



Understanding Factors Affecting Positive Education in Practice: an Australian Case Study

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Abstract

Positive education is characterized by applying positive psychology interventions (PPIs) within educational settings. Increasing evidence suggests that PPIs can help increase well-being and reduce depressive symptoms in general and clinical populations. However, there is less evidence that PPIs are similarly effective within complex school environments. The study aimed to (1) examine the effectiveness of an evidence-informed positive education pilot program (PEPP) delivered within an Australian public high school and (2) use an implementation science framework to explore factors impacting the planning, delivery, practice, and success of program activities. The study used a non-randomized waitlist design ($n = 143$), and provider (teacher), recipient (student), intervention (PEPP), organizational (school), and contextual factors were systematically explored through a mixed methods approach. Findings suggest the PEPP was not related to increases in well-being or resilience, but may have buffered students from declining mental health during the school year. Recipient outlook, organizational support, stakeholder input, and provider enthusiasm and understanding were all thought to impact program outcomes. By exploring the practice of a positive education intervention from an implementation perspective, challenges and opportunities of positive education in the real world can be identified.

Keywords Adolescents · Positive education · Positive psychology interventions · Student well-being · Implementation science

Understanding Factors Affecting Positive Education in Practice: an Australian Case Study

Positive education applies the science of positive psychology to educational setting to promote well-being in students (Seligman et al. 2009). It can be considered an umbrella term for approaches to promote student well-being within educational settings. It includes interventions from social and emotional learning (SEL), such as self-awareness and self-management, as well as those from positive psychology that directly foster resilience, strengths, capabilities, and other non-cognitive skills such as gratitude (Kern et al. 2017b; Slemp et al. 2017; Watkins et al. 2009).

A positive approach to education is nothing new (e.g., Kern et al. 2017b; Kristjánsson 2012), but has experienced increased interest and application over the past decade (e.g., International Positive Education Network 2017; Slemp et al. 2017). This interest is due, in part, to growing concerns over mental illness, including depression, anxiety, and suicide (Green et al. 2011). Epidemiological data reports that up to 20% of children and adolescents worldwide suffer from mental illness and that most adult mental disorders have their onset before age 25 (Kessler and Bromet 2013; Kieling et al. 2011). Prevention efforts in adolescence may support adolescents' academic performance (Adler 2017), as well as prospectively help prevent adult psychological ill-being or at least reduce its severity and duration (McGorry et al. 2011).

SEL and school-based prevention initiatives have a well-established evidence base (e.g., Durlak et al. 2011; Nehmy and Wade 2014), and studies suggest that positive psychology interventions (PPIs) can help improve well-being and decrease depressive symptoms in general and clinical adult populations (Bolier et al. 2013; Sin and Lyubomirsky 2009). However, less is known about the efficacy of applying positive psychology within education settings. That is, even as interest in positive education has grown, there is minimal

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evidence of its efficacy and effectiveness. Positive education has been criticized for overlooking contextual factors and for excessively emphasizing positive states, while disregarding negative experiences (Ciarrochi et al. 2016), and there is a dearth of best practice implementation frameworks to guide the rapid growth in the field (Conoley et al. 2014).

To ensure that positive education provides benefit to students and schools, is resource efficient, and does not lead to unintended harms, there is a need for systematic investigation, not only into the *effectiveness* of positive education interventions, but also into their practice, or *implementation*, as they occur “on the ground” in schools. There is growing recognition for the need to consider factors that make positive education programs more or less successful, as well as the mechanisms involved (Slemp et al. 2017). The current study aims to evaluate the impact of one such evidence-informed positive education intervention on student mental health and, using a framework informed by implementation science, investigates factors impacting its practice.

An Implementation Perspective

Implementation science is an emerging field that explores and explains what makes interventions work in real-world contexts, addressing gaps between findings in the lab and actual outcomes in the real world (Kelly 2012a). Interventions and programs can be designed, tested, and have empirical support under controlled conditions, but often encounter problems when tested in the real world; “knowing what to do may be insufficient” (National Implementation Research Network 2016, p. 1). Challenges of implementing positive education can limit the benefits that participants might otherwise derive; that is, implementation matters to outcomes (Durlak et al. 2011; Durlak and DuPre 2008). For instance, a review of more than 500 studies demonstrated that effect sizes are at least two to three times higher when programs are “carefully implemented” versus less careful applications (Durlak and DuPre 2008, p. 340). A meta-analysis of school-based social and emotional learning (SEL) programs involving more than 200 studies and 250,000 students found that programs implemented with higher quality resulted in larger reductions in emotional distress than programs implemented with lower quality (Durlak et al. 2011).

Clinical research typically focuses on the effects of an evidence-based practice (EBP) on a particular outcome variable, whereas implementation studies focus more on how EBPs are applied. Bauer et al. (2015) described a study which evaluates the effectiveness of an intervention, while simultaneously observing implementation processes such as planning, delivery, and practice. This type of research not only explores what works or what does not, but also why, for who, under what conditions, and what supports and hinders achieving the intended outcomes (Kelly and Perkins 2012). Evaluation of

how a program is implemented within schools can help us to learn from non-significant results and to be more responsive to the practical challenges of complex educational contexts (Greene 2015). By identifying barriers and enablers, it can inform which aspects of a program are feasible and can inform future implementation efforts (Bauer et al. 2015).

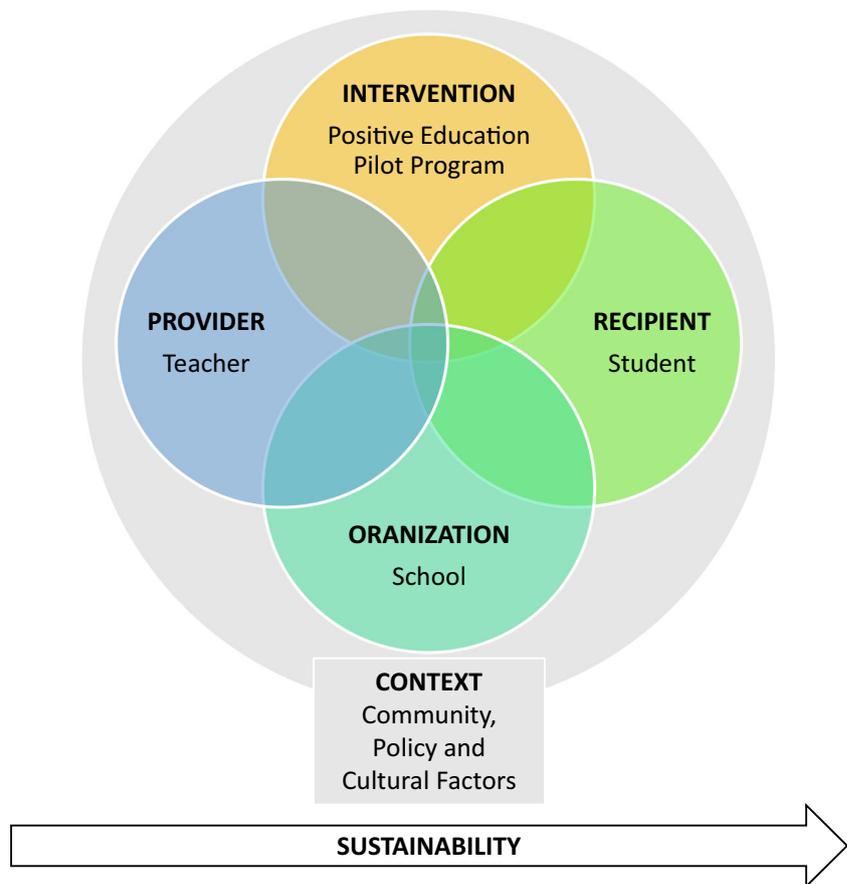
Implementation science has been used in diverse scenarios such as adopting a high school program for students with autism spectrum disorder (e.g., Odom et al. 2014) and the implementation of strategies to prevent sports injuries (e.g., Donaldson and Finch 2013). It has been used with various SEL programs (e.g., Durlak et al. 2011), but has not yet been applied to positive education programs.

