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Nurturing grateful and connected twenty-first century learners:

Development and evaluation of a socially oriented gratitude intervention

Introduction

Gratitude is a disposition to acknowledge and appreciate the positive in life (Wood, Maltby, Stewart, & Joseph, 2008). It is also understood to be an emotion felt when a benefit or positive outcome that is not necessarily deserved or earned (Emmons & McCullough, 2003) is achieved due to a costly and intentional act of a benefactor (Wood et al., 2008). Consistent with Cicero's view that gratitude is the parent of all virtues (Seligman, Steen, Park, & Peterson, 2005), gratitude serves as a pillar of several core values and competencies important to thrive in the twenty-first century (21C). For instance, key elements of the 'Total Curriculum' framework for 21C competencies (21CC) and student outcomes developed by the Singapore Ministry of Education (2017), namely relationship management, social awareness, self-awareness, self-management, and the core values of respect, care, harmony, are closely linked to gratitude (see Kee, Tsai, & Chen, 2008, for a review). In a similar vein, several commonly referenced international 21CC education frameworks, such as the National Academy of Sciences' Education for Life and Work: Developing Transferable 21C Knowledge and Skills (Pellegrino and Hilton, 2013), Assessment and Teaching of 21C Skills (Binkley et al., 2010), and EU's Key Competences for Lifelong Learning (Gordon et al., 2009), all articulate the importance of a suite of intrapersonal competencies that are associated with gratitude, including positive core self-evaluation (Lin, 2015) and relating well to others (Lambert et al., 2010). Complementary to these national and international 21C education frameworks, extant research studies have shown that gratitude serves as an adaptive mechanism that helps individuals to deal with adverse conditions,

and thus develop resilient outcomes (Vieselmeyer, Holguin, & Mezulis, 2017; Fredrickson et al., 2003; Rosenberg et al., 2014). As gratitude is primarily expressed and experienced in the context of social relationships (Emmons & Stern, 2013), it plays a key role in promoting social cohesion and harmony: It was found that gratitude was positively associated with pro-social emotions or behaviours, such as empathy and care (Davis, 1983), and acts of kindness (McCullough, Emmons & Tsang, 2002); and negatively associated with anti-social behaviors, such as aggression (DeWall et al., 2012).

A number of studies have focused on developing and evaluating interventions focusing on cultivating gratitude. Most of these interventions had a generic focus: that is, individuals are usually asked to think of events, things, or people that they are thankful for (e.g., Chan, 2010; Emmons & McCullough, 2003). There is a paucity of empirically tested and well-crafted gratitude activities that target the promotion of social bonds (see O'Connell, O'Shea, & Gallagher, 2015, for a review). Furthermore, most of the studies that investigated the effectiveness of gratitude activities have involved adult populations (e.g., Chan, 2010; Emmons & McCullough, 2003); only a few of such studies had school-age children as samples (e.g., Froh, Sefick, & Emmons, 2008). Even fewer studies (e.g., Diebel et al., 2015; Owens & Patterson, 2013) have actually concentrated on the development of *in-situ* gratitude interventions that can be implemented by teachers in the classroom alongside the regular school curriculum.

To redress the stated gaps in the extant literature, we developed and evaluated an intervention aimed at cultivating gratitude and improving the quality of students' social relationships with key social partners. In this study, we focused on adolescent learners— a group that is known to experience a number of social challenges as they navigate dynamic social environments and prepare for adulthood (Akos, 2002; Brown & Larson, 2009).

This study augments both theory and practice. In terms of theory, we explicitly tested whether a socially oriented gratitude intervention (SOGI) can improve grateful thinking and the quality of adolescent students' relationships with significant others (i.e., parents, teachers, and peers). Previous studies have mostly focused on examining the effects of gratitude interventions on well-being outcomes (e.g., positive affect or emotions) with little research focused on its impact on social relationships (O'Connell, et al., 2015; Lambert, et al., 2010). In terms of practice, the SOGI developed in this study can be used and adapted by teachers in their local schools, in order to cultivate gratitude among students. The school setting provides an optimal authentic context for the implementation of the SOGI given that students spend a significant amount of their time in schools (Hofferth & Sandberg, 2001).

