

The effect of an out-of-school mindfulness program on adolescents' stress reduction and emotional wellbeing

Efectos de un programa extraescolar basado en la atención plena para la reducción del estrés y el desarrollo del bienestar emocional en adolescentes

Efeitos de um programa fora da escola baseado em mindfulness para redução do estresse e desenvolvimento de bem-estar emocional em adolescentes

Carreres-Ponsoda, F.^{1*}, Escartí, A.², Llopis-Goig, R.³ y Cortell-Tormo, J.M.¹

1 Area of Physical Education and Sports. Faculty of Education. University of Alicante (Spain);

2 Faculty of Psychology. University of Valencia (Spain);

3 Faculty of Social Sciences. University of Valencia (Spain).

Abstract: In recent years schools and youth-serving organizations have progressively adopted programs to reduce adolescents' stress levels and improve optimism through mindfulness interventions. The aim of this study was to examine the effects of a mindfulness out-of-school program for adolescents, on perceived levels of stress, optimism and mindfulness skills. Thirty adolescents (15 girls and 15 boys), aging from 16 to 18 years old ($M = 16.8$) were randomly allocated to either 8-week mindfulness extracurricular program ($n = 15$; 8 girls and 7 boys) or a control group ($n = 15$; 7 girls and 8 boys). The results demonstrate that participants in the intervention group reported reductions in perceived stress and increases in levels of optimism and in five specific mindfulness skills. These findings suggest that using an out-of-school mindfulness program may be an effective setting to teach adolescents to use mindfulness to manage stress and to cultivate more positive emotional and social skills. This study is therefore significant for encourage the implementation of out-of-school mindfulness program that contribute to positive youth development and for an improvement of their health and more holistic health and well-being.

Keywords: mindfulness, adolescence, stress, health and social skills training.

Resumen: En los últimos años, los centros educativos e instituciones que prestan servicios a los jóvenes han adoptado progresivamente programas para reducir los niveles de estrés de los adolescentes y mejorar el optimismo mediante intervenciones de basadas en la atención plena (mindfulness). El objetivo de este estudio ha sido examinar los efectos de un programa extraescolar de mindfulness para adolescentes, sobre los niveles percibidos de estrés, optimismo y habilidades de mindfulness. Treinta adolescentes (15 niñas y 15 niños), con edades comprendidas entre los 16 y los 18 años ($M = 16,8$) fueron asignados aleatoriamente a un programa extracurricular de ocho semanas para el desarrollo de la atención plena ($n = 15$, 8 niñas y 7 niños) ($N = 15$, 7 niñas y 8 niños). Los resultados demuestran que los participantes en el grupo de intervención obtuvieron reducciones en el estrés

percibido y aumentos en los niveles de optimismo y en cinco habilidades específicas de atención plena. Estos resultados sugieren que la aplicación de programas extraescolares basados en la atención plena (mindfulness) pueden favorecer que los adolescentes aprendan a regular el estrés y cultivar habilidades emocionales y sociales más positivas. Este estudio es, por lo tanto, significativo para favorecer la implementación de programas extraescolares basados en mindfulness que contribuyan al positivo de los jóvenes y a una mejora de su salud y bienestar más integral.

Palabras clave: atención plena, adolescencia, estrés, salud y habilidades sociales.

Resumo: Nos últimos anos, escolas e instituições que prestam serviços aos jovens adotaram progressivamente programas para reduzir os níveis de estresse e melhorar o otimismo através de intervenções baseadas na atenção plena (mindfulness). O objetivo deste estudo foi examinar os efeitos de um programa de atenção plena fora da escola para adolescentes, sobre os níveis percebidos de estresse, otimismo e habilidades de atenção plena. Trinta adolescentes (15 meninas e 15 meninos), com idade entre 16 e 18 anos ($M = 16,8$) foram alocados aleatoriamente para o programa extracurricular de oito semanas da atenção plena ($n = 15$, 8 meninas e 7 meninos). Os resultados mostraram que os participantes do grupo de intervenção obtido reduções no estresse percebido e aumento dos níveis de otimismo e cinco habilidades específicas da atenção plena. Estes resultados sugerem que a aplicação de programas de atenção plena fora da escola pode incentivar os adolescentes para regular o estresse e cultivar habilidades emocionais e sociais mais positivas. Este estudo é, portanto, significativa para encorajar a implementação de programas de atenção plena fora da escola que que contribuem para o desenvolvimento positivo da juventude e para uma melhoria da sua saúde e bem-estar.

Palavras-chave: Mindfulness, adolescência, stress, saúde e habilidades sociais.