Factors Impacting Implementation: an Organizing Framework

The impact of an intervention in a complex and dynamic school system is influenced by the interaction of numerous factors (Durlak 1998), which are often overlooked in program dissemination in schools (Domitrovich et al. 2008). An implementation science approach enables the identification of factors that influence intervention outcomes. Building upon extant models within the implementation science literature (e.g., Domitrovich et al. 2008; Durlak and DuPre 2008; Fixsen et al. 2005), Fig. 1 provides an organizing framework of five categories of determinants that impact implementation success within a school context: provider, recipient, intervention, organization, and contextual. The relative importance of each implementation factor and their interaction with each other is unknown, and most likely varies across time and settings, but provide areas to consider in the high-quality implementation of a program (Durlak 2013). These factors unfold together over time in ways that make the program more or less sustainable.

Provider Factors Providers refer to those delivering the intervention. In the current study, teachers were the primary providers (or deliverers) of the positive education intervention. A provider’s genuine insight and understanding gained through training is considered vital in adolescent mental health (Proctor 2014); however, provider training does not necessarily lead to program fidelity, i.e., implementation as intended (Langley et al. 2010). Other relevant provider factors include providers’ perceived need for/relevance of the intervention, perceived benefit/effectiveness of intervention, motivation to implement the intervention, self-efficacy, skill and experience, personal characteristics and attributes, understanding of the theory underlying the intervention, understanding of how and why it should be implemented, the intervention’s intuitive appeal to the provider, and the involvement of external paraprofessionals in implementation (Durlak and DuPre 2008; Fixsen et al. 2005; Pearson et al. 2015; Samdal and Rowling 2011).

Fig. 1 Organizing framework illustrating factors impacting the success of the implementation of positive education



Recipient Factors Recipients refer to those whom the intervention is aimed at; in the current study, secondary school students in an Australian public school. Influential recipient factors include the attitudes of recipients (perceived need, motivation and buy-in), self-efficacy, adherence, believing the intervention can bring about change, knowing the benefits of the intervention, the extent to which recipients' contributions are sought and valued, support from significant others, and resistance to the intervention (Aarons et al. 2012; Damschroder et al. 2009; Domitrovich et al. 2008; Layous et al. 2013; Lyubomirsky et al. 2011; Pearson et al. 2015; Samdal and Rowling 2011; Vella-Brodrick 2013; Slemp et al. 2017).

Intervention Factors Intervention factors refer to characteristics of the intervention itself, in this case a positive education pilot program (PEPP). These can include its compatibility with recipients, its fit with the organization's mission, the fidelity in its implementation vs. the extent to which it can be adapted, the mode of delivery, "dosage" effects, timing within the school calendar, and clarity of outcome measures (Damschroder et al. 2009; Domitrovich et al. 2008; Durlak and DuPre 2008; Owens et al. 2014; Pearson et al. 2015). Although positive psychology research recognizes the importance of "fitting" interventions to recipients (e.g., Lyubomirsky and Layous

2013; Schueller 2011; Vella-Brodrick 2013), less is known about positive education's compatibility with students in a school environment. Further, an intervention's fidelity (i.e., the extent to which an intervention is carried out as intended) and adaptation (i.e., the extent to which an intervention is modified to fit provider and recipient preferences, organizational practices, and sociocultural needs and expectations) both may affect outcomes, despite seeming incongruous. Even as fidelity matters, there is always some degree of adaptation needed (Durlak and DuPre 2008), especially when applying activities developed within a psychological laboratory to the real-world context of a school.

Organizational Factors Organizational factors refer to factors within the system of delivery and support of an intervention, in the current study factors within the school where the PEPP took place. Organizational factors include whether or not there are individuals with the motivation and capacity to drive an intervention forward, organizational readiness for change, the availability of resources within the organization to implement the intervention, the nature of social relationships (e.g., collaboration, communication, technical assistance), organizational norms, recipient and provider incentive/reward, the alignment of the intervention with organizational goals, and competing

interests of stakeholders within the organization (Damschroder et al. 2009; Domitrovich et al. 2008; Durlak and DuPre 2008; Fixsen et al. 2005; Forman et al. 2008).

Contextual Factors At the macro level, characteristics of the community (i.e., sociocultural norms), funding, systemic or political support (or lack thereof), relevant policies, and considerations of the student's home environment can impact program success (Damschroder et al. 2009; Domitrovich et al. 2008; Durlak and DuPre 2008; Fixsen et al. 2005; Vella-Brodrick 2013). While a school has less control over such factors, numerous studies point to the importance of identifying the impacts and constraints that such factors impose on the intervention (e.g., CASEL; Kern et al. 2017b).

Sustainability The success of a program depends in part on its sustainability—both in terms of the continuation of activities and behaviors beyond the end of the explicit intervention period and in the ongoing provision of the intervention itself. Provider, recipient, intervention, organizational, and contextual factors dynamically intersect over time, to make the intervention more or less sustainable. For example, financial resources (Forman et al. 2008), teachers' "unambiguous" buy-in (Fixsen et al. 2005, p. 9), leadership shifts and staff turnover (Slemp et al. 2017; Forman et al. 2008), shared decision making, and community participation (Shediac-Rizkallah and Bone 1998) have all been found to be influential in program sustainability. While an investigation of sustainability is beyond the scope of the current study, the process followed here aims to provide a baseline description that will allow sustainability to be tested in the future.

The Current Study

A PEPP was implemented in grade 9 at an Australian government high school (i.e., publicly funded school; hereafter referred to as "the school") during the 2016 school year. The study aims to evaluate the PEPP, as well as to explore its practice in order to facilitate subsequent implementation efforts. The current study's evaluation focuses especially on recipient factors, as these have received less attention in both positive education and implementation research (Durlak and DuPre 2008).

Method

Participants

The PEPP was conducted with grade 9 students aged between 13 and 16 years (baseline; $M = 14.04$ years, $SD = 0.28$, 40.5%

female). At the time of the study, the school's Index of Community Socio-educational Advantage (ICSEA)¹ was 1068, showing that it was slightly above the Australian average. While all students in grade 9 ($n = 180$) participated in the PEPP as part of their usual school activity, consent was sought for measurement, and only those students with consent completed measurement and evaluative activities (79.4% response rate; $N = 143$). Participation at each time point varied (see Table 1). Year 9 was divided into two groups (detailed below); analyses revealed no significant statistical differences between groups on age ($t(114) = 0.018$, $p = .986$) or gender ($\chi^2(1) = 0.136$, $p = .712$).

Separate consent was gained from students, teachers, and other participants (e.g., parents) for additional evaluative activities (e.g., focus groups). All procedures were approved by the University of Adelaide Human Research Ethics Subcommittee (reference number 16/02) and South Australia's Department of Education and Child Development (DECD) Research Unit (reference number CS/16/00067-1.1).