Gratitude and relatedness

Several psychologists have recognized gratitude as an important foundation for forging and maintaining social relationships (Algoe & Haidt, 2009; Emmons & McCullough, 2003). This is in line with Adam Smith's theory of moral sentiments, which indicates that gratitude is a primary motive for engaging in benevolent acts towards a benefactor, as well as the moral affect theory, which posits that gratitude has three moral functions: *moral barometer*, *moral motive* and *moral reinforcer* (McCullough, Emmons, Kilpatrick, & Larson, 2001). Operating as a moral barometer, gratitude helps in detecting a variation in social relationship, such as when a benefactor has engaged in an intentional benevolent act that benefitted the receiver (McCullough, et al., 2001). Functioning as a moral motive, gratitude drives the receiver to reciprocate the action of the benefactor (McCullough, et al., 2001). Working as a moral reinforcer, receiving gratitude encourages the benefactor to behave morally in the future

(McCullough, et al., 2001). Through these mechanisms, gratitude facilitates positive and supportive social interactions that can help forge social bonds between the benefactor and receiver.

Gratitude functioning as a pro-social emotion has been suggested in a number of studies. Being grateful was found to be positively associated with a person's empathy (Davis, 1983; McCullough, Kilpatrick, & Emmons, 2001), sensitivity to others' needs and experiences (Jia et al, 2014; Algoe & Haidt, 2009), and the likelihood of providing assistance to others (McCullough, Emmons& Tsang, 2002). Focusing on the benefits that one has received from others can induce feelings of being appreciated, loved and cared for (Reynolds, 1983) thereby increasing one's sense of relatedness with key social partners.

Building, maintaining and strengthening of relationships is important in human functioning (Baumeister & Leary, 1995). Having a positive sense of relatedness--feeling accepted, loved, and cared for-- helps individuals develop a positive self-concept and serves as a protective factor when facing adversities (Furrer & Skinner, 2003; King, 2015). During adolescent years, relationships tend to change, with parent-child relationship deteriorating as children struggle to attain autonomy from their parents. During this time, adolescents tend to turn more towards their peers for support (Collins, Gleason, & Seesma, 1997). While some tend to experience frequent conflicts with their peers, others struggle to be integrated into social networks (Brown & Larson, 2009). Adolescents moving from primary to secondary school may also feel alienated in the new social context as they leave behind their old friends and teachers (Akos, 2002). The cultivation of gratitude may help adolescents develop adaptive dispositions to deal with such transitional issues pertaining to their social relationships.

The current study

The present study addresses the need for studies that ascertain the social benefits that adolescent learners can gain from experiences that build upon gratitude principles. Specifically, it aimed to answer the following research questions:

1. Do the students who participated in the SOGI activities demonstrate significantly greater positive changes in their gratitude and relatedness with parents, teachers and peers, as compared to the students in the control group?
2. What are the students' perceptions of the SOGI activities?
 - a. What are the students' perceived benefits, if any, from the SOGI?
 - b. What aspects of the SOGI did the students find most beneficial and meaningful?

We expected that the students who experienced the SOGI, when compared with those in the control group, would have a greater positive change in the sense of gratitude and their relatedness with their parents, teachers, and peers. We did not proffer any specific hypotheses about students' perceptions of the SOGI activities as we intend to let ideas addressing the last research question emerge from the data.

Methods

We have organized this section in the following sequence. First, we present the development of SOGI, along with the details of how we worked towards enhancing the teachers' fidelity in implementing the intervention protocol. We then describe the participants, research design, measures and data analysis that were involved in the study.

Development of the Socially Oriented Gratitude Intervention (SOGI)

The SOGI featured four key activities that were tailored for use in classroom settings and in cultivating gratitude and positive social relationships: *Counting Everyday Blessings*, *Gratitude Card*, *Mental Subtraction of Blessings*, and *Gratitude Collage*. To this end, we have introduced three key elements: *social primers*, *sharing moments* and *reflection time*.

Social primers

The social primers, which were introduced at the beginning of each activity, were designed to activate participants' consciousness towards significant others and social situations in order to facilitate the participants' focusing on and valuing of social relationships when doing the gratitude activities. It has been well-recognized by psychologists that being exposed to a social stimulus, or "prime", can engender subsequent events and behavior that may not necessarily be a part of an individual's intention or consciousness (Molden, 2014).

Sharing moments

The sharing moments were introduced in the middle or end of each activity to provide opportunities for the participants to interact and share their ideas on what or who they are thankful for within the context of a group or class discussion. Through the sharing moments, students have the opportunity to re-evaluate and reconstruct their understanding of the world in a social manner through their interactions with their peers (Goncu, 1993). These conversations encourage students to search for social meanings and information, which may result in a shared understanding of gratitude. Furthermore, socially sharing emotional experiences was found to

induce more positive emotional ratings of positive experiences and buffer the effect of negative experiences: that is, such experiences are perceived as more rewarding and pleasant when experienced with someone than alone (Wagner et al., 2014). In line with this notion, the sharing moments can enhance the effects of the gratitude activities.

