RESEARCH PAPER

Positive Psychology at School: A School-Based Intervention to Promote Adolescents' Mental Health and Well-Being

Abstract The present study evaluated a positive psychology school-based intervention aimed at enhancing mental health and empowering the entire educational staff and students at a large middle school in the center of Israel. 537 seventh- to ninth-grade students participated in a 1 year intervention program and were compared to 501 students in a demographically similar control school. In a 2-year longitudinal repeated measures design, the study assessed pre- to post-test modifications in psychological symptoms and distress and in targeted well-being factors that were promoted in the experimental but not in a wait list control condition. The findings showed significant decreases in general distress, anxiety and depression symptoms among the intervention participants, whereas symptoms in the control group increased significantly. In addition, the intervention strengthened self-esteem, self-efficacy and optimism, and reduced interpersonal sensitivity symptoms. These results demonstrate the potential benefits of evidence-based positive-psychology interventions for promoting school-children's mental health, and point to the crucial need to make education for well-being an integral part of the school curriculum.

Keywords School · Intervention · Positive-psychology · Mental-health · Well-being · Adolescents

1 Introduction

Since the late 1990s there has been a dramatic rise in reported mental disorders among children and adolescents (Costello et al. 2004). Epidemiological studies of mental disorders among adolescents younger than 18 years have been conducted worldwide with

prevalence rates ranging from 8 to 20 % (World Health Organization 2005). The Israel Survey of Mental Health among Adolescents reported that at least 11.7 % of adolescents were diagnosable with a mental disorder (Farbstein et al. 2010).

In this same period of time the field of positive psychology has made significant progress in understanding youth trajectories toward improved well-being and positive mental health outcomes (Duckworth et al. 2005). Despite the potential contribution of the science of happiness and positive psychology to prevention science, there is a shortage of empirically validated positive psychology interventions to reduce mental health symptoms and increase well-being in schoolchildren. The present study contributes to ongoing scholarship in the area of school-based prevention of mental health problems by reporting the longitudinal effects of a novel positive psychology intervention to an entire middle-school population in Israel.

1.1 A Dual Perspective of Mental Health at Schools

The last two decades were characterized by increasing pressure to improve student achievements through high academic accountability emphasis. This focus has expanded since the 1980s, with the education reform in the United States that has created a pervasive tendency worldwide towards standards, assessment and accountability as major milestones for increasing student achievement (NCLB 2001). As a result, curriculum goals have become more academic and skill-oriented, and social and emotional components of educational programs have taken the back seat to increasingly rigorous academic demands (Hargreaves 2003).

Over the course of the past decade, the impetus for preventive interventions to respond to mental health problems has been reinforced by epidemiological research that showed excessive levels of mental health conditions among children and youth (Twenge et al. 2010). According to epidemiological studies in the United States, nearly 1 in every 10 children has a depressive episode before their 14th birthday, and as many as 20 % of 16–17 year old adolescents have some form of an anxiety or mood disorder, or some form of a disruptive or substance use disorder (Keyes 2006). Furthermore, Huebner et al. (2000) found that 25 % of American students reported an 'unhappy' or 'terrible' existence, or high levels of negative school or family experiences. Rate of mental disorders tends to be similar in Israel. According to the Israel Survey of mental health, the prevalence of mental disorders among adolescents younger than 18 years is 11.7 % for any disorder, 8.1 % for internalizing disorders and 4.8 % for externalizing disorders (Farbstein et al. 2010).

Nevertheless it is important to note that while early twentieth-century studies regarded health and illness as two extremes of a single dimension recent scientific studies have given rise to a more complex understanding of the relations between well-being and ill-being. For example, Greenspoon and Saklofske (2001) proposed a dual factor model which defines mental health as composed of two psychometrically distinct, but correlated continua of mental illness and positive mental health, and posits that elevated levels of distress can coincide with high levels of subjective well-being. Indeed, others have found that the absence of mental illness does not indubitably imply the presence of high levels of positive mental health and vice versa (Sin and Lyubomirsky 2009).

Subjective well-being, defined as consisting of a cognitive component (life satisfaction appraisals), and an affective component (the presence of positive affect and the absence of negative emotional experiences) (Deiner 2000), is particularly important in the context of school as studies have demonstrated a positive association between students' levels of subjective well-being and their academic functioning, social competence, physical health,

achievements, and behavioral engagement in school (Antaramian et al. 2010). Conversely, low levels of psychopathology with low levels of subjective well-being have been related to characteristics similar to those of students with psychopathologies (Suldo et al. 2009). Additional studies suggest that higher levels of subjective well-being among schoolchildren correlate with better relationships with parents, teachers, and peers (Gilman and Huebner 2006). These outcomes highlight the potential benefits of incorporating education for well-being in the school curriculum.

1.2 Promoting Positive Mental Health in Schoolchildren

Recently, several studies in the new 'positive psychology' movement have begun to identify factors that contribute to children's and adolescents' subjective well-being (Seligman et al. 2009). Specifically, factors such as positive emotions (Fredrickson 2004), gratitude (Froh et al. 2008), hope (Snyder et al. 2003), goal setting (Locke and Latham 2002), and character strengths (Peterson and Seligman 2004) have been increasingly associated with SWB in youth. Moreover, converging evidence indicates that interventions which successfully promote these factors can advance subjective well-being as well as decrease psychiatric symptoms in the general population (Duckworth et al. 2005; Sin and Lyubomirsky 2009).

For example, daily exercises consisting of writing gratitude diaries (Emmons and McCullough 2003) and writing about intensely positive experiences (Burton and King 2004), or counting one's blessings in daily and weekly diaries (Emmons and McCullough 2003) all resulted in higher levels of reported subjective well-being. In other interventions, participants completed the Values in Action strengths inventory and were told to use their signature strengths in a new way every day for 1 week. On the immediate post-test, the participants reported being happier and less depressed (Seligman et al. 2005).

However, much of this literature consists of short-term efficacy studies that have been carried out in controlled research settings, and there is still uncertainty about the extrapolation of the findings into the educational context. That being said, there are a few studies that did demonstrate the potential of school-based positive psychology intervention programs in promoting positive mental health among schoolchildren. These school-based interventions designed to cultivate positive emotions, behaviors and attitudes among children, and a significant part of them were evaluated in controlled and valid research designs and measures.

Number of interventions targeted specific positive emotions that were more consistently related to well-being, such as gratitude and hope. One example is a short-term gratitude intervention study, conducted by Froh et al. (2008), which examined the effects of a grateful outlook on middle school students' subjective well-being. Froh et al. (2008) found that adolescents, who participated in daily gratitude exercises that involved listing five things they are grateful for, reported increased levels of subjective well-being 3 weeks after the intervention. In addition a significant relationship was found between gratitude and satisfaction with school experience in the immediate post-test and in a 3-week follow-up period.

