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Analytical review of mindfulness-based educational programs - a missing linkage between humans and a modern world

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Abstract: *Modern information society gives a big emphasis on high technology development that is supposed to facilitate our lives. However, it often seems that during this information and achievement driven process we left the harmonic development of human beings behind. Finding our inner selves is one of the crucial tasks in the modern, alienated world. This consequently leads us to better cognitive, emotional and social functioning, better mental and physical health, thus making us and broader society more optimistic, positive and happy. These are the goals of a new branch of science, called positive psychology. Within it, mindfulness is an approach that is recently gaining popularity. The first wave of mindfulness-based programs was for adults, while recent efforts have also targeted the well-being of children and adolescents. In this paper we present an overview of the current mindfulness-based educational programs dividing the existing programs into classes, taking into account their objectives, basic disciplines, age of the students, place of implementation and duration of the program. All programs and researches show that mindfulness is a proper way to develop a person and society that will be able to cope with modern world challenges, stay positive and healthy.*

Key Words: mindfulness, benefits, education, analysis

Introduction

"Between the stimulus and response there is a space. In that space is our power to choose our response." - Viktor Frankl

Modern world, filled with information and technology is quick, demanding constant alertness and readiness to react. A person shaped by the new world has a big chance to develop stressful reactions which weaken the well-being. In general, people know this is so, but they are positive it cannot happen to them…until it does. Acute reactions are not enough, to ensure a happy life. Prevention is needed. For this purpose a new approach has been developed, called positive psychology. Positive psychology focuses on the positive attitude of humans toward their own lives. It is a shift from the traditional study of disturbing experiences suffered in life to the study of all that makes life worth living. Positive psychology assumes that it is not only the cure that is important for a healthy human mind, but also the prevention or better, striving toward growth of happiness in everyone's lives, that prevents or heading off problems before they arise. Flourishing, in positive psychology, refers to optimal human functioning. It comprises four parts: goodness, generativity, growth, and resilience (Fredrickson, 2005).

To achieve the goals of positive psychology one has to be alert of oneself. It means to be consciously moment-by-moment attentive to situational elements of an experience: i.e., thoughts, emotions, physical sensations, and surroundings. The psychological approach dealing with it is called mindfulness (Zylowska et al., 2008). The aim of mindfulness is to feel the present moment; one learns to observe the arising and passing of experience. If we describe it with vivid illustration: it is like if we come out of a wild river (that represents our thoughts and feelings), sit on the shore and just nonjudgmentally watch the river passing by. These experiences and thoughts are not judged or thought about– the challenge during mindfulness is to simply observe (Brown et al., 2007).

The four key components of the ME program include:

1. Quieting the mind—listening to a resonating instrument (chime) and focusing on the breath

2. Mindful attention—mindful of sensation, thoughts, and feelings

3. Managing negative emotions and negative thinking

4. Acknowledgment of self and others.

Formally, mindfulness is trained by meditation practices such as sitting meditation, or physical movement such as yoga or tai chi. These techniques help steady the mind and train its attentional capacity, while also increasing its breadth of focus. Practitioners are instructed to focus their attention on the present moment using an "anchor," for instance, the breath. When the mind drifts away, the focus is gently brought back to the present moment experience. The practitioner tries to simply observe his or her experience of the present moment without judging or modifying it (Zenner et al., 2014). Benefits of mindfulness practice include reduction of stress, anxiety, depression, and chronic pain (Brown et al., 2007). Public and scientific interest for mindfulness is growing, especially in the last decade (see Figure 1).

Mindfulness has been applied to many different fields, but it is not until lately, that focus of positive psychology and mindfulness techniques moved to even deeper prevention – into the education of children and youth, to foster their strengths and resiliency. Namely, recent years have witnessed a growing portion of school aged children experiencing a myriad of social, emotional, and behavioral problems that interfere with their interpersonal relationships, school success, and their potential to become competent adults and productive citizens (e.g. Greenberg et al., 2001).