Reflection time

The reflection time was introduced to allow the students to process the experiences that they had during each activity. As John Dewey (1933, p. 78) highlighted: “We do not learn from experience... we learn from reflecting on experience”. Drawing from the literature on metacognition (Flavell, 1979), reflection can be regarded as a critical component of a learning experience. During reflection, students can take stock of their new experience and newly acquired knowledge. Participating in purposeful reflection can enhance the benefits that students gain from the learning activities by increasing their active engagement in the learning activities (Fierke & Lepp, 2015)

Counting Everyday Blessings

We adapted a popular gratitude activity, the Counting Blessings (Emmons & McCullough, 2003), which has been regarded by researchers as effective in cultivating gratitude, enhancing life satisfaction and positive affect (Emmons & McCullough, 2003), and reducing depressive symptoms and negative affect (Gander et al., 2012; Emmons & McCullough, 2003). Counting Blessings requires participants to list down three to five things that they are grateful for on a daily or weekly basis for a given period (usually two to four weeks). Being thankful about life’s blessings can enhance positive emotions as it counteracts one’s tendency to take the good aspects

of life for granted (Lyubimorsky, Sheldon, & Schkade 2005). For the *Counting Everyday Blessings* activity adapted for our present study, we asked the students to write about the things they are grateful for during the session, and also add a short explanation for each entry.

Gratitude Card

We adapted another classic gratitude activity, the Gratitude Visit, which was found effective in cultivating gratitude and well-being (Seligman, Steen, Park, & Peterson, 2005; Froh, et al., 2009; Toepfer, Cichy, & Peters, 2012). The Gratitude Visit requires participants to write a letter of gratitude to a person they never properly thanked and then deliver the letter to the recipient. The theoretical basis for this activity is the notion that writing helps reorganize thoughts and feelings; creates a greater sense of coherence, meaning (Pennebaker & Seagal, 1999) and control (Graybeal, Sexton & Pennebaker, 2002); and promotes self-understanding (Pennebaker & Graybeal, 2001), all of which may induce positive mood and improve subjective well-being (Toepfer & Walker, 2012). In the current study, we transformed the Gratitude Visit into the *Gratitude Card* activity, in which the students were not only required to write but also draw as a means of expressing their gratefulness to a particular person. To make the activity more interesting for the students, we provided art materials so they could also decorate their cards. We gave students the option to either deliver the letter to the target person or keep it for themselves to give them a greater sense of autonomy.

Mental Subtraction of Blessings

The third component of our intervention package draws heavily on the principles of counterfactual reasoning. Counterfactual reasoning involves thinking alternative versions of the

past, such as mental subtraction (i.e., imagining how things would have been worse if a positive event has not occurred) (Roese, 1997). The activity was inspired by the research done by Koo and associates (2008), which showed that doing mental subtraction can enhance positive affect. Although these authors reported that mental subtraction had no significant effect on gratitude, we recognized the potential of this activity in cultivating gratitude, and hypothesized that its effectiveness might be enhanced when combined with the key intervention elements that we introduced in this study. In the present study, we asked the students to choose one entry from their list in the Counting Everyday Blessings and then describe how their life would be like if that particular "blessing" was not present in their lives. Our social primers encouraged the students to select special persons, rather than objects or events from their list.

Gratitude Collage

The *Gratitude Collage* activity was developed by our research team. A collage is a task in which “images and/or objects are combined in one piece of artwork” (Shepard & Guenette, 2010, p. 297). Some psychologists used collage making, particularly those involving magazine cutouts, as an assessment technique, such as in “understanding students’ personal values” and “manifestations of mental illness” (Sturgess, 1983); or as therapies for individuals who have difficulties expressing themselves (Morrity, 1978). Although there is a widespread use of collage making in psychotherapy, there has been no reported empirical study on its application in cultivating gratitude. In the Gratitude Collage activity, the participants were exposed to social primers and then worked in groups to create a collage from magazine cut outs or their own drawings of objects, events or persons for which they felt grateful. During the sharing moments, participants were asked to share with other group members why they have chosen each picture or

drawing and one representative from each group was asked to present their group collage to the class.

Intervention fidelity

To ensure consistency and fidelity in implementing the activities, the teachers of the experimental group participated in a two-hour workshop that was conducted by the research team. The teachers were introduced to the concepts of positive psychology and the guiding principles of the gratitude activities; they were also asked to carry out three activities that we thought would be more challenging for them to implement. The teachers' suggestions were solicited and then incorporated, whenever feasible and appropriate, in modifying the activities before the actual implementation. All materials, including teacher's guide and student's activity booklet, used during the implementation of the intervention were prepared by the research team.