Marques et al. (2011) conducted a hope-based intervention with 31 middle-school students from a public school in Portugal, compared to a matched control group of 31 students. The intervention aimed to enhance hope, self-worth, life satisfaction, academic achievements and mental health, through processes of conceptualizing of clear goals, reframing seemingly insurmountable hurdles, and providing range of pathways to attainment. The program was delivered over 5 weekly 1 h sessions in a group setting, and was

leaded by doctoral students in psychology. At post-test, the intervention group had significantly higher levels of hope, self-worth and life satisfaction that were maintained over 18 months following the intervention.

Positive-psychology programs have been incorporated more broadly into schools in several countries. In the UK, Jenny Fox-Eades has developed a strengths-based program for schools called "Celebrating Strengths", in which she encourages teachers and students to explore and use their character strengths through a cycle of community celebrations and stories that are woven into the school curriculum (Eades 2005). Celebrating Strengths has been implemented in several primary and secondary schools in the UK and Australia, and is currently the subject of a longitudinal research study that examines the impact of the program on adolescents' wellbeing and self-esteem. In addition, since 2006, Wellington College, a British boarding and day independent school has been teaching a "Well-being Program", in which all students in the first 4 years of the school receive 1 h per fortnight of well-being lessons. The course is delivered by leading teachers from the school, and is based on 6 elements which serve to enhance well-being including: physical health, perspective, engagement, positive relationships, the world (living sustainably), and meaning and purpose (Morris 2009).

In Australia a range of positive psychology interventions has been conducted in both elementary and secondary schools. One example is a resilience program called "Bounce Back", which integrates several core principles of positive psychology within the literacy curriculum in several schools across Australia (Noble and McGrath 2008). Another example is the Knox Grammar School, an independent boarding school for boys, located in Wahroonga, where over 200 teachers have participated in applied 3-year training in positive psychology that aimed to provide knowledge and strengths-based skills that promote a positive school climate. Through a combination of Positive Psychology and Coaching strategies, the participating teachers worked individually with the school children and helped them to attain their personal and academic goals and to increase their levels of well-being (Green et al. 2012).

Another preliminary support for the benefits of positive psychology-based coaching in schools was provided by Green et al. (2007) who performed a randomized controlled experimental trial in a private girls' high school in Australia. Ten teachers were trained as coaches through two half-day workshops conducted by a school counselor. After the training period, 56 students were randomly allocated to a 'teacher-coach' with whom they met individually for 10 sessions over two school terms or to a wait-list control group. The results showed a significant improvement over time in hope and hardiness, and decreases in depression and anxiety in the coaching group.

An example for a more continuous intervention is the Geelong Grammar School in Australia, in which over the course of 4 years approximately 250 staff members have taken part in intensive training courses with a team of senior trainers from the Positive Psychology Center at the University of Pennsylvania. First, they were taught basic theoretical elements and skills of positive psychology, such as character strengths, meaning, gratitude, flow, positive emotions, optimism and positive relationships, and were given detailed curricula of how to teach these elements to children. After the training period, the school teachers taught positive psychology courses in several grades, and the professional teachers embedded positive education elements into most academic courses. Results showed improvement in conflict resolution between students, the emergence of a common strengths-based language shared by students and staff, a rise in meaningful conversations between students, and increased levels of individual flourishing among 7th year students (Williams 2011).

Another positive psychology intervention for schoolchildren was empirically evaluated over the course of 2003 at Strath Haven High School outside Philadelphia. 352 students participated in approximately 25 lessons related to positive psychology concepts in 9th grade. The curriculum aimed to promote resilience, positive emotions, a sense of purpose and meaning, and use of signature character strengths in day-to-day life. The basic findings of the program were an increase in enjoyment and engagement in school, and improvement in social skills such as empathy, cooperation, and self-control. However, the program did not improve depression or anxiety symptoms, character strengths, or participation in extra-curricular activities (Seligman et al. 2009).

The initial findings from these interventions provide support for the potential of positive psychology school-based intervention program for students' sense of well-being. They also indicate that the interventions are effectively delivered by teachers and do not necessitate external experts for delivering the curriculum. In addition, there is strong evidence to the effectiveness of school-wide interventions, in which all educational staff and students are trained in positive psychology strategies. On the basis of these findings, we adopted in the present study a whole-school approach, and set up a broad intervention that involved an entire school and not just individual classrooms. We posited that allowing teachers to practice the skills derived from positive psychology in their personal lives as well in their roles as educators would allow them to pass on their knowledge directly and indirectly to their students through role modeling and direct teaching. Thus, the intervention program was delivered in the form of a teacher development course and workshop. The teachers, in turn, administered the curriculum to the students, using age-appropriate materials and activities.

1.3 Goals of the Maytiv School Program

Numerous studies published during the last decades have provided evidence for the important role that well-being plays in the lives of adolescents (Deiner 1984, 2000; Lyubomirsky 2001). Well-being is largely conceptualized as a whole that is integrated by cognitive and emotional components. The cognitive component includes positive evaluations of different areas of life, and the emotional component is characterized by a dominance of positive emotional experiences (Deiner 2000).

Despite the numerous aspects of well-being in the literature, the most theoretically elaborated explanations for well-being in recent years derived from two philosophical views: the hedonic approach and the eudaimonic approach for well-being (Ryan and Deci 2000). The hedonic approach for well-being focuses on pleasure fulfillment and pain avoidance, and thus involves concepts such as positive emotions, life satisfaction, and happiness (Deiner 2000; Ryan and Deci 2001). In contrast, the eudaimonic approach focuses on the realization of human potential as the ultimate human goal, and emphasizes components of self-actualization, autonomy, meaning, and purpose in life as the main foundations of well-being (Waterman 1993).

These two perspectives have produced an abundance of studies on the factors associating with hedonic and eudaimonic well-being, that part of them attributed to the field of positive psychology. From this breadth body of knowledge, we decided to focus our intervention on six key factors of well-being that have received widespread attention in the positive-psychology research. These factors included: positive emotions, gratitude, goals fulfillment, optimism, character strengths, and positive relationships.

The importance of positive emotions is extensively illustrated by the Broaden-and-Build Theory of Positive Emotions (Fredrickson 2004). According to Fredrickson (2004) several

discrete positive emotions such as joy, interest, contentment, and love, have the ability to build personal, physical, intellectual, social and psychological resources by expansion people's thought-action repertoires. As a consequence, the last several years have seen a variety of studies on positive emotions and their relation to happiness, success, psychological growth and improved mental and physical health (Fredrickson and Joiner 2002).