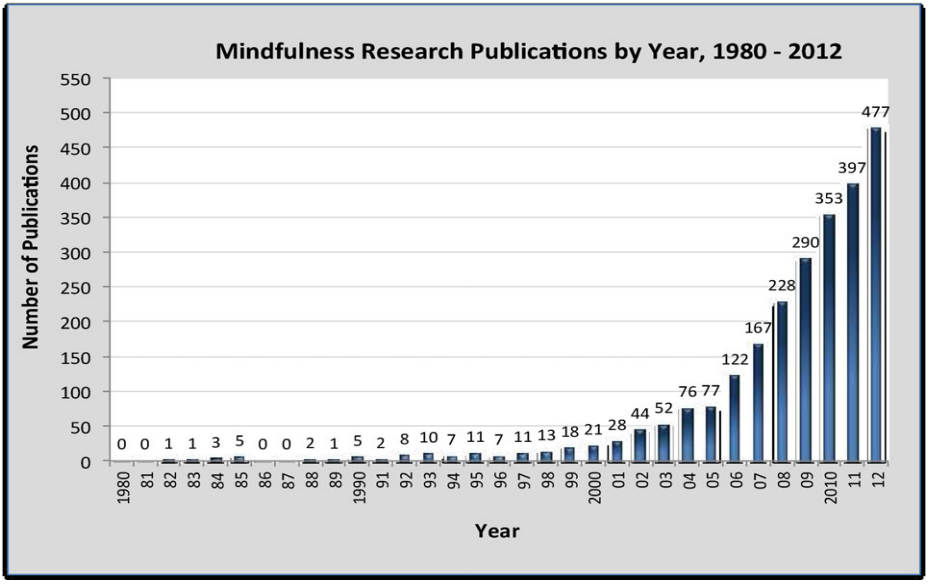

Figure 1. Growth in academic articles published on the topic area of mindfulness.

Mindful education

"Children Are the Best Ambassadors to Social Change" - Rose Pavlov, Founder and President of Ivy Child

Childhood and adolescence are important formative developmental stages that lay the groundwork for well-being and mental health in adulthood. The evidence base for school-based programs that aim to promote well-being, support emotional and social learning and prevent mental health problems in adulthood is growing. Mindfulness shows to be a good counterbalance to the immense media and technology that children are exposed to and formal education should always consider the mental health and balance of children thus preventing disorders and fostering personal development and well-being in children.

School is an appropriate setting for such interventions, since children spend a lot of time there and interventions can be brought directly to groups of children in areas of need as part of a preventive approach at little cost (Weare and Nind, 2011). Researches show that "academic achievement, social and emotional competence and physical and mental health are fundamentally and multiply interrelated. The best and most efficient way to foster any of those is to foster all of them." (Diamond, 2010, pp.789). Children need to learn to stop their mind wandering and regulate attention and emotions, to deal with feelings of frustration, and to self-motivate. Mindfulness based interventions (MBI) in schools are seen as an approach to tackle these challenges. As a result, various mindfulness programs for schools have been developed and applied within the past few years.

In this article we present the current state of the art researches and programs of mindfulness in education under the umbrella of positive psychology and information society.

Generally there are three ways in which mindfulness can be integrated in classrooms: indirectly (as the teacher develops his personal practice), directly (by teaching students directly), or combining both. We will describe the first two options in more details.

1. Students
2. Teachers

1. Students

We have analyzed 47 mindfully based educational programs/studies. In Table 1 we describe some of their characteristics: age of children to which the program was applied, country of the application, type of school, program and its duration. In Table 2 we present the objectives of particular programs (marked with the sequential number from the first table).

From Table 1 (see in atachement) we can see that mindfulness is by far most developed and spread in the USA, Western Europe, Canada and Australia follow. Programs and researches are rapidly growing in the last five years, not many date latter than the last decade. Thus, we may say that mindfulness is a modern approach that is getting more and more popular. This is so also because some of the programs are funded by celebrities (e.g. Goldie Hawn foundation). Most programs/researches are focusing on children in elementary school (aged 6-14, 30 programs/researches out of 47), following by high school students (aged 14-18, 23 programs/researches). Less interest is for college students (aged 18-24, 2 researches) and preschool children (less than 5 years, 4 studies). Results are expectable, since age 6-14 are most suitable for unlocking children's potential and show them the way to happiness and wellbeing that they can treasure through their whole life. Most mindfulness programs last 4-8 weeks or for longer periods during the school year or semester. Shorter periods of time are not useful, since mindfulness is not a magic stick that would save the world and people living in it, but it is actually work on a personal development. Typically, sessions are from one to three times per week. In this case lessons are usually around 30-45 minutes long. If sessions are everyday, which is rarely, they last less (a few minutes). As for the content, programs use different mindfulness approaches focusing on specific trait such as stress reduction, breathing, attention, awareness, body scan, meditation etc. Some combine mindfulness with transcendental meditation, yoga, Tai chi or even music. The benefits of the programs described in Table 1 are shown separately in Table 2.