Teacher Training

Before the PEPP was delivered, a brief training program was developed for grade 9 pastoral care teachers ($N = 8$, 62.5% female; age 25–64 years, teaching experience 1–32 years). The first author developed the content in collaboration with the school's deputy principal (DP), who had undergone extensive training in positive education. Materials and delivery methods incorporated best practice recommendations in the area on effective professional development, adult learning theories, and face-to-face learning (see Avalos (2011) for a review of teacher professional development).

Prior to sessions, teachers received background information on positive education including definitions of core constructs, a summary of scientific evidence, sample activities, and links to educational videos. Teachers attended three face-to-face sessions, each lasting two hours, which included a review of distributed material, a summary of well-being and ill-being data already collected at the school (Halliday 2014), a discussion on the prevalence of mental ill-being and suicide in Australia, a discussion of class norms at the school, possible adverse events, an opportunity to try activities, and an opportunity to collaborate on proposed PEPP lesson plans. Learning outcomes including program and personal efficacy, an understanding of the PEPP's rationale, and attitude toward the PEPP

¹ ICSEA provides an indication of the level of educational advantage of the school's student population relative to those of other schools using the geographical location of the school, the proportion of indigenous students catered for, and the occupation and level of education of students' parents. In 2016, scores ranged from 125 for a school in remote Arnhem Land to 1308 for an independent inner-city Sydney school. The Australian average is 1000 (Australian Curriculum Assessment and Reporting Authority 2012).

Table 1 Study design overview

	End of term 1	Term 2	End of term 2	Term 3	End of term 3
Group 1	T1 measure <i>n</i> = 69	PEPP	T2 measure <i>n</i> = 70		T3 measure <i>n</i> = 59
Group 2	T1 measure <i>n</i> = 47		T2 measure <i>n</i> = 73	PEPP	T3 measure <i>n</i> = 55

were assessed at the conclusion of training (see “Implementation Evaluation” section).

The Positive Education Pilot Program

The PEPP program was completed in extended pastoral care time (“care group”) once a week for one school term (nine sessions) and delivered by pastoral care group teachers (“care group teachers”).² Content of the PEPP was informed by existing practices and frameworks in the school, previous data collected at the school (Halliday 2014), action research completed by students the previous year (Halliday et al. 2017), content developed during the staff training workshops, and guidance from key leadership personnel.

Prior to the study, the school adopted a model of positive education that included practices from positive psychology, SEL, prevention, and health promotion. The school defined well-being as the ability for an individual to feel good and function well (Huppert and So 2013). Activities included in the PEPP were derived from positive psychology and prevention, emphasizing the conditions and behaviors that help people to feel good and function well. By using intervention from positive psychology and prevention, the PEPP was considered an “integrated model” of universal mental health intervention, providing a greater theoretical breadth and blending the strengths of multiple disciplines (Cook et al. 2015).

The program began and ended with sessions focused on positive activities, which were intended to foster positive affect, gratitude, meaning, and optimism. Participants learned about and participated in several PPIs, including “Three Good Things” (Seligman et al. 2009), “Gratitude Letter” (Seligman et al. 2005), “Meaning Through Photography” (Steger et al. 2013), “Counting Kindness” (Otake et al. 2006), and “Best Possible Selves” (Layous et al. 2013). Chosen activities had a well-established evidence base in the positive psychology literature and have been used in other positive education programs. To help make the PEPP practical, the five sessions in the middle used a freely available, online depression and anxiety prevention program (“MoodGYM”; Australian National University 2014).

² “Pastoral care” is a term used in education in Australia describing daily or weekly class time, often in a homeroom setting, devoted the objective of supporting the welfare, well-being, and personal development of students.

MoodGym is a scientifically validated tool that allows participants to practice navigating their thinking styles and emotional responses across a range of situations (see Christensen et al. 2011). It is appropriate for use with young people within a class or as a group exercise (Australian National University 2014). Based on suggestions by the school, two Student Representative Council (SRC) students trialled MoodGYM. The first author developed posters on the types of “warpy thinking” to complement areas where these students reported difficulty. In addition, some positive activities (e.g., three good things) continued during sessions devoted to MoodGYM. MoodGYM was chosen as it had a robust evidence base, succinct timeline, is self-paced and relatively private, and does not require special training for providers (for summary of advantages, see Calear et al. (2009)).

Implementation factors were considered throughout the planning and delivery of the program. PEPP session plans were developed based on the literature, with supporting Microsoft PowerPoint slides. To balance fidelity and adaptability, slides were distributed to care group teachers ahead of time to allow teachers to add their personal touches (e.g., their own meaningful photos and “three good things”). Teacher input to the PEPP during training sessions produced several innovative features, including the use of videos in the presentation. To help foster recipient engagement, information sheets were handed to students prior to participation in the PEPP. The sheet included a peer’s testimonial to help normalize participation in the program. Layous et al. (2013) found similar testimonials to be related to outcomes. While stakeholder input was sought throughout the development of the intervention, time and resource challenges minimized the extent to which this input could be incorporated into the PEPP.

Study Design

Intervention Evaluation The effectiveness of the PEPP was evaluated using a non-randomized waitlist design with existing student groups. While the design brings various limitations, it was chosen to allow the research to occur while minimizing disruptions to the school. Grade 9 was divided into two groups; each group comprised four care groups determined by the DP, the year-level coordinator, and the care group teachers themselves. Table 1 summarizes timing of measures and the PEPP’s completion. As noted in the table,

participation varied across each measurement occasion. Each measure included standardized quantitative measures of well-being, ill-being, and resilience, as outlined below (see results for reliability information). For the group having just completed the PEPP, additional quantitative and qualitative questions were included to evaluate the PEPP's implementation.

EPOCH Measure of Adolescent Well-being The 20-item measure of adolescent well-being (EPOCH; Kern et al. 2016) was chosen to provide indicators of positive psychological functioning across five domains: engagement, perseverance, optimism, connectedness, and happiness. Respondents indicated the extent to which they agree with each item (five-point Likert scale; e.g., "I keep at my schoolwork until I am done with it"). Scores for each domain are based on the average of the four items.

Connor-Davidson Resilience Scale The 10-item Connor-Davidson Resilience Scale (CD-RISC 10; Davidson and Connor 2015) was used to provide an indication of adaptability and resilience. Respondents indicated the extent to which each statement described them (five-point scale; e.g., "I tend to bounce back after illness, injury, or other hardships"); items were then summed to create a total resilience score (higher scores indicate greater resilience).

Depression Anxiety Stress Scale The Depression Anxiety Stress Scale-21 (DASS-21) was used to provide an indication of respondents' negative emotional states (Lovibond and Lovibond 1995). The DASS-21 is a 21-item self-report measure appropriate for individuals aged 12 years or more and is comprised of scales for depression, anxiety, and stress. Respondents indicated on four-point Likert scale the extent to which each statement described them over the past week (e.g., "I found it hard to wind down").

Implementation Evaluation A theory-driven, realist approach was used to critically examine implementation factors (IFs) impacting the PEPP (see appendix Table A4 for details of exploration within each category of factors). Realist models use mixed methods and acknowledge both the objective and subjective in creating reality (Kelly 2012b). Using the organizing framework (see Fig. 1) as a guide, quantitative and qualitative data were collected from within each implementation area of the model. Table 2 summarizes the range of types of data and perspectives to evaluate IFs. These included focus groups with students and with teachers, an interview with the DP, questionnaires completed by parents and teachers, and consideration of the school's strategic plans.