Gratitude is defined in the literature as a virtue or as an emotional state resulting from recognition of future, contemporary or previous benefits received (Emmons and McCullough 2003). From a moral perspective it is perceived as a moral affect that promotes prosocial behavior and enhances interpersonal relationships and personal well-being (McCullough et al. 2001). From an emotional perspective, gratitude is perceived as an attribution-dependent state that demands recognition of a positive outcome that obtained from an external source (Froh et al. 2008). As mentioned before, studies indicated that simple exercises of gratitude that instructed students to focus on things or experiences in their lives for which they are grateful, yielded significant improvement in life satisfaction and well-being (Froh et al. 2008; Emmons and McCullough 2003).

The interrelatedness of fulfillment of goals, needs, and desires and subjective well-being has long been recognized (Deiner 1984). For example, Wilson (1967) claimed that the satisfaction of needs increases happiness and that unfulfillment of needs leads to unhappiness. The present intervention focused on several mechanisms and variables that have been associated in the literature with the ability to turn beliefs into reality, including: positive expectations, optimism, focusing and purpose, self-concordant goals, self-efficacy, and a flexible mindset (Langer 2000; Seligman 2002; Sheldon and Houser-Marko 2001). Among them, purpose in life during adolescence has attracted considerable research interest and has been highly associated with long-term motivation (Damon 2008), sense of belonging to school, prosocial behavior, and high self-esteem (Bronk 2011). Self-efficacy beliefs have also been related to such key factors of academic motivation. There is evidence that self-efficacious school children show higher levels of school participation and involvement, persistence and coping with difficulties and challenges than do those who doubt their abilities (Bandura 1997).

The intervention's factor of optimism represents positive and hopeful expectations in a given condition or in general (Scheier and Carver 1988). In the burgeoning field of optimism, research has shown that optimism is correlated with various positive outcomes including better physical and mental health, increased school success and better coping strategies when faced with adversity (Seligman 2011). In addition, optimism seems to have an important role in ameliorating depressive symptoms and enhancing positive mental health. Seligman et al. (1999) have shown that "learned optimism" training programs, that teach children and adults to recognize catastrophic thoughts and transform them into more constructive and optimistic views, reduce depression and anxiety symptoms.

Another key factor for well-being is the individual's character strengths, which are positive traits, based on virtues that can be fostered and cultivated over time (Peterson and Seligman 2004). Theories about the nature of good character appeared over two thousand years ago in the ancient roots of ethics, philosophy and religion. In recent years, research about the impact of character, virtues and moral qualities on cultivating strengths and promoting well-being has gained renewed interest and yielded important findings regarding the personal and interpersonal benefits of character strengths and virtues (Gillham et al. 2011; Park and Peterson 2008; Shoshani and Aviv 2012).

Diener and Seligman (2002) conducted research that compared extremely happy people with a control group of people who were not happy. When the researchers examined the characteristics of the happy group, they found that they differ radically from the others in

respect of their rich and satisfying social life. They were characterized by close relationships and intimate friendships. Similar findings were obtained from studies in the field of resilience. Populations in situations of crisis and risk have shown the ability to cope and function well, despite the difficult circumstances, in situations where they experienced strong social and family support (Masten 2001). Positive supportive relationships are the foundation of resilience and subjective well-being (Wang et al. 2003). The purpose of the last factor in the intervention was to promote positive relationships with friends, family and other members in the community, and to encourage the creation of positive school environments.

The intervention presented in the current study was conducted by "Maytiv" ("to make good" in Hebrew), an academic center for the research and practice of programs in the field of positive psychology. It was established to assist individuals, groups, and sectors in the community by applying and making the knowledge that the academic world has accumulated in the field of positive psychology accessible to the public. The program was implemented on the entire student population and educational staff of a large middle-school in the center of Israel. 537 7th to 9th grade students and 80 teachers participated in a 1 year intervention program and a 2-year evaluation process from September 2010 to June 2012 and were compared to 501 students in a control school. The intervention was directed at the entire school including the school principal, management staff, teachers and students in all grades. We employed a 2-year longitudinal repeated measures design that assessed pre- to post-test modifications in psychological symptoms and distress and targeted positive factors that were promoted in the experimental but not in the control condition.

1.4 The Aims of the Study

Our major aim in this research was to examine whether participation in the intervention program longitudinally predicted better mental-health outcomes throughout the middle-school years. We expected that the participants in the intervention group would exhibit a greater longitudinal increase from pre- to post-intervention in self-efficacy, optimism, life satisfaction, and lower levels of psychological distress and mental health symptoms than the control group participants. In addition, we were interested in evaluating the influences of the intervention on the dynamics of self-esteem. Recent self-esteem theories have suggested that self-esteem is not constant over time but a dynamic, changing construct (Baldwin and Hoffmann 2002). William James (1983) viewed self-esteem as a ratio of the individual successes and expectations. He explained increase in self-esteem with increase in the individual's successes or with decrease in his self expectations. Since the present intervention focused on promotion of both successes and expectations, this question remained to be investigated.

The second aim of this study was to investigate whether intervention efficacy differed in terms of socio-demographic background characteristics that have been identified in previous research as risk factors for low mental health including coming from a low-income family and single-parent household (McLeod and Shanahan 1993). In addition, an exploratory question examined the effects of gender on intervention efficacy.

2 Method

2.1 Participants

Participants were 1,167 adolescents in the seventh, eighth and ninth grades aged 11.8–14.7 at the beginning of the study ($M = 13.68$, $SD = 0.64$) from two large middle schools in

the center of Israel. Allocation to study conditions followed a two-step procedure. First, we selected an initial pool of 28 middle schools from 35 middle schools in the same geographic area, while seven ultra-orthodox religious schools were excluded. Afterwards, we sent a proposal describing the positive-psychology intervention to the selected schools, and we met with eight school principals who expressed their willingness to participate in the program. School principals were informed that they might be recruited to a wait list control condition and six of them agreed to the random selection process. In the second stage, one of the interested schools was randomly selected to the intervention. Another school was selected to the wait list control group, based on similar features to the intervention school, such as socio-demographic characteristics and number of total students. The control group participated in the intervention after the completion of the study.