From Table 2 we can see that the majority of the programs (29/47) outpoint improvement of some aspect of cognitive functioning as important benefit of mindfulness. Attention, concentration and academic performance are most obvious. Psychological improvements are mentioned as an important benefit of the mindfulness in most of the programs (35/47). They are divided in subclasses – resilience is the focus of 26 of 47 programs, stress reduce is the focus of 17 of 47 programs and emotional issues (including decreased depression and anxiety, increased sense of calmness,

relaxation, and self-acceptance, increased self-calming) are the focus of 14 of 47 programs. Benefits on the social field are mentioned in 23 of 47 programs. Physical aspect as a benefit of mindfulness is mentioned the least (5 times).

If we combine the two tables we can notice, that mindfulness programs that are specifically based on stress reduction, do not especially point out attention and concentration improvement as a benefit of such training. Some of the programs include attention and concentration under improvement of broader executive functions or academic performance.

Some researches (see Figure 2) state that, in the first stage mindfulness programs improve cognitive functioning and emotional regulation which then results in better students' well-being, social competence and academic achievement.

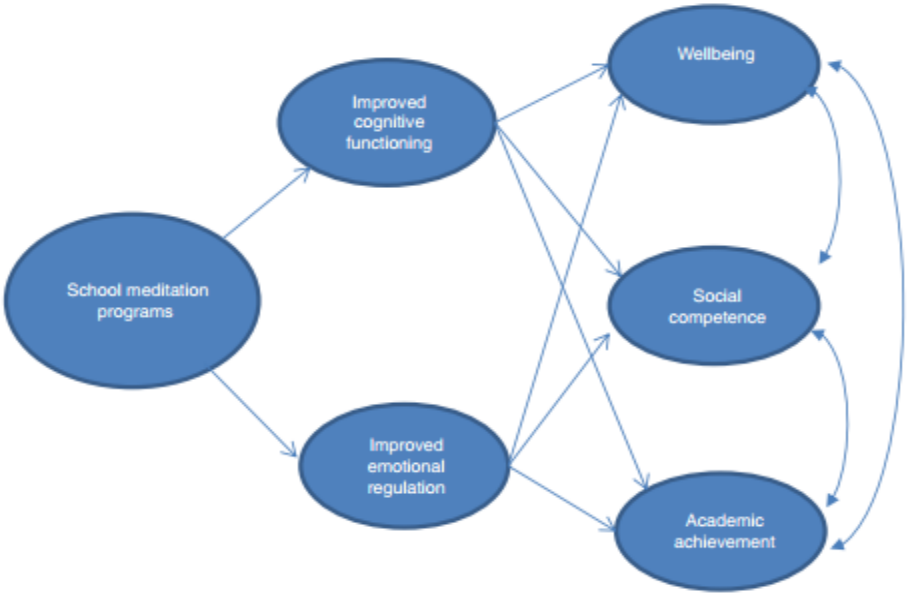

Figure 2. The School-Based Meditation Model

Source: Waters et al (2015), pp.121

We agree that first one has to be mentally alert and has to control his/her own emotions in order to achieve better social competence, wellbeing and academic achievement. However, improved cognitive functioning and emotional regulation are just precondition for developing wellbeing, social competence and academic achievement. We think mindfulness techniques by themselves also directly improve wellbeing and social competence. Firstly, they reduce anxiety, improve optimism and hope. Secondly they improve empathy and better understanding of other people. Nevertheless, all the programs are designed to foster healthy habits through a variety of strength-based approaches focused on exercising mindfulness and positive psychology in every aspect of daily life.

Most school-based interventions that we have mentioned so far are designed for students. But youngsters are not the only ones in school communities whose well-being needs to be nurtured and invested in.

2. Teachers

Teachers are also the ones to ameliorate the stress involved in the teaching profession and the problem of teacher burnout. “The personal, societal, and financial costs associated with burnout are too high to ignore. Teachers perceptions of stress and their ability to cope with demands are implicated in burnout.” (McCormick and Barnett, 2011, pp. 182)

We will review 5 major mindfulness - based education programs for teachers: MindUp, MBWE, CARE, SMART and MBSR.