Dirección para correspondencia [Correspondence address]: Federico Carreres-Ponsoda, Faculty of Education. Area of Physical Education and Sports. University of Alicante (Spain). San Vicente del Raspeig s/n 03690 San Vicente del Raspeig Alicante (Spain). E-mail: fcarreres@ua.es

Introduction

Adolescence is a period of formative biological and social transition characterized by physical maturation of the brain and body, giving rise to intense psychological and physical change (Feindler, 1995; Prins & Hanewald, 1999). In addition to these normative development changes, adolescents are vulnerable to multitude of contextual stressors, such as academic pressures at school, changing relationships with peers, and all too often, unstable family life characterized by divorce, frequent moves, income and occupational changes, and disruptions in family routines (Blakemore et al., 2009; Divall & Radovick 2008; Forman & Davies, 2003; Paus, Keshavan, & Gieddl, 2008; Mendelson, Greenberg, Dariotis, Gould, Rhoades, & Leaf, 2010; Pine, Cohen, & Brook, 1999; Susman & Dorn 2009; Steinberg, 2010).

While stress is considered a natural part of a healthy youth development it needs to be acknowledged, managed and channelled by every child individually, in order to prevent negative outcomes (Blakemore, 2012; Napoli, Krech, & Holley, 2005; Neff & McGehee, 2010). Adolescents' ability to regulate their responses against stress is increasingly being recognized as an important skill to prevent the onset of emotional, cognitive, and social problems and ensuring mental health, academic success, and healthy transition into adulthood (Blakemore, & Mills, 2014; De Bolle, & De Fruyt, 2010; Eisenberg, Spinrad, & Eggum, 2010; Kim-Cohen, & Maughan, 2006; Napoli, Krech, & Holley, 2005; Solomon et al., 2000; Starr, & Davila, 2008).

Moreover, in recent decades, positive psychology has highlighted the importance of building in adolescents individual strengths of character that serve as protectors of stress and promote well-being (Seligman, 2002). One of the character strength that is linked to a wide array of positive psychological qualities is optimism (Segerstrom, 2010). Among teens, higher levels of optimism have been associated with better mental health and less involvement in risky behaviors (Carvajal, Clair, Nash, Evans, 1998). Additionally, an optimistic attitude in youth towards life and the future has been reported to be an essential component of the resilience mechanism (Brodhagen & Wise, 2008).

In recent years, schools and youth-serving organizations have progressively adopted programs to reduce adolescents' stress levels and improve optimism. Introducing mindfulness into the school curriculum is considered an approach to stress reduction among adolescents (Burke, 2010; Greco, Baer & Smith, 2011; Greenberg, & Harris, 2011; Hassed & Chambers, 2014; Hayes, 2004; Metz, Frank, Reibel, Cantrell, Sanders & Broderick, 2013; Napoli et al., 2005; Orzech, Shapiro, Brown, McKay, 2009). The potential of mindfulness as a skill in managing stress has been recognised in recent years, and training in mindfulness is now being used and accep-

ted in educational establishments (Biegel, Brown, Shapiro & Schubert, 2009; Black, Milam, & Sussman, 2009; Broderick, 2013; Burke, 2010; Kabat-Zinn, 2003; Waters, Barsky, Ridd, & Allen, 2014).

Existing reviews of mindfulness interventions with youth indicate that these programs have potential for promoting positive changes (Black et al. 2009; Broderick, & Frank 2014; Burke, 2010; Dellbridge & Lubbe, 2009; Greenberg & Harris, 2011; Huppert & Johnson, 2010; Neff, & McGehee, 2010; Shapiro, Brown, & Biegel, 2007; Lu, Tito & Kentel, 2009; Pepping, O'Donovan, Davis, 2013; Schonert-Reichl, Oberle, Stewart-Lawlor, Abbott, Thomson, Oberlander, & Diamond, 2015; Zoogman, Simon, Goldberg, Hoyt, & Miller, 2014). Likewise, a recent metaanalysis on mindfulness interventions with youth confirms this finding, particularly in relation to psychological outcomes, such as perceived stress, anxiety and depression (Zoogman et al. 2014). Zenner, Herrleben-Kurz and Walach (2014) systematically reviewed the evidence regarding the effects of mindfulness school-based interventions on psychological outcomes and on stress in adolescents. The results showed significant pre-post declines in perceived stress, negative affect, rumination, trait anxiety, and significant increases in positive affect. Schonert-Reichl and Lawlor (2010) found that students who participated in a mindfulness education program saw significant increases in optimism and socially competent behaviours.