In total, 578 students from 7th to 9th grade participated in the positive psychology intervention program, and 589 adolescents from 7th to 9th grade classes selected to the wait list control condition who did not take part the intervention. In both conditions, 5 classes in each grade level participated in the study. In the intervention group a total of 65 students did not complete the study, 34 due to absence, 2 due to refusal to complete questionnaires, and 29 started the study and later dropped out. In the control group 59 students did not complete the study, 22 due to absence, 4 due to refusal to complete questionnaires, and 33 started the study and later dropped out. The final longitudinal analyses used data from a total of 1038 students: 537 students from the intervention group and 501 adolescents from the comparison group who did not take part any positive psychology lessons. Students were mostly Jewish (98 %). 4 % of the adolescents reported Orthodox levels of religious observance, 21 % traditional, and 75 % were secular. In addition, 57 % of the study population reported middle socioeconomic status, 20 % high SES, and 23 % low SES. Participants also provided responses to questions regarding family status (64 % lived in a two-parent family, 36 % lived in a single-parent family) (Table 1).

2.2 Instruments

2.2.1 Socio-Demographic Measure

The participants in this study were given a demographic data questionnaire requesting background information. This included self-report questions about gender, age, participant's country of birth, parents' country of birth, religion, and socioeconomic status that was determined by a set of income thresholds and household size.

2.2.2 Brief Symptoms Inventory

The adolescents' mental health was measured by the Brief Symptom Inventory (BSI) (Derogatis and Spencer 1982). The BSI, the abbreviated version of the SCL-90-R, comprises 53 self-report symptom items rated on a 4-point Likert scale to identify clinically relevant psychological symptoms in adolescents and adults. The BSI was designed for adolescents and reports norms from that age. The inventory provides distress indices and symptom load assessment on 10 subscales—somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychotic ideation and miscellaneous. For a single summary measure, Derogatis and Spencer (1982) recommend the Global Severity Index (GSI) calculated as the average of ratings assigned to symptoms. The BSI has yielded good psychometric properties:

Table 1 Socio-demographic characteristics of the intervention and control groups at baseline

	Control group (n = 501) Mean (SD)	Intervention group (n = 537)	Statistic	*p* value
Gender			$\chi^2 = 0.2$	.65
Girls, n (%)	257 (51.2 %)	268 (49.9 %)		
Age (years)	13.75 (0.66)	13.61 (0.61)	$t = 3.55$	.001
Socioeconomic status			$\chi^2 = 2.98$	.56
Very good, n (%)	43 (8.58 %)	39 (7.26 %)		
Good, n (%)	56 (11.18 %)	66 (12.30 %)		
Average, n (%)	295 (58.88 %)	299 (55.68 %)		
Low, n (%)	61 (12.18 %)	81 (15.08 %)		
Very low, n (%)	46 (9.18 %)	52 (9.68 %)		
Religious observance			$\chi^2 = 1.93$	.38
Orthodox, n (%)	23 (4.59 %)	16 (2.98 %)		
Traditional, n (%)	105 (20.96 %)	118 (21.97 %)		
Secular, n (%)	373 (74.45 %)	403 (75.05 %)		
Family status			$\chi^2 = 1.70$	.19
Two-parent household, n (%)	332 (66.27)	335 (62.38 %)		
Single-parent household, n (%)	169 (33.73 %)	202 (37.62 %)		

Cronbach's alpha coefficients of 0.71–0.81, high test–retest reliability (correlations between .78 and .90) and high concurrent validity with the MMPI. In the current study, the Cronbach's alpha coefficients were $\alpha = 0.92$–0.97 for the GSI and $\alpha = 0.79$–0.90 for the subscales.

2.2.3 The Rosenberg Self-Esteem Scale (RSE; Rosenberg 1965)

The RSE is a 10-item unidimensional measure of a person's overall evaluation of his or her worthiness as a human being. The RSE is the most widely used measure of self-esteem and requires respondents to rate items on a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The RSES contains an equal number of positively (e.g., people feeling satisfied with life) and negatively (e.g., people feeling they are failures) worded items. After reversing the negatively worded items of the RSE, responses are summed to generate scores ranging from 10 to 40, with lower scores indicating lower self-esteem. The RSE (Rosenberg 1965) had a coefficient alpha of 0.77. In the current study, tests of internal consistency produced Cronbach's alpha coefficients of 0.83–0.86 for the RSE measure.

2.2.4 The General Self-Efficacy Scale (Zeidner et al. 1993)

This scale was developed to assess a general sense of perceived self-efficacy to predict coping with daily hassles and stressful events (e.g., "I can always manage to solve difficult problems if I try hard enough", "I am confident that I could deal efficiently with unexpected events"). It contains 10 items, and responses are made on a 4 point scale ranging from 1-not at all to 4-exactly true. Summed responses yield a total score, with higher scores

reflecting higher levels of self-efficacy. In this study, the Cronbach's alpha coefficients measured in the different measurement points were $\alpha = 0.82–0.87$.

2.2.5 Satisfaction with Life Scale (SWLS; Diener et al. 1985)

The scale was developed to assess satisfaction with the individual's life as a whole. According to the authors of the SWLS, the scale is designed around the idea that one must ask subjects for an overall judgment of their life in order to measure the concept of life satisfaction (Diener et al. 1985, pp. 71, 72). The scale contained five items (e.g., "In most ways my life is close to ideal") and employed a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). The mean score was calculated to represent the level of satisfaction. The SWLS has shown good reliability and validity. In this study, the alpha coefficients were $\alpha = 0.85–0.88$. The SWLS demonstrated adequate construct validity, convergent validity, and discriminant validity (Pavot and Diener 2008).

2.2.6 The Life Orientation Test-Revised (LOT-R: Scheier et al. 1994)

The LOT-R has three positively phrased items reflecting optimism (e.g., "in uncertain times I expect the best") and three negatively phrased items reflecting pessimism (e.g., "if something can go wrong … it will") along with four filler items. Participants' responded on a 5-point scale ranging from 0 (strongly disagree) to 4 (strongly agree). LOT-R Total scores are calculated by summing the three positively worded and three negatively worded items (these are reverse coded). Reliability analyses in this study showed the internal consistency for optimism ($\alpha = 0.53–0.59$) and pessimism ($\alpha = 0.63–0.69$).

2.3 Intervention and Control Conditions

2.3.1 Intervention Group

The intervention program included two parallel phases: (1) teachers' training workshop, led by clinical psychologists trained in group dynamics and in positive psychology; this phase included 15, 2-h long group sessions through the school year, and took part in it the school's educational staff. And (2) teachers administered a parallel, age-appropriate program, to their students in the classroom. This phase was conducted in parallel to the teacher's training workshop, every 2 weeks, in the same format of 15 sessions, throughout one school year. In order to encourage implementation, increase its effectiveness and standardize it, a teacher's text book was created, which included class plans for each of the 15 sessions. Each such class plan included the theory and experiential activities for teachers to implement the concepts and ideas, as well as multi-media complementary material. The parallel structure of the program, allowed for the classroom implementation to be processed in the teachers' workshop.