MindUP™ is the program under the Hawn foundation (2015). It helps teachers to more easily manage the classroom, maintain an environment conducive to student learning and find greater professional and personal fulfillment while pushing student academic and personal success.

Mindfulness-Based Wellness Education (MBWE) was created at the Ontario Institute for Studies in Education of the University of Toronto

(OISE/UT) in 2005 as a response to the increasing rates of teacher stress and burnout. It is taught in a 9-week (36 h) elective course. Modeled on the MBSR program, MBWE uses a "wellness wheel" as a framework to illustrate the principles and implication of mindfulness to teaching strategies such as reflective practice, professional identity, emotional competence and mindful listening. It applies the learning to the students themselves, as well as their pupils, parents, and their teaching colleagues. Evaluation of the MBWE program was completed and highlights two core learning objectives: mindfull teaching and pedagogy for well-being (Soloway et al., 2011).

Garrison's professional development program for teachers, Cultivating Awareness and Resiliency in Education (CARE, 2015), runs in several sites in the US. It recently received a major grant from the U.S. Department of Education's Institute for Education Sciences (IES). The CARE intervention is based on the Prosocial Classroom model (Jennings and Greenberg, 2009). It helps teachers learn skills that can transform the classroom environment into one that fosters not only academic but also social and emotional development. The curriculum combines exercises for recognizing emotional patterns with contemplative practices such as mindfulness meditation. The course has been delivered in various ways and with different durations, the longest being a 5-day intensive retreat. Classroom instruction is supported by email and one to one phone mentoring and coaching (CARE, 2015).

Stress Management and Relaxation Techniques (SMART, 2015) is a professional development program for primary and secondary education (K-12) teachers and administrators, including the following three curriculum elements: (1) Concentration, Attention, and Mindfulness; (2) Awareness and Understanding of Emotions; and (3) Empathy and Compassion Training. The training consists of 11 sessions over 8 weeks, including two day-long sessions. Participants are assigned 10–30 min of daily mindfulness practice. (Jennings et al., 2012)

Last but not least, an 8-week adapted mindfulness-based stress reduction (MBSR) program on educators showed effects on stress and well-

being. Results suggested that educators who participated in MBSR reported significant gains in self-regulation, self-compassion, and mindfulness related skills (observation, no judgment, and no reaction). Significant improvements in multiple dimensions of sleep quality were found as well. These findings provide promising evidence of the effectiveness of MBSR as a strategy to promote educator's personal and professional well-being (Frank et al., 2015).

Table 3. Review of the benefits of 4 Mindfulness-based education programs for teachers.

PO class	Program objectives(PO)	Program
COGNITIVE	Attention, concentration	MindUP, SMART
	Think more clearly especially under pressure	MindUP
PSYCHO-LOGICAL	Increased self-efficiency, better work efficiency	MBWE, CARE
	Increased self-esteem/self-confidence, self-awareness and self-control	CARE, MBRS
	Increased sense of calmness, relaxation, and self-acceptance, Increased self-calming, decreased stress	CARE, MBSR
	Increased emotional regulation	CARE
	Experience greater job satisfaction	MindUp
	Better mental health, well-being - in the classroom and into private life, optimism, joy	MindUp, MBWE, CARE, MBSR

SOCIAL Increased social skills and social compliance	classroom participation Improve communication with students, parents and staff, inducing better behavior with students	Mindup
SOCIAL	Increased work motivation	SMART
Increased social skills and social compliance	Empathy, more accurate perceptions of students	Mindup, CARE
	Improve the overall classroom climate by infusing it with optimism and hope Helps to create a stronger, more vibrant school culture	MindUp, CARE
PHYSICAL	Better health, sleeping	MBWE, MBSR

From Table 3 we can see that most of the above mentioned programs help teachers to improve social skill, mental health and wellbeing and to better focus and concentrate. These are one of the most important traits for teachers in order to avoid burnouts, and to fulfill their class obligations as well as possible. A distressed, burnout teacher, with no focus and social skills is definitely not the one who should educate our children. A mindful and happy teacher on the other hand has qualities such as open minded curiosity, kindliness, empathy, compassion, acceptance, trust, patience, non-striving and empathy. He is a positive person, with good mental and physical wellbeing. Such a person can upgrade raw knowledge with all these characteristics, thus teach children in a better way and show them how to develop harmonically, so that they will not get lost in the modern technological society.