The fidelity of implementation (FOI) form (available upon request from the authors) was created for the evaluation of the degree to which the teachers adhered to the activity procedures indicated in the teachers' guide. During each session, two members of the research team completed the FOI form during each session: These researchers had an agreement of at least 90%. The teachers' FOI ranged from 83% to 87%.

Participants

The participants were secondary students in Singapore who were attending the Normal Academic (NA) course. In the Singapore context, most students are assigned into the Express, Normal Academic (NA) or Normal Technical (NT) course based on their performance at the Grade Six national examinations (Singapore Ministry of Education [MOE], 2014). Some students may be laterally transferred to other academic streams depending on their school

performance (Singapore Ministry of Education, 2017a). Using the data that we extracted for a number of schools through the School Information Service (MOE, 2017b), we noted that the median aggregate score in the national examinations of NA students tend to be lower than that of the students in the Express course but higher than that of the students in the NT course. Noting these, students attending the NA course may be assumed to have similar academic abilities, which fall in the moderate range.

Students from two Secondary One classes (S1, mean age=12.97 years) and another two Secondary Three NA classes (S3, mean age=14.97) from one school were involved in the study. One class from each level was randomly selected as the experimental group whereas the other class served as a wait-list control group. There were 134 students who participated during the early part of the study; however, only 103 students completed all stages of the study: 46 students (32 from S1 and 14 from S3; 47% male and 53% female) in the experimental group and 57 students (21 from S1 and 25 from S3; 49% male and 51% female) in the wait-list control group. The final analytical sample comprises 48% male and 52% female; 39% Chinese, 37% Malay and 13% from other race groups. Of the 28 absentees (students who were present in the pretest and then absent in the posttest, 27% of the participants), 15 were from the experimental group and 13 were from the control group.

Procedure

Before taking part in the study, the participating students and their parents signed consent and assent forms, respectively. Three weeks prior to the implementation of the first intervention activities, all participants completed a survey (for about 40 to 50 minutes), which elicited students' response concerning their demographic background, gratitude, relatedness with parents,

peers and teachers. The survey questionnaire also included items tapping on other constructs that were not presented in this paper. During the class subject focusing on character and citizenship education (CCE), the students in the experimental group participated in the intervention activities facilitated by the teacher while their peers in the control group had their usual CCE lessons facilitated by another classroom teacher. The intervention activities (see Figure 1) were carried out by the teachers in four CCE periods (a total of 140 minutes) within two weeks. The *Gratitude Collage* and *Counting Blessings* were carried out in 50- and 20-minute sessions, respectively. Although originally intended to be a four-week session, constraints in school schedule necessitated the integration of the *Alternate Reality* and *Gratitude Card* activities into one session (50 minutes). As the allotted time was insufficient for students to complete both activities during the class session, so students were asked to complete their Gratitude Card at home. For the final session (20 minutes), the teacher asked volunteers to share briefly on the Gratitude Card that they have previously worked on. Some students opted to give the card to the persons they were addressed to while others chose the provided option of having their teachers mail the cards on their behalf. The teacher then prompted the students to recall the four activities that they carried out over two weeks. Finally, the teacher asked the students to write their general feedback in their activity booklet (see Measures section for details).

[Insert Figure 1 about here]

After the students in the experimental group and control group completed all the SOGI activities and corresponding CCE lessons, respectively, all of them had their final-year school examinations. Subsequently, about four weeks after the last intervention session, the students from both groups answered the same survey that they had completed prior to the intervention.

Having the school examination before the post-intervention survey may dilute the effects of the intervention on relatedness. As the examination time is a stressful time for students (Ogden & Mitandabari, 1997), especially in Singapore education setting where high currency is given to examination results and education (Deng & Gopinathan, 2016), the students might have more intense reactions to everyday relationship challenges with significant others (Neff & Karney, 2009): This may cause relationship problems.

Measures

Gratitude

The six-item Gratitude Questionnaire-6 (GQ-6; McCullough, Emmons, & Tsang, 2002) was used to measure gratitude. Items are rated on a scale of 1 to 7, ranging from *strongly disagree* to *strongly agree*. A sample item is: *I have so much in life to be thankful for*. Satisfactory levels of reliabilities (Cronbach alpha pretest=.73, posttest=.74) were found in relation to the present sample.

Relatedness with parents, teacher and peers

Four items were used to assess the students' sense of relatedness to three key social partners: parents, teachers, and friends (Furrer & Skinner, 2003). A sample item is: *When I'm with my friends, I feel accepted*. A six-point Likert response scale was used, ranging from *strongly disagree* to *strongly agree*. Cronbach alphas for this scale ranged from .79 to .88 in both pretest and posttest.