Student Questionnaire Eight quantitative and two qualitative questions evaluating students' understanding of emotions after the PEPP, their belief in the need for positive education,

their buy-in to it, and their satisfaction with the PEPP were included in the questionnaire of the group immediately completing the PEPP. Questions also asked for their feedback on how they would improve positive education for year 9s next year.

Focus Groups and Interviews Focus groups were used to gain data grounded in the experience of the participants and to access insights produced by interaction among participants (Smithson 2008). Student focus group selection was guided by a coordinating teacher who knew the students and who had been briefed about the need for a wide selection of students. Teacher focus group participants were all grade 9 care group teachers who were available on the day. Focus groups and the DP interview were semi-structured with questions including "What were some of your general experiences of teaching positive education to students?" (teacher focus group), "How did positive education change your thinking or behavior?" (student focus group), and "How well did the grade 9 teachers 'buy-in' to the positive education pilot program?" (DP interview). The interview and teacher focus group were recorded and transcribed verbatim; due to ethical issues, the students' focus group was not. The first author took notes at the student focus group then developed a report with no identifying information included. A supervising school teacher present at the focus group affirmed the report.

Teacher Questionnaires Teachers completed questionnaires prior to and at the completion of the PEPP evaluating their belief in the need for positive education, their understanding of the rationale for it, their belief in their own teaching efficacy, and the level of support, training, and input they had in implementing the PEPP.

Parent Questionnaires All parents and guardians of students in grade 9 were invited via email to complete a brief online questionnaire gauging their awareness of their child's participation in positive education, their observation of its impact, and their opinion of a school's role in teaching social and emotional concepts.

Data Analyses Data analyses aimed first to consider the effect of the PEPP and second to understand IFs impacting intervention success.

Impact of the PEPP Based on the included measures, we defined "mental health" as a combination of well-being (EPOCH and CD-RISC) and ill-being (DASS-21) variables. We hypothesized that the PEPP would improve mental health (i.e., increased engagement, perseverance, optimism, connectedness, happiness, and resilience and decreased depression, anxiety, and stress) from T1 to T2 for group 1 and from T2 to T3 for group 2.

To encourage honest responses to the measures, students were linked to their care group, but not individually identified. Thus, individual responses could not be linked across measurement occasions. Sample sizes also varied across each measurement occasion. To address these challenges, we tested differences between groups at T2 using regression analysis, with scores anchored to each participant's care group. The model thus takes into account differences at baseline and clustering due to care group, but also results in considerable within-group noise, making it harder to find effects. Providing more stable estimates, further ill-being analyses incorporating T3 used a bootstrap approach, re-sampling 2000 times, and using the bias-corrected and accelerated method for confidence intervals (Efron and Tibshirani 1994). Invalid cases were excluded on an analysis basis; thus, sample sizes vary across analyses.

As per Thompson's (2007) suggestion, regardless of statistical significance, where possible, we report mean differences, their confidence intervals, effect sizes, and confidence intervals for effect sizes. Confidence intervals are reported to provide information about statistical significance, as well as the direction and strength of the effect (Shakespeare et al. 2001). For considering between group differences at T2, effects are reported as Cohen's f^2 , and Cohen's (1988) guidelines were used to interpret the size of the effect ($f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes, respectively). For analyses including T3, we use Cohen's d , with $d = 0.2$, 0.5 , and 0.8 indicating small, medium, and large effects, respectively.

Mixed Method Analysis of IFs To consider factors in the practice of the intervention, we used a "following a thread" method (Moran-Ellis et al. 2006) to triangulate the data across different components and sources. This approach to the analysis of mixed-method derived data aims to preserve the integrity of each dataset, such that the resulting analysis is "greater than the sum of the (methodological) parts" (Cronin et al. 2008, p. 584). The first author identified key themes and

questions requiring further explanation at initial analysis. These "threads" were followed across both qualitative and quantitative components of the study (methodological triangulation) and across sources of data (data triangulation) to generate a multi-faceted picture of the phenomenon (Johnson et al. 2007; O'Cathain et al. 2010). Qualitative patterns were identified using methodology based on that outlined by Braun and Clarke (2006). As we generated initial codes, we considered agreement, partial agreement, silence, and dissonance from the qualitative and quantitative data within each thread. Ten threads were initially identified, which we then mapped to our model. After consultation with members of the research team, data were reviewed, themes refined, and threads consolidated, resulting in six final threads.

Results

Impact of the PEPP

Our first objective was to examine whether the PEPP was beneficial in increasing well-being and resilience and decreasing ill-being. The two groups were similar at baseline with analyses showing no statistically significant differences (see Table 3 for measure descriptives across the three measurement occasions). Between T1 and T2, mean scores for the well-being variables increased in both groups. Regression analyses indicated statistically significant differences between the two groups at T2 only for optimism ($p = .012$, $f^2 = 0.046$), with the group 2 (the waitlisted control group) scoring higher on optimism with a small effect than group 1 (the treatment group).

For the depression and anxiety variables, the pattern of scores suggests a buffering effect of the intervention. Figure 2 shows that group 1 remained stable across the three time points while group 2 showed an increase in depression and anxiety at T2, then a decrease at T3 back to baseline levels (see appendix Table A5 for mean difference values). Between

Table 2 Sources of implementation evaluation data

	Quantitative data collection	Qualitative data collection
Students	- 8 evaluative items in post-PEPP questionnaire to students ($n = 102$)	- 2 open ended questions in post-PEPP questionnaire to students ($n = 125$) - Student focus group ($n = 10$)
Teachers	- 13-item pre-PEPP questionnaire to teachers ($n = 6$) - 10-item post-PEPP questionnaire to teachers ($n = 5$)	- Teacher focus group ($n = 5$)
School		- Interview with deputy principal (DP; $n = 1$) - School Context Statement 2016 - DECD Strategic Plan 2014–2017
Parents	- 5-item post-PEPP Parent Questionnaire ($n = 43$)	

Number of respondents in parentheses. PEPP Positive Education Pilot Program

T1 and T2 when group 1 completed the PEPP and group 2 was acting as the waitlisted control, mean increases in depression and anxiety can be seen for group 2 with a small to medium effect, compared to virtually no change in group 1. Between T2 and T3 when group 2 completed the PEPP, depression and anxiety dropped, with a small effect in group 2 and group 1 remaining stable. However, we note that these indicate trends only; all changes and differences were non-significant.

Factors Impacting Implementation

Our second objective was to examine factors that impact the intervention in practice. Drawing on qualitative and quantitative data from the different data sources (student, teacher, and parent questionnaires; teacher and student focus groups; DP interview), we integrate and illustrate threads that appeared. The threads and agreement or disagreement between sources of data are discussed below. Quotes have been presented with context in parentheses for clarity.

“Activities Were Good but MoodGYM sucked” A common theme, summed up by a student in a questionnaire response, reflected both positive reactions to some aspects of the PEPP and negative reactions to other parts. Teachers talked about signs of student engagement during the first sessions (comprised of the positive education practices). These positive effects were lost when they began the computerized ill-being prevention program (MoodGYM). Student feedback was largely consistent with this, highlighting their dissatisfaction with MoodGYM, especially with having to do it on a computer and the number of “quizzes” or surveys the program contained. For instance, a teacher in the focus group noted:

“The kids bought into it early, the first bit with the ‘acts of kindness’, ‘the three good things’, they seem to be able to relate to it, it was pretty easy going to present it. And then once MoodGYM was up and going I lost them.”

Similarly, in the student questionnaire, a student noted:

“With the mood gym thing, I got the anxiety and the depression quiz like 7 times each. I feel like I seem to be doing the same questions over and over again.”