Mindfulness benefits still have to be taken with caution

The results of this review must be considered within some of methodological consider-actions. First weakness of most researches and programs is the fact that many of the published studies had evaluated the results in the pilot stage and have only considered the immediate effects of the program. Thus, although we can provide the conclusions above about the short-term benefits, there can be no firm conclusions drawn about whether the benefits are sustained over time. Secondly, the majority of the studies were unable to use random assignment due to specific year levels being used or particular student groups being targeted for the intervention. Therefore interpretation of many studies is limited due to the lack of an equivalent control group or the unreliable and preliminary effect sizes for controlled studies. Results are generalizable only to individuals who have the interest and ability to participate in a Mindfulness program. Next, the meditation programs have commonly been evaluated using student or teachers subjective self-report measures; thus, common-source bias is a concern. Last but not least, it is difficult to make judgements about which types of meditation are most effective with the current evidence available because there was no consistency used in the samples, designs and surveys. More fine-tuned research is needed to understand the optimal frequency with which students are best to practice meditation at school. Similarly, more research is needed to understand the optimal amount of time to spend meditating for each session. Nevertheless, Baer (2003) concludes that although the empirical literature includes many methodological flaws, mindfulness-based interventions may be helpful in the education as well as treatment of several disorders.

Conclusion

"There's a New Mental Health Model in Town Focusing on the Positives" - Rose Pavlov, founder of Ivy Child International

This brief review shows that school-based mindfulness interventions are relatively new but address skills that are important for student wellbeing, and appear to be especially effective in reducing negative functioning. Mindfulness education enhances the very qualities and goals of education in the 21st century shaped by the positive psychology movement. These qualities include not only attentional and emotional self-regulation, but also prosocial dispositions such as empathy and compassion, self-representations, ethical sensitivity, creativity, and problem solving skills. They enable children to deal with future challenges of the rapidly changing world, ideally becoming smart, caring, and committed citizens (Mind and Life Education Research Network (MLERN), 2012). A mindful child grows up to be a person who fulfills three central positive psychology concerns: positive emotions, positive individual traits and positive institutions. One must not forget that a mindful education can only be properly implemented if the educators are properly trained and harmonically personally developed. The goals of education have always been contingent on the cultural context (Durkheim, 1956; Waters, 2015). Therefore we may say that a mindful person is armed with the necessary psychological equipment to fight the 21 century demands - information technology, uncertainty, stressful situations and self-alienation. To sum it up, mindfulness is firstly a gift to ourselves, and consequently to the broader public and social life in general.

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Figures and tables

Table 1. Review of the mindfully based educational programs/studies characteristics

Seq Nr.	Program name	Country	Est. year	Age of students / school level	Type of students	Duration	Type of mindfulness techniques used
1	Oakland-based Mindful Schools program (Black and Fernando, 2014)	USA, Oakland	2010	elementary school	low-income, ethnic-minority	5 weeks, 3 sessions per week	Mindfulness of the Breath, Body Scan, Mindfulness of Walking, mindfulness practices that help children pay attention, build empathy and self-awareness, improve self-control, and reduce stress
2	Move-into-Learning (MIL) (Klatt et al., 2013)	USA	2013	third graders at elementary school	low-income, urban in the Midwest	8-weeks , 45-minute session, weekly	mindfulness meditation, yoga and breathing exercises set to music, and positive self-expression through writing and visual arts. In addition, the two classroom teachers led shorter, daily practice sessions that reinforced those skills.
3	Mindfulness meditation for alternative school students, (Wisner, 2013)	USA	2013	high school	low-income, rural area	half-hour, flexibly at least twice per week for eight weeks	guided mindfulness meditation sessions,
4	Mindfulness in Schools Program (MiSP), (Kuyken et al., 2013)	United Kingdom	2013	12-16 years	public schools	weekly by trained classroom teachers	nine scripted mindfulness lessons,
5	Attention Academy Program (AAP), (Napoli et al., 2005)	USA	2005	first to third grade (5-8 years)	children with high anxiety	12 sessions over 24 weeks for 45-min per session	sitting, movement, and body-scan meditations as well as relaxation exercises.
6	Wall (2005)	USA	2005	11-13 years	public school children	5-weeks	modified mindfulness based stress reduction (MBSR) intervention (sitting meditation and