Students' feedback

After every session, the students were asked to write about their feelings and what they think about each activity. At the end of the fourth session, participants were asked to write down their

overall perceptions of the intervention using two guide questions: *What do you think about the activities that we have done?* and *Which activity did you like best? Why?* The students were also asked about their comments and suggestions on how to improve the activities.

Analytical procedure

We have compared the pre-intervention scores of the experimental group and control group using *t*-test. Then, we have conducted a series of 2 x 2 repeated measures analysis of variance (RANOVA) with Time (pre-intervention vs. post-intervention) as within-subjects factor, Group (experimental vs. control) as between- subjects factor, and students' gratitude and relatedness with parents, teachers and peers as dependent variables. As sample size is small, and may have limited power to detect small effect sizes, we considered alpha values of less than .10 as statistically significant. This is in line with the recommendation of Leech, Barrett, and Morgan (2015) to use this alpha value for small exploratory studies in order to increase the power to detect a difference that really exists. Follow-up paired samples *t*-tests with Bonferonni adjustment were conducted in relation to the significant and marginally significant RANOVA *F*-test results.

We have used two indicators of effects size to facilitate comparison with the results of earlier studies. The effect size in terms of partial-eta squared with values of .01, .06 and .14 were regarded roughly as small, medium and large (Cohen, 1988). An alternative measure of effect size, Cohen's *d*, was calculated in two ways: first by comparing the pre- and post-intervention scores separately for the experimental and control groups; and then, by comparing the post-intervention scores of the experimental and control groups (Lakens, 2013). Cohen's *d* values of .2, .5 and .8 were considered as small, medium, large, effect sizes respectively (Cohen, 1988).

The positive comments written by students were subjected to thematic analysis (based on Miles & Huberman, 1994). The comments were read multiple times, with key words and phrases highlighted, to identify some common themes (e.g., recurring commonalities, overarching patterns) (Lincoln & Guba, 1985). To reduce bias, two of the authors constructed the themes both individually and jointly and have engaged in in-depth discussions to come up with the collective themes, as well as sub-themes, that would subsume key words and phrases highlighted (based on Stake, 1995). The intercoder agreement in terms of percentage agreement and Cohen's kappa were determined.

The negative comments of the students were very few (7% of total feedback). Thus, these comments were just summarized and not subjected to thematic analysis.

Results and discussion

The results are presented in two parts: the first part focuses on the changes in students' gratitude level and their relatedness with parents, peers and teachers; the second part details the students' perceptions of the intervention.

Changes in students' gratitude and relatedness

Preliminary analysis showed significant positive correlations between the students' pre-intervention and post-intervention scores on gratitude and relatedness with significant others ($r_{experimental}=.48$ to $.74$, $p<.001$; $r_{control}=.54$ to $.82$, $p<.001$). It was found that the difference in the control and experimental groups' pretest scores in relation to the focal variables were non-significant ($t(26)= 0.4$ to $.24$, $p=.391$ to $.97$): gratitude= 0.03 , 95% CI [-0.43, 0.36], relatedness with teacher= 0.17 , 95% CI [-0.17, 0.49]; relatedness with parents=- 0.06 , 95% CI [-0.52, 0.40]; and relatedness with friends= 0.06 , 95% CI [-0.44, 0.33]. These results indicate that the control

and experimental groups had similar gratitude and relatedness scores prior to experiencing the intervention.

The RANOVA results pertaining to gratitude did not wholly support our hypothesis (see Table 1). The main effect of Time and the interaction effect of Time and Group on gratitude were not statistically significant. Although relative to the control group, the experimental group appeared to have greater improvements in gratitude levels after the intervention (see Table 2), this observed effect did not exceed what could be expected from chance. Nevertheless, the effect sizes (Cohen's *d*) obtained by comparing the post-intervention scores of the experimental and control groups, albeit small, were comparable to those reported in earlier gratitude studies (e.g., Emmons & McCullough, 2003).

The impact of the intervention was found to be more pronounced in relation to the students' relatedness with their parents and peers. While the overall effect of Time and Group were not significant on all relatedness variables, Time by Group interaction effect was found significant on relatedness with parents and peers. The intervention did not appear to have an effect on students' relatedness with teachers in both the experimental and control groups.

[Insert Table 1 about here]

Follow-up paired samples *t*-tests with Bonferonni adjustment are presented in Table 2. It was found that the quality of relationship with parents of students from the experimental group changed marginally while that of their counterparts in the control group decreased significantly. It is worth noting that the effect sizes of the present intervention in relation to relatedness was small; but such magnitude of effect appears to be common when gratitude interventions are compared with approaches that intended to induce neutral (see Emmons & McCullough, 2003).