Finally, to increase program fidelity, the school psychologist and counselors were given responsibility for checking randomly that the program was being implemented in the classrooms during the assigned lessons and to complete a report noting their impressions of the administration and any problems that had arisen. All participating teachers reported full administration of the activities and excellent class cooperation with the program.

The classroom program included activities, discussions, reading poems and stories and viewing movie clips dealing with core elements of positive psychology. For example, to

address the gratitude component, students were instructed to list up to five or more things that they felt most grateful for in the past week, and shared their written reflections of gratitude and positive experiences with their classmates. Students were also encouraged to write gratitude letters to people who had affected their lives in a positive way and send them to these individuals. In order to address the goal-setting component, students created a list of personal large-scale goals that they wanted to achieve in their lives. Then, they broke these goals down into smaller targets, and every week listed four methods (plans of action) that they anticipated using that week to accomplish their goals. During the next week, students rated their progress toward that goal using goal-attainment scaling.

Most activities stimulated lively discussions and frequently generated emotional responses, intense and novel group processes, and new channels for communication among students and between educators and students. In this way, the circles of influence of the program extended from individual teachers to the educational staff as a group, from individual students to the classroom as a group, and finally to teacher—student interactions.

2.3.2 Control Group

In the wait list control group, during school hours, teachers continued with the regular curricula of the social science lessons which were to impart information and to discuss issues related to the period of adolescence. The control groups did not participate in any positive psychology experiential activities as utilized in the intervention groups. The intervention and control conditions ran parallel to each other over the same period.

2.4 Procedure

After receiving municipal and academic ethics committee authorizations the adolescents were recruited to participate in a study examining the effectiveness of a positive psychology school-based intervention program. During the 2010–2011 and 2011–2012 academic years, letters describing the project, parental consent forms, and student assent forms were sent to the families of the schools' students. All the parents complied with the informed consent requirements. The intervention was carried out at the school from September 2010 to June 2011. In order to examine the long-term effects of the intervention, the study lasted over two school years. In September 2010, June 2011, December 2011, and June 2012, research assistants administered questionnaires to the participants at their schools during the school day. Unless noted, adolescents completed each measure at each of the four assessment points.

2.5 Statistical Analyses

The main analyses were designed to explore the longer-term relationships between intervention condition and mental health outcomes. Two-level hierarchical linear modeling (HLM) was used to characterize the mental health growth of students with various background characteristics (poverty status, family type, and gender) along with the intervention condition and the interactions between the students' characteristics and intervention type.

The statistical literature on the analysis of serial measurements have focused on the important advantages of using multilevel models, where repeated measures are nested within respondents, over conventional repeated measures ANOVA (Weiss 2005). The

HLM method accommodates several complexities of longitudinal data set including missing data, time-varying covariates, attrition and other characteristics that make standard multivariate procedures less applicable in a longitudinal research (Ware 1985).

The HLM analyses modeled the mental health scores from four points in time at two school years at level one and adolescent-level variables at level two (i.e., intervention condition, the student characteristics, and the interactions). The elapsed time, in months, was calculated between the initial assessment (in September 2010) and each later assessment (i.e., June 2011, September 2011, and June 2012). This value was zero for all children's initial scores and the elapsed time between each assessment and the initial assessment in September 2010 was calculated to describe the extent of mental health change the students exhibited each month from the beginning of the study.

Student characteristics were included as predictors in the second-level equations for the intercept in order to determine how they were related to students' mental health at the beginning of the intervention. Program type, the adolescents' characteristics, and their interactions with program type were included as predictors of the growth-rate parameters to depict the relationship of the intervention condition to mental health from the beginning of the intervention, during the year in which the intervention took place, and finally a follow-up 1 year after completing the intervention. Separate models were analyzed for the different outcome variables of self-esteem, self-efficacy, optimism, life satisfaction, psychological distress as measured by the GSI (Global Severity Index of the BSI), and mental health symptoms (BSI subscales).

3 Results

The comparisons for mean changes between the intervention and control groups are presented in Table 2.

3.1 Mental Health Status at the Beginning of the Study

Results from the mental health variables analyses indicated that many of the student-level characteristics were associated with students' mental health symptoms at the beginning of the study (see Table 3). The two family risk factors (living below the poverty level and single-parent household) were positively related to adolescents' initial levels of mental health symptoms before starting the intervention, although the Cohen's d effect sizes for these relations were in the small range according to Cohen (1988). After accounting for other factors in the model, students in poverty reported higher levels of general distress (GSI mean difference = 0.11, $d = 0.21$), higher levels of depression symptoms (mean difference = 0.14, $d = 0.25$), and higher levels of anxiety symptoms (mean difference = 0.12, d = 0.21). Children in single-parent households also had higher GSI levels (mean difference = 0.15, $d = 0.29$), higher depression symptoms (mean difference = 0.18, $d = 0.32$), and higher anxiety symptoms (mean difference = 0.16, $d = 0.29$) than those in two-parent homes. There were also initial score differences by gender. Males showed decreased GSI levels (mean difference = −0.10, d = 0.19), lower depressive symptoms (mean difference = −0.14, $d = 0.25$), and lower interpersonal sensitivity symptoms (mean difference = −0.18, $d = 0.38$) than females at the beginning of the study. However, males showed increased initial anxiety levels than females (mean difference = 0.16, $d = 0.32$).

Table 2 Descriptive statistics for the mental health and self-perceptions measures in the intervention and control groups