							mindful eating) with Tai Chi.
7	Semple et al. (2005)	USA	2005	7-9 years	urban elementary school, referred by their classroom teachers based on observed symptoms of anxiety	6- weeks, 45-min-per-week	manualized Mindfulness-Based Cognitive Therapy for Children (MBCT-C)
8	Semple et al. (2010)	USA	2010	9-12 years	children enrolled in a clinic-based remedial reading program	12- weeks	MBCT-C
9	Innerkids program Flook et al. (2010)	USA	2010	second and third grade children	program at an oncampus university elementary school	8-weeks, two 30-minute sessions per week	mindful awareness practices (MAPs)
10	Schonert-Reichl and Lawlor (2010)	Canada	2010	pre- and early adolescent students in the 4th to 7th grades, mean age=11 years	representative schools of a diverse range of socioeconomic status	10 lessons and three times daily	ME program - a classroom-based universal preventive intervention designed to foster children's positive emotions, self-regulation, and goal setting. Mindfulness meditation - four teachers delivered components: quieting the mind, mindful attention (to sensation, thoughts, and feelings), managing negative emotions and thinking, and acknowledgment of self and others.

11	Beauchemin et al. (2008)	USA	2008	13–18 years	private residential school for students with learning disabilities	5 to 10 min at the beginning of each class, 5 days per week, for five consecutive weeks	mindfulness meditation
12	Zylowska et al. (2008)	USA, Boston	2008	>15 years, adolescents	attention-deficit hyperactivity disorder (ADHD)	8-weeks, comprised of weekly 2.5-hr group sessions and daily at-home meditation practice	MAPs intervention with psycho-education - components to ameliorate self-esteem and self-regulation,
13	Learning to BREATHE program (Broderick and Metz, 2009)	USA	2009	17-19 years (average age 17.4)	private girls' school in an American independent girls' school	six-session	MBSR-derived mindfulness program as part of health curriculum
14	The Mindfulness In Schools Project (MiSP) (Weare, 2013)	United Kingdom	2012	12-16 years	public school	Integrated into school curriculum, checked after 2-3 months course	MiSP curriculum - involves learning to direct attention to immediate experience, moment by moment, with open-minded curiosity and acceptance. New skills are learned in a highly practical way, through experience of mindfulness practices and application in everyday life.
15	.b ("Stop, Breathe and Be") (Huppert and Johnson, 2010)	United Kingdom	2010	14-15 years	boys in secondary school curriculum	4 weeks, one lesson per week,	stopping and breathing Learning how to recognize feelings by learning about body responses to emotions + mindfulness how to deal with anger, worry and other difficult feelings. Mindfulness themes are taught by

							engaging images, video clips and objects such as snow globes to support understanding of busy thoughts come and go.
16	David Lynch Foundation – Quite time program	USA, San Francisco	2014	teenagers	public school	2 sessions a day, Inserted in a curriculum	Quiet Time program, which uses Transcendental Meditation techniques to help students focus and stay calm - students closed their eyes and focused their minds
17	Hawn Foundation, MindUp, The Hawn Fundation (2015)	USA	2014	all school children	all types of schools	integrated into school curriculum	development of well-being traits using social, emotional, attentional and self regulation strategies, including mindfulness exercises. Increasing prosocial behavior and fostering emotional and social well-being.
18	Saltzman and Goldin (2008)	USA	2008	9-11 years with parents	public school	8-weeks, weekly	MBSR intervention- stress reduction program (Still Quiet Place)
19	Joyce et al. (2010)	Australia	2010	10–13 years	public school	10 weeks	14 mindfulness program
20	Liehr and Diaz (2010)	Caribbean and Central American countries	2010	mean age 9.5 years	summer camp, minority and disadvantaged children	10 15-inute classes for two weeks	interventions focusing on depression and anxiety.
21	Raes et al. (2014)	Flanders — the northern, Dutch-speaking region of Belgium.	2014	14-17 years	public school	during school hours for eight weeks, replacing religious studies, physical education, or another academic course, depending on the class's timetable. Each	elements of MBCT and MBSR - guided experiential mindfulness exercises (e.g., mindfulness of breathing, breathing space, body scan), sharing of experience of these exercises; reflections in small groups, inspiring stories; psycho-education (e.g., stress, depression, self-care), and review of homework.