[Insert Table 2 about here]

Students' perceptions of the SOGI

Cursory reading of the students' responses was done to sort students' responses before further analysis. Of the 67 students who submitted their activity booklets, 82% gave positive comments on the intervention, 12% did not write any feedback, and 7% wrote negative feedback. The themes identified for the positive comments were labeled as *affective*, *cognitive* (subthemes: *realize blessings* and *learn gratitude*) and *social* (subthemes: *forming bonds*, *opportunity to express gratitude*) benefits of the intervention. Two of the authors independently coded 20% of students' feedback, which were broken down into 41 codable units or phrases. The agreement between coders was found to be substantial (83%, Cohen's $\kappa=.74$, $p<.001$). The rest of the students' feedback was coded by one of the authors.

Aside from the positive affective effects of the intervention activities (e.g., *I think the activity we have done is fun*), which was reported by 45% of the students, the cognitive appeal of the activities was expressed by about 34% of the students (e.g., *It taught me how to show gratitude; [I]t made me realize that we should be thankful and feel bless [sic] for everything we have*). These results suggest how gratitude or gratitude activities can serve as a moral motive and moral barometer (McCullough, et al., 2001).

The social benefits that can be derived from the SOGI activities were expressed by 59% of the students. About 20% of the students wrote that the activities helped them interact and bond with their friends (e.g., *I think that it have [sic] help us to build up friendship*) while 39% indicated that the activities have given them the opportunity to express their gratitude to others

who have done good things for them (e.g., *I've always been going around, asking for help and now is the only time for me to pay their kindness back.*). One student wrote:

The thank you letter was the best part. It really made me think well of my parents. I don't get to spend much time with them as I'm always in my room and they're always at work.

These results suggest how gratitude can operate as a moral motive (McCullough, et al., 2001) and serve as a social glue.

Six students wrote some negative comments; these suggest aspects of the SOGI that may need further attention and improvement. Despite finding the SOGI activities fun and interesting, two students indicated their discomfort in doing the gratitude card. One of them wrote: *Gratitude Card was quite uncomfortable for me because it is our private letter to somebody and not for someone else to read.* Four students did not seem to find the activity useful or meaningful to them. This perception appears to be associated with their level of interest, enjoyment and/or comprehension of the activities. One of these students commented: *The activities doesn't (sic) affect me at all; it (sic) was boring. [I like] none [of them] because I don't understand the activities.*

Overall, the students' feedback indicated generally positive experiences during the SOGI activities. The dominance of socially oriented benefits mentioned by the students uphold the potential of gratitude interventions in forging positive relationships, especially with peers and family members, which corroborated the quantitative results of this study. To improve the SOGI, there appears to be a need to assure the students of the confidentiality of their personal reflections and writings, to infuse elements (e.g., arts or games) that can enhance students'

interest in the activities, and to use simple language and illustrations in presenting gratitude concepts to facilitate students' comprehension of the concepts featured in the activities.

Conclusion and implications

In summary, our findings provided preliminary evidence for the potential of the SOGI to nurture grateful and connected twenty-first century learners. In consonance with the findings of other gratitude intervention studies involving adult samples (e.g., O'Connell, et al., 2010), the SOGI was found to be helpful in improving the students' relationships with their parents and peers. This result was affirmed by the students' feedback on the activities suggesting the social benefits of the activities. Having the students reflect individually and as a group on the good things present in their lives, express their gratitude to someone, and imagine losing a special person (or blessing) that is currently present in their lives, could have stimulated the students' feeling of positive connection with their significant others. The elements of SOGI harnessed the potential of gratitude to forge or maintain social relationships, which was suggested by other researchers (e.g., Algoe & Haidt, 2009; Emmons & McCullough, 2003). The students' written feedback suggest how gratitude functions as a moral barometer and moral motive to improve interpersonal relationships (McCullough, et al., 2001).

This result is noteworthy considering that the last post-intervention survey was administered right after the final year examinations, which is a particularly stressful period for students (Ogden & Mitandabari, 1997). During this period, student relationships with their significant others may be expected to deteriorate. When individuals are under stress, they are likely to be more reactive to typical challenges in everyday relationships (Neff & Karney, 2009), and experience relational tension and conflict. If this was the case, the significant improvement in the students' relationships that were detected in this study could be indicative of SOGI's role as a

buffer to this relationship dip, alongside its potential to boost the quality of the students' relationships. Quality relationships are known to be crucial in enhancing school outcomes, such as school and classroom engagement (Buhs & Ladd, 2001; Wang & Eccles, 2012), as well as academic motivation and achievement (Song, Bong, Lee & Kim, 2014).