Still, even as some students responded negatively to the program, qualitative data from both teachers and students suggested that the program may be valuable to students struggling with poor mental health. Students also saw the need for including a mental health program such as positive education in the school (48% agreed, 19.6% disagreed, and 33.3% were neutral). For instance, one student noted: *“I think those*

activities were very helpful to identify how you as an individual is/was feeling. I don’t believe that there is anything to improve it seems pretty down pat.”

Teachers thought the frequency of one class a week for one term “was about right,” and the school was happy with where it was positioned in pastoral care. The deputy principal noted *“There’s no denying it fits within pastoral care because pastoral care is around learning programs that help young people to develop themselves and their pathways, their goals and their futures so it is around how do we teach kids to develop themselves.”* Parents were also generally positive about the program in their feedback.

Of the activities, the gratitude letter had the most favorable feedback, but teachers noticed how it was difficult for some students to complete the gratitude letter and offered suggestions to allow more time to think of an appropriate recipient, write it, and to mail it. For instance, one teacher noted: *“Kids who spoke about it (positive education) to me spoke about the gratitude letter.”* After writing a gratitude letter to her mother, a focus group student reflected on her changed behavior: *“I actually am really nice to my mum now.”*

The Value of Input from Multiple Stakeholders The school and governmental department support the inclusion of multiple stakeholders in decision making, including students. Indeed, the Department of Education and Child Development’s (DECD) Strategic Plan for 2014–2017 notes: *“What success looks like: Children’s and young people’s voices are being heard and incorporated into our decision-making and teaching and learning processes.”* As such, the PEPP purposely included multiple stakeholders, including students in the design and conduct of the intervention. In the end, however, the school was aware of the need to better inform the governing council and parents, such that all stakeholders feel like they have a voice and are well informed of the purpose and process of PEPP.

More than a third (39.3%) of students agreed that “it was good that some school students were involved in planning and explaining positive education” (16.6% disagreed, 44.1% neutral). Student input regarding the improvement of the PEPP centered on doing more hands-on, interactive, and group activities. They asked for more videos, with one student in the focus group suggesting that the entire year level could be involved with producing their own video about well-being. A common suggestion by students was to have less writing and to avoid the perception of positive education as “school work.” In contrast, teachers made suggestions of how positive education could be *counted* as school work. No students made this suggestion.

Benefits and Challenges of Existing Programs There was widespread feedback highlighting how attending to the negative in the subject matter and the quizzes of MoodGYM

Table 3 Descriptive statistics and reliability information for study variables across the three measurement occasions

	Time 1 (baseline)						Time 2 (post-PEPP for group 1)						Time 3 (post-PEPP for group 2)											
	Group 1			Group 2			Group 1			Group 2			Group 1			Group 2								
	n	M	SD	α	n	M	SD	α	n	M	SD	α	n	M	SD	α	n	M	SD	α				
Engagement	68	2.99	0.84	.798	46	2.84	0.84	.805	67	3.15	0.90	.901	70	3.02	0.91	.885	59	3.10	0.87	.885	48	3.03	0.98	.927
Perseverance	68	2.92	0.80	.772	46	2.96	0.88	.831	67	3.19	0.84	.845	70	3.29	0.84	.848	59	3.24	0.94	.835	48	3.09	0.93	.860
Optimism	68	3.05	0.88	.809	46	3.15	0.87	.785	67	3.19 ^a	0.84	.835	70	3.47 ^a	0.88	.844	59	3.42	0.78	.789	48	3.43	0.94	.845
Connectedness	68	3.83	0.87	.786	46	3.63	1.03	.882	67	3.85	0.88	.855	70	3.88	0.98	.870	59	3.95	0.89	.857	48	3.92	0.96	.866
Happiness	68	3.26	1.00	.909	46	3.32	0.92	.896	67	3.56	0.94	.913	70	3.65	0.89	.860	59	3.69	0.82	.842	48	3.60	1.00	.910
Resilience	67	23.27	6.98	.886	43	24.77	6.88	.880	62	23.81	7.20	.911	67	26.03	7.30	.915	56	23.95	8.92	.949	43	25.23	7.44	.902
Depression	68	4.75	4.55	.896	44	4.80	3.44	.806	63	4.84	4.12	.905	70	5.71	4.93	.927	57	5.05	5.37	.952	45	4.84	4.37	.906
Anxiety	68	5.19	4.41	.857	44	4.64	3.10	.690	63	5.10	4.03	.829	70	5.97	4.75	.881	57	5.09	5.05	.920	45	5.49	5.40	.917
Stress	68	6.22	4.39	.846	44	5.75	3.77	.826	63	6.46	4.04	.847	70	6.47	4.58	.911	57	6.11	4.82	.908	45	6.36	4.65	.888

M mean, SD standard deviation, α Cronbach's alpha

^a Significant difference between groups

actually seemed to cause negative affect. For instance, one teacher noted: “I spoke to one (student) outside in the corridor and he said ‘the questions make me think I am depressed or I’ve got anxiety issues.’” Similarly, students noted in questionnaire responses “Remove the moodgym (sic.) program it just makes you more depressed than when you started” and “Thinking about these things will just make the situation worse so its (sic.) best to just support them and not teach.”

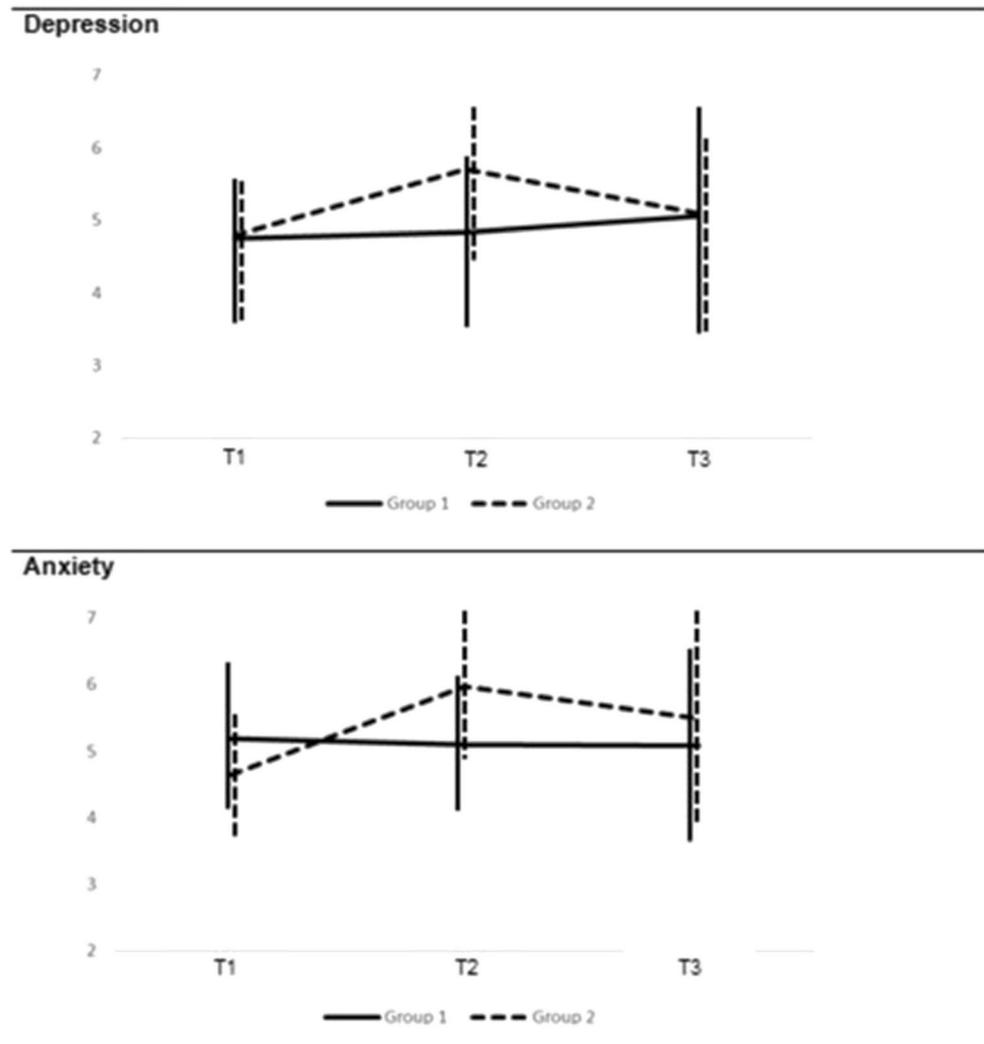
This thread exposes the kind of unintentional harm that universal mental health programs may cause. There were many suggestions from teachers and students pointing toward alternatives to the online prevention program chosen for the PEPP. Both groups suggested involving an external party or mental health expert, to teach or introduce positive education. Students suggested that lessons focused on coping strategies could be valuable. Students in the focus group observed that depression and suicide had seemingly been less of an issue in the past. One student asked: “why is it now when we’ve never had it so good?” Students holding this opinion may benefit from alternative approaches to MoodGYM that place mental health problems within their historical and social context.