						mindfulness session lasted 100 minutes.	
22	Mindfulness Education (ME) program (Schonert-Reichl, K. A., and Lawlor, M. S., 2010)	Canada	2010	pre and early adolescents (4-7 grade)	public schools	daily lessons (three times a day)	students engage in mindful attention training
23	Razza et al. (2013)	USA, Boston	2013	ave.11 years (6th grade)	public schools, white and Asian race	1 school year implemented in English Language Arts (ELA) classes, three times per week for 4 min at the beginning of each ELA class.	mindfulness and yoga intervention.
24	Mindfulness Practice and Healthy Young People (Monshat et al., 2013)	Australia	2013	16–24 years	public school	6-weeks	mindfulness training program
25	Sibinga et al., (2013)	USA	2013	7th and 8th grade boys	urban male school, application - based, tuition-free middle school	12- week, once-weekly, 50-minute sessions	MBSR
26	Ivy child international	schools in North	2011	preschool children,	all types of schools	campus programs, community	using a combination of mindfulness activities including yoga, meditation, nutrition, art and

	program - International's mindfulness-based learning™	America, South America, and Asia		elementary, high school, adolescents		programs and events. All programs are tailored to the specific needs of the diverse populations. Single day classes to long-term programs are offered, customized to the unique and diverse populations.	music
27	social and emotional learning (SEL) program (Schonert-Reichl et al., 2015)	Canada	2015	elementary school students, 4 and 5th graders (9-11 years)	suburban, predominantly middle-class community public school	SEL program: 12 lessons taught approximately once a week, with each lesson lasting approximately 40–50 min, Mindfulness: every day for 3 min three times a day	mindfulness and caring for others – MindUp program + Social responsibility program
28	mindfulness-based stress reduction program (Kerrigan et al., 2010)	USA	2010	adolescents	urban public schools	8-week program of instruction	mindfulness-based stress reduction (MBSR): (1) didactic material related to mindfulness, meditation, yoga, and the mind-body connection, (2) experiential practice of

							meditation, yoga, and the "body scan" during group meetings and encouragement of home practice, and (3) group discussion focused on applications of mindfulness to everyday situations and problem-solving related to barriers to effective practice
29	Arthurson et al. (2015)	Australia, Adelaide	2015	11-12 years	public school	9 weeks (July-September 2013), 45 minute class per week	several existing mindfulness program resources, including the Mind-up which was adapted to the specific Australian educational context, along with material from two Australian resources, Smiling Mind (2015) and Meditation Capsules (2015)
30	Galantino et al. (2008)	USA	2008	Children (4th and 5th graders)	urban public schools	8 weeks	body scan, meditation, breathing exercises, and Tai Chi
31	Sines (2009)	USA	2009	8-9 years (2nd grade)	public school	6-week program, 45 minutes per week	yoga and mindfulness training
32	Powell et al. (2008)	United Kingdom	2008	8-11 years	young children with emotional and behavioral difficulties in public schools	12 one hour sessions delivered over two school terms	Self-discovery program (SDP), interventions involving massage, yoga and relaxation
33	A mindful project, funded by the Wellcome Trust (Williams and Kuyken, 2012; MyRIAD: Mindfulness and Resilience in	United Kingdom	2015	teenagers	public schools	8-weeks	.b mindfulness in schools program developed by the Mindfulness in Schools Project as a Mindfulness Training (MT) intervention. The .b program is based on the 8-week MBCT course

	Adolescence, 2015)						
34	Wellness Works in SchoolsTM program (Desmond and Hanich, 2010)	Germany	2010	10-12 years, 6th grade,	urban public middle school, low income.	3 months	mindful awareness: focuses on both executive attention and executive control behaviors in students.
35	Meditación Fluir program - Franco Justo research group program	Spain	2011	16-19 years (1st/2nd year of high school)	compulsory secondary education from three public school	10 weeks (first quarter academic year), with frequency of one hour and a half session weekly.	Meditation practice and Flow, a meditation that focuses on the attention on the breath in the area abdomen while repeating a mantra.
36	Potek (2012)	USA	2012	14-17 years	two high schools (one rural and one urban)	14-weeks	Learning to Breathe program (Broderick, 2007)
37	Frenke et al. (2014)	Germany	2014	13-15 years	public school	6 weeks	mindfulness training
38	Metz et al. (2013)	USA	2013	16 years	suburban high school	Home practice	Learning to BREATH program
39	Anand and Sharma (2011)	Bangalore India	2011	14 years	public school	3 months training	stress reduction program
40	Biegel and Brown (2010)	California USA	2010	6-8 years	elementary school	5 weeks—3 sessions a week for 15 minutes per session	mindfulness-based activities: listening, breathing, movement, walking, eating, seeing, emotions, test taking, activities of daily living, and lessons on the promotion of kindness and caring
41	Baijal et al. (2011)	USA	2011	13-15 years	public school	10 min, twice daily	transcendental meditation
42	Campion and Rocco (2009)	Australia	2009	5-18 years	public school	1 year program in classroom	mindfulness, visualization, mantra, prays
43	Mendelson et al.	USA	2010	10 years	urban public	12 weeks, 45 min	school-based mindfulness and yoga