Nearly half of the participants wrote that they learned to be more grateful and became more aware of life aspects that they can be grateful for as a result of engaging in the SOGI activities. These qualitative affirmations were corroborated by the quantitative analysis results, albeit to a slight extent, considering that the SOGI was found to have a weak and non-significant effect in terms of enhancing students' gratitude. This finding resonates with those reported by Toepfer, Cichy and Peters (2012) and Emmons et al. (2003). The weak statistical effect of the SOGI on gratitude could be due in part to the instrument used to assess gratitude (i.e., GQ-6), which might have not been sensitive enough to distinguish the difference between state and trait qualities of gratitude, as was also noted by Toepfer et al. (2012). It is likely that the dispositional nature of gratitude that is being assessed by GQ-6 relies more on stable trait qualities (e.g., empathy, pro-social qualities) that are less likely to be influenced by gratitude-inducing activities. This nature of GQ-6 needs to be considered when evaluating gratitude interventions. Alternative measures that can assess state qualities of gratitude are recommended in future investigations.

The weak effect of SOGI in relation to gratitude can also be linked to the four-week delay in students' completion of the post-intervention survey. Only a few gratitude-based interventions (e.g., Emmons & McCullough, 2003) studies have generated sustained positive gains on gratitude. This is, perhaps, one of the reasons why some intervention studies (e.g., Owens & Patterson, 2013) did not include gratitude as a measure for manipulation checks.

The non-significant effect of the SOGI on gratitude can also arise in part from the small sample size involved in the study, which could have made it difficult to detect small intervention effects on the students' gratitude scores. Increasingly, psychologists have recognized that the *p*-value significance test should not be the only criterion for determining whether a study is valid or not and have instead advocated for the critical use of effect sizes and descriptive statistics (Cumming, 2013). Although many of the *p*-values in our study were not significant, they were in the expected direction (e.g., higher levels of gratitude and relatedness for those in the intervention vs. control group).

This study showed the benefits of conducting socially oriented gratitude activities on maintaining, and potentially strengthening, social bonds and support for secondary students. Although the results were promising, our study had some limitations that need to be considered in future investigations. Firstly, the implementation of the gratitude activities was shortened because of contextual constraints; this could have undermined the potential effects of our intervention. In addition, gratitude and relatedness were measured only at two time points, with the post-intervention survey conducted just about a month after the last intervention session. This short time frame would have made it difficult to ascertain the potential stable or delayed effects of the SOGI. Follow up studies may increase the duration of the SOGI and include more follow-up assessments to help ascertain if the effects would last.

In conclusion, our study illustrates how gratitude activities can be framed and implemented in formal schooling for the purposes of maintaining and strengthening social relationships, especially for young adolescents who are in the crucial stages of psychosocial development. Teachers and researchers may find the intervention activities applicable to their local contexts; they are encouraged to apply the gratitude activities using a longer time frame and with other

groups of students to further examine the boundary conditions in which such activities aimed at nurturing grateful and connected 21C learners can be effective.

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Table 1. Results of repeated measures ANOVAs on relatedness with parents, teachers and peers.

Source	<i>F</i>	<i>MS</i>	<i>p</i>	η^2
<i>Gratitude</i>				
Within-subjects				
Time	0.59	0.28	.45	.006
Time x Group	1.88	0.91	.17	.018
Error Within		0.48		
<i>Relatedness with parents</i>				
Within-subjects				
• Time	1.90	.59	.17	.018
• Time x Group	4.61	1.42	.03	.044
• Error		0.31		
<i>Relatedness with teachers</i>				
Within-subjects				
• Time	0.90	0.28	.34	.009
• Time x Group	0.01	0.00	.91	.000
• Error		0.31		
<i>Relatedness with friends</i>				
Within-subjects				
• Time	0.37	.17	.55	.004
• Time x Group	3.31	1.55	.07	.032
• Error		0.47		

Note: *df*=1; error *df*=101

Table 2. Comparison of pre-intervention and post-intervention mean scores on relatedness of the experimental ($n=46$) and control groups ($n=57$).