	Control group n = 501				Intervention group n = 537			
	Time 1 (*M*/*SD*)	Time 2 (*M*/*SD*)	Time 3 (*M*/*SD*)	Time 4 (*M*/*SD*)	Time 1 (*M*/*SD*)	Time 2 (*M*/*SD*)	Time 3 (*M*/*SD*)	Time 4 (*M*/*SD*)
GSI	0.89/ 0.55	0.99/ 0.48	1.04/ 0.51	1.07/ 0.46	0.94/ 0.49	0.78/ 0.54	0.74/ 0.69	0.72/ 0.71
Z scores	0.10	0.27	0.35	0.4	0.18	−0.08	−0.15	−0.18
Depression	1.00/ 0.56	1.08/ 0.50	1.09/ 0.49	1.14/ 0.63	1.03/ 0.56	0.92/ 0.64	0.90/ 0.55	0.93/ 0.57
Z scores	0.02	0.12	0.14	0.21	0.05	−0.10	−0.12	−0.08
Anxiety	1.09/ 0.53	1.11/ 0.53	1.14/ 0.56	1.13/ 0.69	1.06/ 0.58	0.98/ 0.47	0.94/ 0.52	0.98/ 0.59
Z scores	0.08	0.11	0.14	0.13	0.05	−0.05	−0.09	−0.05
Int. sensitivity	1.02/ 0.50	0.99/ 0.41	1.05/ 0.48	1.00/ 0.56	0.98/ 0.45	0.87/ 0.49	0.91/ 0.51	0.86/ 0.57
Z scores	0.04	0	0.07	0.01	0.01	−0.14	−0.09	−0.15
Self-esteem	31.41/ 5.10	30.84/ 5.87	30.46/ 6.75	30.28/ 5.70	31.85/ 5.08	32.07/ 5.97	32.40/ 7.15	32.20/ 5.90
Self-efficacy	27.56/ 6.88	27.77/ 6.28	26.82/ 5.81	25.84/ 6.19	28.10/ 6.64	32.25/ 5.95	33.04/ 6.56	33.22/ 6.18
Optimism	16.31/ 3.06	16.54/ 2.82	16.46/ 2.97	16.56/ 2.99	16.44/ 2.84	16.89/ 2.91	17.01/ 2.82	16.92/ 2.92
Life satisfaction	23.06/ 5.79	23.16/ 5.54	23.13/ 5.48	23.58/ 6.09	22.51/ 5.78	23.08/ 6.44	22.97/ 6.27	23.85/ 5.62

Standardized scores are based on comparison to the BSI Israeli norms (Canetti et al. 1994)

The student-level characteristics were also associated with students' positive mental health at the beginning of the study. Students whose families were below the poverty level and students in single-parent households reported significantly lower levels of self-esteem, optimism and life satisfaction, but increased levels of self-efficacy (see Table 4). Males reported higher self-esteem, but showed lower levels of self-efficacy, optimism and life satisfaction compared to females.

3.2 Changes in Mental Health Over Time

The HLM longitudinal analyses for changes in mental health from September 2010 to June 2012 revealed that on average, participation in the intervention program was associated with fewer mental health symptoms over time, whereas participation in the control group was associated with increased mental health symptoms.

Comparison of the general distress index (GSI) levels and the BSI symptom indices to adolescents population norms (for the GSI: $M = 0.83$, $SD = 0.60$) (Canetti et al. 1994) revealed slightly higher levels of psychological symptoms ($Z = 0.02$–0.18) in the intervention and control groups at baseline compared to the Israeli normative data.

In the control group the symptom levels continued to rise above the normative average over time. In the intervention group, symptom levels decreased below the normative average. The overall effect sizes were in the small-to-moderate range as defined by Cohen (1988) but most of them were educationally significant ($d > 0.25$) according to Wolf

Table 3 Linear model of modifications in mental health symptoms from September 2010 to June 2012 (with adolescents' background factors and intervention program type)

	General distress (GSI)		Depression		Anxiety		Interpersonal sensitivity	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Model for initial status (September 2010)								
Intercept	1.01***	0.02	1.23***	0.02	1.27***	0.02	1.17***	0.01
Male	−0.10***	0.03	−0.22***	0.02	0.13***	0.02	−0.18***	0.02
Below poverty threshold	0.11***	0.05	0.14***	0.03	0.12***	0.03	0.02	0.01
Single-parent household	0.15***	0.04	0.18***	0.04	0.16***	0.04	0.01	0.01
Model for growth rate (September 2010 to June 2012)								
Intercept	0.01***	0.001	0.004***	0.000	0.002*	0.001	0.001	0.001
Male	−0.01***	0.001	−0.000	0.001	0.001	0.001	−0.002**	0.001
Below poverty threshold	0.002	0.003	0.002	0.001	−0.001	0.002	−0.001	0.001
Single-parent household	0.001	0.002	0.03***	0.002	−0.003	0.002	0.006***	0.002
Maytiv Intervention	−0.02***	0.001	−0.01***	0.001	−0.006***	0.001	−0.005***	0.001

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 Linear model of students' positive mental health growth from September 2010 to June 2012

	Self-esteem		Self-efficacy		Optimism		Life satisfaction	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Model for initial status (September 2010)								
Intercept	33.7***	0.21	29.84***	0.16	17.49***	0.09	25.38***	0.18
Male	1.1***	0.20	−5.95***	0.18	−3.63***	0.11	−5.42***	0.21
Below poverty threshold	−1.9***	0.29	1.92***	0.28	−1.21***	0.16	−2.37***	0.33
Single-parent household	−3.1***	0.50	2.05***	0.22	−5.64***	0.25	−4.31***	0.39
Model for growth rate (September 2010 to June 2012)								
Intercept	−0.05***	0.01	−0.09***	0.01	0.012***	0.001	0.003	0.002
Male	−0.02**	0.01	0.03***	0.006	−0.003*	0.001	0.001	0.002
Below poverty threshold	0.01	0.01	−0.007	0.01	−0.01***	0.002	0.001	0.003
Single-parent household	−0.01	0.01	−0.01	0.02	0.001	0.001	−0.001	0.005
Maytiv Intervention	0.07***	0.01	0.33***	0.006	0.01***	0.001	0.003	0.002

* $p < .05$; ** $p < .01$; *** $p < .001$

(1986). Participants in the intervention group exhibited significant decreases from the beginning to the end of the study in psychological distress (GSI) (mean change = −0.22, $d = 0.45$), depression symptoms (mean change = −0.10, $d = 0.18$), anxiety symptoms

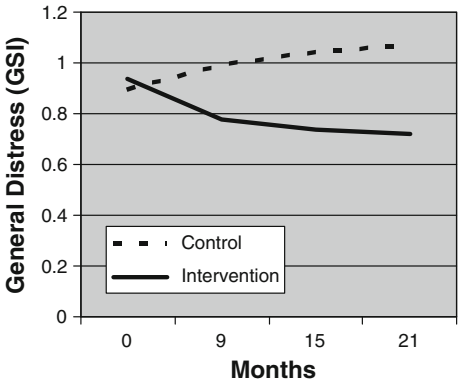

Fig. 1 Changes in general distress from September 2010 to June 2012

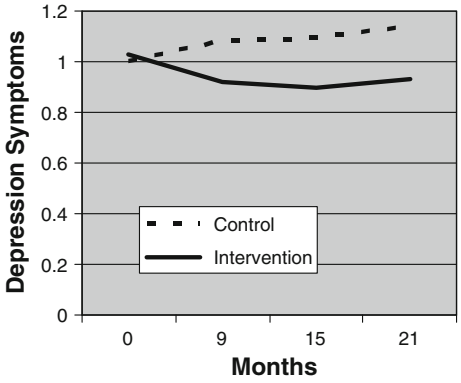

Fig. 2 Changes in depression symptoms as a function of time and intervention type

(mean change = −0.08, $d = 0.17$) and interpersonal sensitivity (mean change = −0.12, $d = 0.27$) in contrast to significant increases in GSI (mean change = 0.08, $d = 0.15$), depression symptoms (mean change = 0.14, $d = 0.25$), and anxiety symptoms (mean change = 0.04, $d = 0.08$) in the control group. The score change per month was 0.02 points lower for the GSI, 0.01 lower for depression, 0.006 lower for anxiety, and 0.005 lower for interpersonal sensitivity in the intervention group compared to the control group. There were no significant changes over time in the other BSI subscales. To illustrate these changes, Figs. 1 and 2 displays the actual average scores for general distress and depression symptoms at each time point for the intervention and the control groups.