Some teachers appreciated the classroom posters as supporting material, with some requesting to keep them in their classroom after their class had completed the PEPP. One teacher even suggested that the MoodGYM “Warping Thinking” posters could be the basis of some activity. Alternatively, students suggested that instead of MoodGYM, the school should do something framed as how to help others, “because then you know how to help your friends, but you know it all for yourself too.” It should not only provide information about where to go, but also guide students in signs of psychological ill-being in their friends and how to encourage them to seek help. This should include practical advice like what to say and where to go, “helping care for one another.”

Teacher Efficacy Minimal training was provided for the teachers, and teachers had mixed opinions about its adequacy. The school had the potential to better support teachers in their delivery of the PEPP, but did not want to interfere with what they considered a controlled research trial. The DP noted: “In hindsight we could’ve, we should’ve, given them more support (but) we were interested in this as being a piece of research.”

Despite the minimal training and need for greater support, teachers showed enthusiasm, buy-in, and self-reported efficacy prior to PEPP implementation. There was full agreement (100%) on being “willing and open” to teaching positive education to their pastoral care students and full agreement (100%) on the understanding of “the rationale behind positive education.” They showed satisfaction with the PowerPoint slides and were happy with the specified places in the teaching material to personalize and adapt content. Teachers noted: “(There are) clear teaching slides. So (I was) able to replay and add-in examples and (had) time to try the activities,” And

Fig. 2 Average depression (top) and anxiety (bottom) scores with bootstrapped 95% CI_{BCa} at baseline (T1), after group 1 participated in the PEPP (T2), and after group 2 participated in the PEPP (T3)



“I was doing (the positive activities) and showing my care group that I did it. They were like ‘well you’ve done it, I can do it too’. Rather than (slides showing) a generic photo of nothing.”

The DP reported that “We had a group of teachers who were very willing to (teach it).” Students also saw benefit to the buy-in and excitement that their teachers brought to the intervention, with majority of students thought positive education was taught well by the teachers (51%; 15.7% disagreed, and 33.3% were neutral).

Gender Matters Students and teachers agreed that attitudes toward the PEPP were dependent on gender. Although it may be the *perception* of whether or not a PEPP is acceptable depends on gender, whereas the *benefit* is less distinctive. Boys were less willing than girls to participate in the activities, or at least they wanted to appear so. The first author and SRC facilitators made similar observations during the student focus group. However, there were no statistically significant gender

differences in responses to evaluate questions about the value of and satisfaction with the PEPP. A teacher astutely noted:

“I think the boys wanted to say that they weren’t interested in it, but they still did it... and contributed and talked about it and they might have been a bit painful in terms of getting them to engage at the time and getting them to talk seriously about anything that we were talking about without them trying to muck around, but they actually still did it (agreement from another teacher in the room) and some of the ones that really actually needed it, were those ones. So they put a front up and pretended they weren’t interested in it, but they were actually listening and taking part in it.”

Fit with School Culture The school had been laying the foundation for positive education for quite some time, forming it as

part of the school culture, and preparing the community for change to happen. The DP noted *“I think we were ready (for change) in that we were very ready to have something happen, we needed to have something happen.”* Despite minimal training, the staff felt well supported to carry out teaching positive education by the school. One teacher noted: *“I think the structures are in place for anyone to be supported with it. I did some training, I thought that was enough.”*

There was also support for the intervention by parents and school leadership. Various stakeholders recognized the need for some kind of adolescent mental health and well-being intervention at the school, and parents overwhelmingly supported social and emotional concepts being taught at school, with 97% saying that they thought it was extremely or somewhat important and 3% were neutral. The DP reflected:

“We know that anxiety and depression is an issue that needs attention. So the aim of the program developed was quite clearly directed toward that was adapted to us, and the fact that it actually gave us some evidence based ways to help students develop those skills makes it better, because often that doesn't happen.”

Still, although positive education fit with the school and the department's strategic priorities, school support by the department was not unequivocal. The DP further reflected:

“(The department is) not opposed to it, but there's no support for it. ... wellbeing is certainly a priority...the department tends to see wellbeing in terms of student attendance, student achievement; those measurable, objective things. So the wellbeing in terms of the state of mental health isn't what they've thought about.”

Discussion

This case study evaluated the impact of a positive education pilot program and explored factors that were likely to have influenced that impact. In our consideration, we integrated multiple methods and perspectives to understand challenges and successes of the program, along with provider, recipient, organization, and intervention factors, within the context of a public Australian secondary school.

There was little evidence of changes in well-being and resilience. While well-being variables did increase as groups participated in the PEPP, there was also improvement in group 2 when acting as the “control.” This may point to confounding variables, contamination effects of the PEPP, or a positive impact of participation in data collection. The PEPP was also compulsory, which also may have affected reported well-

being. Other studies find that effects are stronger when participants voluntarily engage in a positive intervention and are motivated to change (e.g., Sin and Lyubomirsky 2009).

While there was little change in well-being, the intervention may have buffered from ill-being. The control group reported increases in depression and anxiety at T2, which then decreased after receiving the intervention, while the initial treatment group remained stable across the three assessments. Other studies similarly find declines in adolescent mental health during a school year (e.g., Boniwell et al. 2016; Vella-Brodrick et al. 2014; Haraldsson et al. 2008). Vella-Brodrick et al. (2014) posit that this trend of a decline in mental health may be a reflection of the substantial but transient demands students experience from their studies, as well as increasing challenges of adolescence. We speculate that the PEPP may have had some buffering effect against the decline of mental health, but this needs to be further tested in other samples.