Construct/ Group	Pre-intervention Score			Post-intervention Score			MD	95%CI	<i>p</i>	Effect Size (Cohen's <i>d</i>)	
	Mean	SD	95%CI	Mean	SD	95%CI				Per Group ¹	Across Groups ²
Gratitude											
• Experimental	4.92	0.89	[4.63,5.22]	5.13	0.83	[4.83, 5.43]	0.25	[-0.08,0.50]	.15	0.29	0.23
• Control	4.95	1.08	[4.69, 5.22]	4.89	1.17	[4.62, 5.17]	-0.05	[-0.32,0.20]	.65	-0.04	
Relatedness with parents											
• Experimental	4.68	1.17	[4.34, 5.03]	4.74	1.13	[4.39, 5.10]	0.05	[-0.17,0.29]	.61	0.05	0.23
• Control	4.75	1.17	[4.44, 5.05]	4.47	1.24	[5.05, 4.79]	-0.23	[-0.48,-0.68]	.01	-0.19	
Relatedness with teachers											
• Experimental	4.27	0.78	[4.02, 4.52]	4.34	0.92	[4.05, 4.62]	0.08	[-0.17,0.30]	.58	0.09	0.14
• Control	4.11	0.89	[3.89, 4.34]	4.2	1.01	[3.94, 4.45]	0.09	[-0.12,0.29]	.43	0.10	
Relatedness with peers											
• Experimental	4.4	1.03	[4.10, 4.70]	4.52	1.08	[4.20, 4.83]	0.11	[-0.17,0.40]	.42	0.11	0.27
• Control	4.46	1.01	[4.20, 4.73]	4.23	1.08	[3.95, 4.52]	-0.22	[-0.49,0.02]	.07	-0.21	

Note: MD=mean difference (post-intervention minus pre-intervention), CI=confidence interval;

¹Cohen's *d* (per group)=MD/{[(n_1-1) SD_1^2] + (n_2-1) SD_2^2 }/(n_1+n_2-2)^{1/2} (Lakens, 2013)

²Cohen's *d* (across groups)=Difference in post-intervention means/{[(n_1-1) SD_1^2] + (n_2-1) SD_2^2 }/(n_1+n_2-2)^{1/2} (Lakens, 2013)

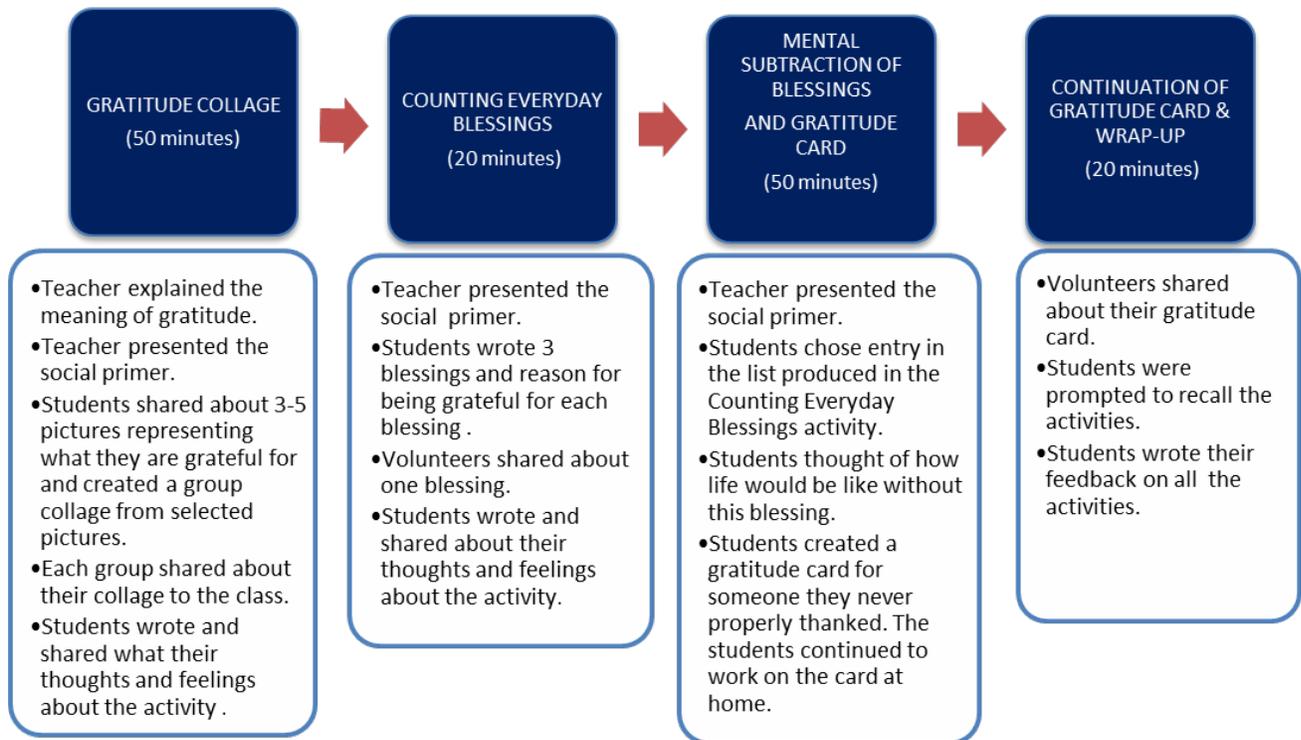


Figure 1. Implementation of the intervention activities.