	(2010)				schools	session 4 days per week	intervention.
44	Nidich (2011)	USA	2011	6-7 grade	public school	twice daily 12 min session, 3 months	transcendent meditation
45	So and Orme-Johnson (2001)	Taiwan	2001	14-18 years	public school	2min sessions, twice daily, 6 months-1 year	transcendential meditation
46	Warner (2005)	USA and Canada	2005	5-11 years	public school	Integrated into school curriculum, 5 min, twice daily, ongoing > 1 year	transcendential meditation
47	Bluth (2015)	USA	2015	adolescents	ethnically diverse at-risk adolescents	50 min, once a week, over one school semester	Learning to BREATHE

Table 2. Presentation of the benefits of the above described program/research.

PO class	Program objectives (PO)	Program / Research nr.
COGNITIVE	**Attention, concentration**	**1,2,3,5,7,8,9,18, 26, 30, 40**
		14,15,16,17, 26, 29, 41
	Executive functions	**9, 18, 34, 37,46**
	(working memory, planning, organization, decision making, impulse control metacognition)	**12, 14, 15, 25, 45**
	Decreased ADHD behaviors - specifically hyperactivity and impulsivity	2, 9
		12
	Academic performance/competence	7, 10, 44
		4, 11, 14, 15, 16, 26, 29, 35, 42
PSYCHO	***EMOTIONAL ISSUES***	
LOGICAL	**Decreased depression**	20,26, 43
		4, 12, 15, 19, 21, 22, 47
	Decreased anxiety in general and	**5,8,20, 26**

text anxiety in particular	**5, 11, 12, 15, 25, 29, 35, 36, 45**
STRESS AND COPING	
Increased sense of calmness, relaxation, and self-acceptance, Increased self-calming, decreased stress	**1, 3, 6, 26, 43**
	4, 13,15, 16, 24, 25, 27, 28, 29, 38, 39, 42, 47
RESILIENCE	
Decreased aggression negative affect or emotions	10, 17, 31, 43
	13
Increased self-esteem/self-confidence	32, 27
	24, 35
Increased self-awareness and self-control	1, 26, 31
	13, 17, 24, 28, 29, 38
Fewer conduct and anger management problems	8, 26
	15, 29, 42
Increased emotional, behavior regulation and reactivity	9, 10, 18, 26, 27
	13, 29, 38
Better mental health and well being	4, 6, 26, 33
	(4, 6, 15,33), 17, 28, 29, 39

	Happiness, optimism	10, 22, 27
		15, 17
SOCIAL	**Increased social skills and social compliance:, better behavior**	**5, 7, 8,9, 10, 11, 22, 26, 27, 33, 40**
		(11) 17, 19, 21, 31, 35, 42
	classroom participation, reduction of suspension, motivation for learning	1, 2, 32
		16, 17, 47
	Respect and care for others	1
		17
	Empathy and compassion	1, 26, 27
		17, 24, 35
	Enhanced school climate	3,32
		(3)
PHYSICAL	Increased quality of sleep	6, 26, 30
		(6)
	Decreased aches, pain, tiredness	
		13
	Decreased psychosomatic	
		38

Legend: Third column is divided according to the school level – first row are elementary school, second row is high school programs
Numbers are indicating the program/research that is described in Table 1
Colors represent the frequency of the particular program/research objective (class)

	10	At least 10 programs/researches are dealing with this subfield		>=10	At least 10 programs/researches are dealing with this field
	>=8	At least 8 programs/researches are dealing with this subfield		>=8	At least 8 programs/researches are dealing with this field
	>=5	At least 5 programs/researches are dealing with this subfield		>=5	At least 5 programs/researches are dealing with this field
	>=3	At least 3 programs/researches are dealing with this subfield		>=3	At least 3 programs/researches are dealing with this field
	<3	Less than programs/researches are dealing with this subfield		<3	Less than programs/researches are dealing with this field