Beyond the impact of the PEPP, we considered factors in implementation that may have impacted the PEPP. Drawing on qualitative and quantitative data from multiple perspectives (students, teachers, parents, deputy principal, author observations), several themes appeared. In terms of intervention factors, the fit between the intervention and the recipient mattered. Factors such as need, fit with the organization's mission, timing within the school calendar, and fidelity vs. adaptation were carefully considered prior to delivery. While parts were well received, other parts did not suit many of the recipients. This is consistent with a recent review which found that outcomes of school-based mental health programs have strongest association with students' receptiveness to the intervention, defined as the degree of relevance of the intervention to participants (Rojas-Andrade and Bahamondes 2018). Although the intervention was informed by action research completed by students the previous year, it was also limited by pragmatic considerations. For example, MoodGYM formed a core part of the PEPP, due to its succinct delivery and strong evidence base for addressing depression and anxiety, an identified need in the school. Yet many students were dissatisfied with MoodGYM. The previous action research study found that students were open to the use of technology in positive education if it did not involve too much reading on the screen (Halliday et al. 2017). The subject matter itself increased some participants' awareness to negative aspects, unintentionally causing some students to feel greater distress. Despite the evidence for MoodGYM's clinical effectiveness, this illustrates how universal mental health programs can cause unintended harm, and real-world student advice should be considered with more weight in the future. Lyon and Koerner (2016) suggest that user-centered design may overcome problems with evidence-based initiatives, making them more accessible, appealing, and by extension, more effective. Future studies might further investigate user-centered approaches to developing positive education programs.

An important recipient factor that impacted the PEPP was gender. Males *appeared* less likely to enjoy or benefit from the PEPP, although analysis of evaluative data did not indicate this. This presentation is consistent with an endorsement of the masculine norm of “self-reliance,” which has been consistently and unfavorably related to help seeking for mental health (Wong et al. 2017). The classroom culture, of which gender norms and expectations are a part, has been identified as an implementation challenge (e.g., Ijadi-Maghsoodi et al. 2017), and in general, males are less aware of their feelings than females and less comfortable talking about them with others (Englar-Carlson and Kiselica 2011). In addition, the stigma of mental health issues remains (Kern et al. 2017a), more so among males (e.g., Eisenberg et al. 2009; Chandra and Minkovitz 2006). Employing an identity from the sporting world has been used in some school-based programs to overcome stigma associated with depression (e.g., Robinson et al. 2010). Further investigation regarding the impact of recipient gender in school-based mental health programs is needed.

Another relevant factor was teacher efficacy, which intersects areas of provider (teachers), intervention (PEPP), and organization (school) factors. Prior research suggests that the results of well-being programs are highly dependent on the sense of ownership of the teachers involved (e.g., Knoop 2010; Ijadi-Maghsoodi et al. 2017). Notably, teachers generally felt confident in leading the PEPP despite receiving little training and were open to teaching emotional health and well-being concepts and knew the reasons for doing so. The organization did a lot of groundwork to set the stage for the PEPP, showing clear support for the program. This suggests that minimal training for an intervention’s provider may be overcome with organizational support, combined with the enthusiasm and understanding of providers.

Teachers were also satisfied with being able to adapt content within a structured presentation. Successful adaptation has been found to be possible as long as a program’s established core components are retained (Durlak 2013). Despite these successes, some teachers desired additional support and lacked efficacy. Langley et al. (2010) found supervisory consultation for providers a key enabler in their investigation of barriers and facilitators in the implementation of school-based mental health programs. Providing learning opportunities through observation, meaningful discussion, practice, and reflection (“performance feedback”; Domitrovich et al. 2008) may provide the efficacy some teachers found was lacking. In the present study, time and resources were limited for providing such support. In addition, the leadership knew that the program was part of a research trial and were concerned about contaminating the study results by intervening and providing additional training. School leaders may benefit from clarity around how to stay true to research while still providing adequate provider support.

Finally, stakeholder involvement brings together areas of intervention, recipient, provider, and organization implementation factors. Involvement of an organization’s members in decision making is considered a critical factor in successful implementation, decreasing resistance to change and increasing motivation and commitment (Domitrovich et al. 2008). Students and teachers had input into the PEPP, and further contributions were gained from the present study’s evaluation of the program in practice. For example, focus groups revealed the need for mental health problems to be put into historical context for better understanding, as was the value of concrete supportive material in the classroom. Parental engagement may be an untapped resource; parents were not mentioned by teachers or students as a help or a hindrance, yet our data show they are widely supportive of positive education. Familial support is an essential component in school-based interventions, but parental engagement requires sensitivity (see Kern et al. (2017a) for a summary of considerations) and a time-efficient outcome (Langley et al. 2010).

Limitations and Future Directions

The project was undertaken in a real-world setting, where we were unable to control many aspects of the intervention, with pragmatic consideration limiting what could be done. Groups were not randomly assigned, limiting any causal explanations for the results. The intervention occurred within a specific school context and may not generalize to other schools or other cultures and year levels. A major limitation was the inability to directly link individual level data across time points. This meant that there was considerably more unexplained within-group variance, making it harder to find significant change. We employed a non-randomized pre-test and post-test waitlist design. While this is a common approach for evaluating of interventions in schools, this design brings along various limitations. Participants were asked the same questions over three different time points, and we cannot be sure that changes are real or due to repeated testing. While the waitlist approach may be useful in evaluating the short-term impact of an intervention, it is limited in long-term evaluations of impact. Further, only the short-term impact of the intervention was considered, with the final assessment occurring after the second group received the intervention. Evidence suggests that longer interventions are more effective than shorter interventions (Sin and Lyubomirsky 2009) and interventions of this nature may only have visible impact in the longer term (Slemp et al. 2017). There were also methodological limitations that may have impacted participants’ responses; for example, the first author developed the PEPP and also led the student focus group. While it was not explicit who developed the content of the PEPP, participants may have felt compelled to give positive feedback.

Despite these limitations, the study demonstrates the value of scrutinizing recipient factors that impact the delivery and outcomes of a program; this may prove a productive area for future research. Pre-implementation activities aimed at increasing buy-in among parents, school administrators, and staff are recognized as an important part of a program's implementation (Langley et al. 2010), but how important is the buy-in of recipients to program success? And can this be influenced in a pragmatic timeframe? The various factors impacting the delivery and success of a program may be more or less modifiable (Kam et al. 2003; Berkel et al. 2011; Durlak 2013); further study is needed into the value and plasticity of recipient characteristics. The study of how sustainability interacts with identified influential factors will also be important to evaluate.

Conclusion

This paper describes an evaluation of positive education “in action” in a school, examining both the intervention and its practice. While prior reviews of school-based mental health interventions show positive effects of such programs (e.g., Wells et al. 2003; Nehmy and Wade 2014), there is a need to go beyond looking at overall impact alone, to consider factors that make an intervention more or less successful (Slemp et al. 2017). Lessons learned from implementation science can help psychological interventions in schools be more effective (Kelly 2012c);

incorporating an implementation perspective helps designers develop not only interventions that can work, but also ones that can successfully be implemented in everyday school settings. Our approach takes a step forward in this regard, identifying some of the conditions and actions that likely impact positive education in practice. As a whole, the study provides a systematic investigation of critical barriers and enablers in the “doing” of positive education in the real world. It is an exploratory yet important initial step toward successful positive education in practice.

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Compliance with Ethical Standards

The first author of this study was supported through an Australian Government Research Training Program Scholarship. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflict of interest.

