficial has happened in order to define thankful. In this sense the facilitator will explain to students the connection that feeling happy or excited could be due to something good happening to the student and they feel grateful or thankful for it

"Another word that is used to mean thankful is grateful. They are the same feeling. Grateful or thankful is the feeling we get when something good happens to us. Many of us feel grateful for family, friends, or their pets. Feeling grateful could also come from a time when someone helped you. An example could be that you were having difficulty understanding your homework. You asked your older brother or sister or a parent to help you. They spent some time with you helping you to understand the assignment. Now let us take a few moments to think about a time that we felt grateful or thankful for something. Once you have thought about a time you felt thankful, I would like for you to pair up and please share you experience with the person you are paired with."

Could you give me some examples of things you might be thankful for, such as events that have happened that you are thankful for, things that people have done for you or that you have got to do with someone that you are glad for.

"Now that we have had a chance to share our experiences of feeling thankful with our partners, will someone volunteer to share their experience with the class?"

For each volunteered answer, make the connection that something positive happened to the student and that is why they felt grateful.

Introduction to rating scale and practice filling one out for example questions: "I really like chocolate" and "football is my favourite sport".

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