Other significant effects emerged for self-esteem and self-efficacy, with intervention group participants reporting significant increases from time 1 to time 4 in self-esteem (mean change = 0.35, $d = 0.07$) and self-efficacy (mean change = 5.12, $d = 0.77$), and control group participants reporting significant decreases in self-esteem (mean change = −1.13, $d = 0.22$) and self-efficacy (mean change = −1.72, $d = 0.25$). Figure 3 displays the change in self-efficacy as a function of time and intervention type.

A significant effect was also found for optimism, with the intervention group participants reporting significantly greater increases over time in optimism (mean change = 0.48, $d = 0.17$) than those in the control group (mean change = 0.25, $d = 0.08$). The score change per month was 0.07 points higher for self esteem, 0.33 higher for self-efficacy, and 0.01 higher for optimism in the intervention group than in the control group. The effect sizes were in the small-to-moderate range for optimism and self-esteem, and in the

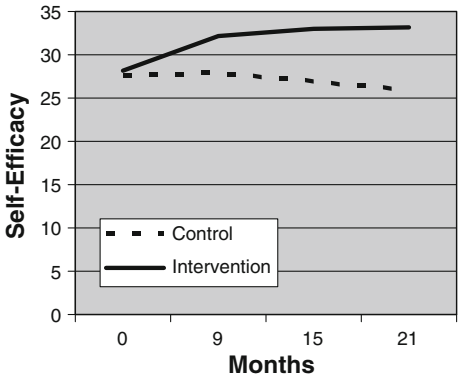

Fig. 3 Changes in self-efficacy from September 2010 to June 2012

moderate-to-high range for self-efficacy (Cohen 1988). Finally, there was no significant difference between the intervention and control groups in changes over time in the life satisfaction measure.

The two family risk factors were negatively associated with mental health rates over the two academic years. After taking into account the other factors in the model, the increase in depressive symptoms per month was 0.03 points higher for students in single-parent households. In addition, the increase in interpersonal sensitivity level was 0.006 higher for students in single-parent households than those in two-parent homes. In addition, optimism per month was 0.01 points lower for students in poverty. Males exhibited a lesser increase in general distress (mean difference = −0.01), interpersonal sensitivity (mean difference = −0.002), self-esteem (mean difference = −0.02), and optimism (mean difference = −0.003) over time compared to females, but showed a greater increase in self-efficacy (mean difference = 0.03).

Finally, the interaction terms were examined to investigate whether attending the intervention program had a uniform relationship with mental health for the groups of students represented in the model. There were no significant interactions between the student-level demographic characteristics and type of intervention as regards changes in mental health.

4 Discussion

The current study measured changes in mental health symptoms, subjective well-being and self-perception indicators, comprising self-esteem and personal efficacy among students participating in a positive psychology intervention program versus a comparable control group. The links among demographic and background characteristics and changes in mental health was also investigated. It was predicted that by the end of the year-long intervention program, participation in the intervention program would lead to better mental health outcomes among the students. As outlined in the results section, findings indicated a spectrum of mental health changes across the short-term and long-term effects of the program.

The findings indicate that students in the intervention group showed decreases over time in anxiety and interpersonal sensitivity symptoms. In addition, the intervention participants showed decreases in general distress and depression symptoms whereas those in the control group exhibited significant increases. Additional significant effects emerged for self-

esteem and self-efficacy, whereas intervention group participants reported significant increases in self-esteem and self-efficacy whereas control group participants reported significant decreases. The importance of these findings is twofold: they indicate not only the efficacy of the intervention in ameliorating mental health symptoms and improving self-perceptions but also the process of decreasing mental health and self-confidence in the control group over a relatively short period of time.

The trend in the pre- to post-test extension of mental health symptoms in the control group is consistent with the increasing rate of psychopathology during adolescence. Two large-scale meta-analyses studies have accounted for this phenomenon in terms of cultural shifts that emphasize extrinsic goals such as individual achievement, material wealth and status, rather than intrinsic goals such as competence, social relationships, community affiliation and autonomy (Klerman and Weissman 1989; Twenge et al. 2010). Several longitudinal analyses of the dynamics of learning motivation have demonstrated a trend of decline in intrinsic motivation during the elementary and middle school years (Gottfried et al. 2001; Lepper et al. 2005). This trend may be a possible precursor to psychopathology considering the strong associations between intrinsic motivation and sense of personal commitment, greater persistence, positive emotions, higher academic performance, and well-being (Ryan and Deci 2000).

In addition, research generally recognizes the transition to middle school as a complex period of dramatic shifts that has profound effects on mental health. The middle school years involve considerable changes in learning environments, social challenges and academic demands, compared to elementary school. Additionally, they are marked by a number of challenging life changes, including puberty, greater independence, increased responsibilities, and early romantic relationships (Vanlede et al. 2006). Similar to our findings, converging data have demonstrated declines in adjustment during the middle-school years including a drop in perceived self-efficacy and declines in competence and self-esteem (Fredricks and Eccles 2002), lower achievement and academic competence (Shoshani and Slone 2013), and increases in anxiety symptoms (Harter et al. 1992).

However, our findings suggest this can be changed, as they point to the potential a positive-psychology based intervention program has for improvement in adolescents' well-being. Specifically, upon completing the program, participants in the intervention program were more optimistic, had increased self-esteem and self-efficacy, and lower depression and anxiety symptoms compared to their counterparts in the control group. While it is difficult to determine causation in such a multi-content intervention, it may very well be that one of the unique and powerful elements of the intervention was its implementation on the entire school population, from the school principal, the teachers and the administrative staff down to the individual student level, all of whom routinely participated in formal workshops on positive psychology. This school-wide approach was developed in order to foster a common positive and supportive language among students, between teachers and students, and among the staff. The social and encompassing framework of the intervention may have been a significant catalyst for a personal change.