Appendix

Table A4 Exploration of implementation factors

Factor	Investigation setting	Item
Intervention factors		
Compatibility with recipients (appropriateness, fit, congruence, match)	Teacher discussion	How appropriate was the positive education content? Specifically for the year 9 age group?
Fit with the organization's mission, priorities, policies, and values	Student evaluative questions	I enjoyed doing this trial of positive education
	Deputy principal interview	How does positive education, and more specifically the content that was contained in the trial, fit with the values of Blackwood High School?
Adaptability vs. fidelity, including standardized teaching materials	Deputy principal interview	How well did you think the positive psychology interventions were adapted to the school setting at Blackwood High?
	Teacher discussion	How closely were you able to deliver the PET as intended? Were there any changes/adaptations you made “on the run”?
		Did all classes reach the same point in the content by the last PET session?
Dosage effects: time and timing	Teacher discussion	Were there any privacy issues with doing activities involving the whole class? If so, how were they handled?
		Was there anything specific that you think would improve the activities used in the PET? Such as the timing of the activities—more or less frequent, etc.
	Student focus group	Was Extended Care Group the best time in which to do Positive Education?

Table A4 (continued)

Factor	Investigation setting	Item
Clear outcome measures	Online data collection	Would you have liked to spend more time on each exercise? Or would you have liked to do positive education more frequently than once a week? Positive and negative mental health (EPOCH, CD-RISC, DASS-21—see Error! Reference source not found.)
Recipient factors		
Feelings, values, and attitudes of recipients about the intervention, perceived need for the intervention	Student evaluative questions Student focus group	There is a need for positive education at Blackwood High School. Do you think there is a need for something like this (a program to help your well-being and develop thinking skills) at the school?
Buy-in—the extent to which the recipient believes the intervention is worthwhile	Student evaluative questions Student focus group	Positive education seems like a worthwhile thing to do. How well was the positive education you did in care group this year accepted by you and your peers?
Self-efficacy—extent to which recipient feels the intervention is able to bring about change	Student evaluative questions	After doing some positive education this year, I have a better knowledge and understanding of my own thoughts and well-being. Some skills I learned in positive education have helped me to become a more capable student.
Motivation to participate in the intervention	Student evaluative questions	I felt motivated to participate in the positive education sessions.
Benefits—knowing the beneficial outcomes of the intervention	Student focus group	How many of you know the possible benefits of positive education? How important was it to know this?
Collaboration—the extent to which recipients' contributions are sought and valued	Student evaluative questions	It was good that some BHS students were involved in planning and explaining positive education.
Provider factors		
Perceived need for/relevance of and benefit/effectiveness of intervention	Teacher pre-PEPP questionnaire	I understand the rationale behind positive education. There is a need for positive education at Blackwood High School.
Training of practitioners	Teacher post-PEPP questionnaire	In retrospect, I would have liked to do additional specific positive education training before teaching it to my students
Motivation to implement the intervention	Teacher pre-PEPP questionnaire	I will be able to motivate my students to participate in positive education.
Self-efficacy—extent to which provider feels they are able to do what is required and their beliefs about the program's potential to bring about change	Teacher pre-PEPP questionnaire	I am convinced that I am able to successfully teach positive education content to even the most difficult students.
Practitioner skill and experience	Teacher pre-PEPP questionnaire	Years of teaching experience [open-ended]
Openness to change/new practices, perceived divergence of research based intervention with usual teaching practices	Teacher pre-PEPP questionnaire	I will be able to teach positive education even when I am opposed by skeptical colleagues.
Practitioner's understanding of the theory underlying intervention, how and why it should be implemented	Teacher pre-PEPP questionnaire	I understand the rationale behind positive education.
The intervention's intuitive appeal to the provider	Teacher pre-PEPP questionnaire	I believe positive education will help the psychological health of my students.
Level of support/resources	Teacher discussion	How satisfied were you with the level of support you received from the teaching materials/resources and the school in implementing the PET?
Organizational factors		
Vision, efficacy, and buy-in of staff, work climate, norms regarding change	Deputy principal interview	How well did the year 9 teachers “buy-in” to the positive education trial?
Personnel stability	Deputy principal interview	Were there any changes in personnel during the trial?
Organizational readiness for evidence-based programs (values, resources, skills, and ongoing evaluation)	Deputy principal interview Analysis of BHS Strategic Directions 2013–2018 (Blackwood High School 2012)	In retrospect, was the school ready for this step in the implementation of positive education? Regarding skills, resources, etc.
Shared decision making, collaboration, input of stakeholders	Student evaluative questions Teacher post-PEPP questionnaire Analysis of DECD Strategic Plan 2014–2018 (Department for Education and Child Development 2013)	It was good that some BHS students were involved in planning and explaining positive education. I am satisfied with the level of input I had in the positive education trial.
Communication and ongoing support—the extent to which frequent and open communication and problem solving is encouraged once implementation begins, and mechanisms allowing it	Teacher discussion Deputy principal interview	Was there open communication with the school? With each other? Was there an open communication channel between the school (you, Lee, Janet) and the year 9 teachers? Among the year 9 teachers?
Specific staffing considerations—leadership and administrative support	Deputy principal interview	Was there adequate leadership and administration support?
Incentive and reward—for both recipient and provider	Deputy principal interview	In retrospect, was there adequate incentive and reward for the students? The teachers?
Level of resources	Deputy principal interview	After this process, what are your thoughts on the level of resources?

Table A4 (continued)

Factor	Investigation setting	Item
Contextual factors Political support or lack thereof	Deputy principal interview Analysis of DECD Strategic Plan 2014–2018 (Department for Education and Child Development 2013)	How supported is the organization to implement positive education? By the school board? The DECD?
Parental and community member engagement	Parental questionnaire	Were you aware of the positive education trial your child participated in this year? [Y/N] How did you interact with your child regarding positive education? [5-point Likert scale] How did positive education impact on your child? [5-point Likert scale] How satisfied were you with the school's trial of positive education with year 9 students? [5-point Likert scale] How important is it that the school engages in some social and emotional learning such as positive education? [5-point Likert scale]

Except where stated, all student evaluative questions and teacher pre-PEPP items were answered on a five-point agree-disagree Likert scale
DECD Department of Education and Child Development

Table A5 Depression and anxiety for the duration of the study

		Depression		Anxiety	
		Group 1	Group 2	Group 1	Group 2
T1	N	68	44	68	44
	M (CI ^a)	4.75 (3.69, 5.82)	4.80 (3.85, 5.79)	5.19 (4.15, 6.27)	4.64 (3.73, 5.55)
T2	N	63	70	63	70
	M (CI ^a)	4.84 (3.81, 5.92)	5.71 (4.67, 6.80)	5.10 (4.11, 6.17)	5.97 (4.98, 7.01)
T3	N	57	45	57	45
	M (CI ^a)	5.05 (3.71, 6.52)	4.84 (3.70, 6.05)	5.09 (3.83, 6.42)	5.49 (4.06, 7.01)
T1 to T2	MD (CI ^a)	0.09 (−1.40, 1.58)	0.92 (−0.572, 0.39)	−0.10 (−1.56, 1.28)	1.34 (−0.05, 2.73)
	Effect size (CI ^b)	0.02 (−0.32, .36)	0.21 (−0.17, 0.58)	−0.02 (−0.37, 0.32)	0.32 (−0.07, 0.69)
T2 to T3	MD (CI ^a)	0.21 (−1.46, 1.90)	−0.87 (−2.57, 0.87)	−0.01 (−1.67, 1.68)	−0.48 (−2.35, 1.54)
	Cohen's d (CI ^b)	0.04 (−0.31, 0.40)	−0.18 (−0.56, 0.19)	0.00 (−0.36, 0.36)	−0.10 (−0.47, 0.28)

M mean, MD mean difference

^a Bootstrapped 95% confidence interval_{BCa}

^b 95% confidence interval around effect size

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