In addition, the intervention's emphasis on embedding Positive Psychology principles in the school context stimulated an abundance of changes in daily school routines and settings, through diverse initiatives of the intervention's participants.

Students' engagement in creating a positive school atmosphere was considered as an integral part of the aims and the positive outcomes of the intervention. For instance, a new school bell was put into use that plays a popular self-empowerment Israeli song. School corridor walls were decorated with a collage of positive messages, images, and affirmations of the students' dreams and desires. The school students participated in a significant

level of community service activities, most of which was student initiated. Parent-teacher meetings at schools were conceptualized as "strengths based meetings", leveraging children's assets and strengths, instead of dealing with their weaknesses and school grades.

Another major factor that could have contributed to the adolescents' well-being was the resilience and empowerment nature of the intervention. The program was constructed to enhance individual and interpersonal characteristics, most of which have been shown in the literature to significantly function as resilience factors such as self-efficacy, internal locus of control, optimistic world view, positive emotions, and social support (Gillespie et al. 2007). These personal assets, ranging from psychological to societal resources, act as mechanisms that can be drawn on later to improve the odds of efficacious coping with adversities and hardships (Fredrickson 2004). Thus, the intervention could form a platform of resilience that allowed adolescents to thrive.

Many of the benefits were made possible by targeting the intervention directly to teachers who had successfully implemented the program in their classrooms. Teaching is considered to be an 'extremely highly' stressful occupation (Pithers 1995). The standards movement that has shaped government policy educational reforms in Israel and in many other countries worldwide places a strong emphasis on "performativity" and increased workload pressure upon teachers (Valli and Buese 2007). The intervention was designed initially for teachers in order to promote their well-being and control over their daily challenges. We assumed that teachers' ability to make positive changes in their own lives was a crucial component to garner commitment, enthusiasm and empathy in implementing the program in their classrooms.

In examining the effects of the intervention on students with different socio-demographic backgrounds, interesting findings emerged. Demographic risk factors of poverty and a single-parent household appeared to affect the initial levels of mental health symptoms, as well as the rates of symptoms over the two academic years. In both cases these students showed increased levels of mental health symptomatology. Gender was also associated with mental health, with elevated mental health symptoms among females. Despite these differences, the intervention was effective in producing a significant improvement in mental health both in high-risk and low-risk students. This is of particular note for its application to at-risk adolescents who are relatively at greater risk for negative consequences. However, it is imperative to point out that this intervention was applied to a general school population and should not be considered as an alternative to psychotherapeutic or psychiatric treatment for at-risk adolescents with clinical indicators for such treatment.

Contrary to our expectations, there was no significant difference between the intervention and control groups in changes over time in self-report judgments about their overall life satisfaction. It is difficult to explain this outcome, in light of the improvement in the other mental health indicators. However, it may be related to the abstractness and the generality of the life satisfaction questionnaire that asked participants to reflect on their average levels of life satisfaction, compared to the other questionnaires in the study that were less overt and directive, and sampled participants' day-to-day symptoms and emotional experiences over a period of time.

The present intervention was developed on the basis of lessons learned from previous school-based positive psychology interventions. Perhaps one of the benefits of the present program is that it adopted a whole-school model of intervention, which was successfully implemented in the Geelong Grammar School (Williams 2011). This approach moves beyond the use of specific interventions implemented within isolated classrooms to a comprehensive intervention that establishes a positive way of life at school (Waters 2011).

The program emphasized the involvement of the entire school community in the intervention (the educational staff and the students), and strived to support a sustainable positive school climate where teachers and students can develop and flourish. It placed a great importance to the quality of the relationships between students and teachers, and engaged with the design of school ethos and policies.

In addition, similar to the interventions in Strath Haven High School (Seligman et al. 2009) and the Geelong Grammar School (Williams 2011), the intervention involved a multidimensional conceptualization and application of positive psychology. This model differs from targeted interventions that focus on specific behaviors, emotions, or specific aspects of positive psychology, and we believe it allowed achieving the wide variety of positive outcomes in this study. The broad and long-term assessment of the intervention outcomes in a standardized manner is another important progress and significant contribution to the field of positive education. However, for the effects above to be sustained and extensive, we believe that it is extremely important to weave positive psychology throughout the core school curriculum in Mathematics, Language Arts, Science, Social Studies, and the Fine Arts, as well as to involve parents and community change agents in future interventions.

4.1 Limitations and Implications

This study has several limitations. First, the study results relied on self-report measures from adolescents, which can be subject to inaccuracy and biases, especially in the case of mental health symptoms. Taking into account different informants (self-, parent-, and teacher-reports) could provide more accurate information about adolescents' well-being.

Second, the school-wide nature of the program demanded that the selection for the intervention and control groups was made at the school level. On the one hand this method was advantageous, since the alternative selection at the classroom or student level within a school could contaminate the intervention effects because students typically interact with each other during the school day (Flay and Collins 2005). On the other hand, randomization at the school level made it impossible to recruit a 'perfect' control school that was completely identical in its features to the intervention school. To address this concern, we used a quasi-experimental design, in which the intervention and control schools were matched based on relevant variables such as socio-demographic characteristics and number of total students. This strengthened the likelihood that the control and intervention schools would be similar on measured and non-measured elements and that the results would not be attributable to preexisting differences. Our findings showed that the observable characteristics of the control group were indeed extremely close to those of the program group. It important to note that the implementation of the program in one school that compared to one control school limited the generalizability of the study. Therefore, we suggest that future replications would involve random assignment of multiple schools to each condition.

In addition, the intervention was delivered by teachers who were trained by the workshops' facilitators. While this approach maximizes the intervention generalizability, it could reduce its fidelity, than if the projects' facilitators were the implementers. Another limitation of this study was the fact that it was conducted in one specific middle-school, in that the effects noted in this school might not hold for another type of sample. These limitations suggest the need for further research to ascertain generalizability to other schools, age-cohorts and contexts.

This study joins to a growing body of work that suggests that positive-psychology interventions (Froh et al. 2008; Seligman et al. 2009; Williams 2011) and positive

psychological health interventions within schools (Hawkins et al. 1999; Solomon et al. 2000) can improve adolescents' mental health and well-being. Incorporation of positive psychology elements into school curricula can bring about a decisive change in the role of school from an academic institution that focuses on imparting knowledge and skills to a holistic institution that meets a wide range of children's and adolescents' needs in various areas of life through coordinated socio-emotional and academic learning.

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