Although research on the effectiveness of mindfulness programs with youth is promising, current literature about the implementation of mindfulness training for adolescents' as a extracurricular activity suffers from several limitations regarding study design, sample size, lack of systematic intervention protocol, and absence of comparison groups (Galantino, Galbavy, & Quinn, 2008; Shea-Bach & Guse, 2014; Solomon, Keller, Leon, Mueller, & Lavori, 2000; Zoogman et al., 2014; Zenner et al., 2014).

Given the need to better understand both, the implementation and potential benefit of mindfulness programs in extracurricular settings, we conducted a pilot study to examine the effects of a mindfulness out-of-school program for adolescents, on perceived levels of stress, optimism and mindfulness skills.

Method

Participants

Thirty adolescents (15 girls and 15 boys), aging from 16 to 18 ($M = 16.8$) were randomly allocated to either 8-week mindfulness extracurricular program ($n = 15$; 8 girls and 7 boys) or a control group ($n = 15$; 7 girls and 8 boys). The sample consisted of a representative group of inner-city urban public school. Participation in the study was voluntary and both

parental/guardian consent and student assent were required. There were no initial screening, clinical inclusion or exclusion criteria. After school board permission had been provided to conduct the research, parent/guardian permission forms along with a letter from the school principal describing the research were given to the students. Prior to providing students with the parent/guardian permission slips, a 15-min presentation was given to adolescents and parents to explain the purpose, the risks, and the benefits of the participation in the study.

In order to complete the program attending to at least six of the eight sessions was required. Fifteen adolescents (100%) completed the program. Three adolescents attended six sessions, four attended seven sessions and eight attended all the sessions. Mean number of sessions attended was 7.2 ($SD = 0,8$) with an overall attendance rate of 95.4%.

Measures

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a 14 Likert-item scale that offers a nonspecific measure of appraised stress with internal consistency reliabilities ranging from .84 to .86. The coefficient alpha for the sample in this study was 0.90.

Optimism (EQ-i, YV; Bar-On & Parker, 2000). The EQ-i (Emotional Quotient Inventory) is a 125-item self-report instrument designed to measure the core features of emotional intelligence using 5-point Likert scales for each item (ranging from "1" being "very seldom true of me" to "5" being "very often true of me"). In our study we used the General Mood Subscale that has 8 items to measure optimism related to be positive and look at the brighter side of life. The coefficient alpha for the sample in this study was 0.84.

Mindfulness (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ is a 39-item self-report measure that assesses the tendency to be mindful in everyday life. Participants indicate on a five-point Likert-type scale (1 = never or very rarely true to 5 = very often or always true) the degree to which they engage in five specific mindfulness skills: (1) *Observe* (e.g. "When I'm walking, I deliberately notice the sensations of my body moving."); (2) *Describe* (e.g. "I'm good at finding words to describe my feelings."); (3) *Acting with Awareness* (e.g. "When I do things, my mind wanders off and I'm easily distracted." - Reverse scored); (4) *Non-judgment* (e.g. "I criticize myself for having irrational or inappropriate emotions." - Reverse scored); and (5) *Non-reactivity* (e.g. "I perceive my feelings and emotions without having to react to them."). Higher scores indicate greater use of each mindfulness skills. The FFMQ subscales have demonstrated adequate to good internal consistency and tend to be associated with decreased psychological symptoms and increased well-being (Baer et al., 2006). Cronbach's alpha in the current sample

for the five FFMQ subscales was acceptable to good (0.83 to 0.89).

Opened interviews: The study employed opened interviews in order to gain a better insight into why participants attended the yoga classes and how they explained the benefits of the mindfulness program.

Procedure

The study was implemented as an out-of-school program in the school facilities, one day per week during eight weeks, from February to April 2015.

Intervention program

The intervention was an adaptation of the Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1994). The standard Kabat-Zinn's (1994) program for adults consists of eight weekly sessions, each of two to three hours in duration, and an all-day session of six to eight hours in length. Among sessions, participants engage in forty-five to sixty minutes of daily home practice. Home practice includes both formal (guided audio practices) and informal practice (the application of mindfulness to daily life). The program includes discussions about the psychology of stress, the fight-or-flight response, and the beneficial effect of mindfulness. More often, these discussions are based on the experience of the participants.

In many ways, our intervention is similar to the MBSR, but these are some of the adaptations we have developed for adolescents in accordance to Biegel et al, (2009):

- *Language*: we used age-appropriate language in order to make explanations more fun and engaging, as well as when the practice of mindfulness was being imparted.
- *Sessions*: the program comprised eight sessions, one per week. Furthermore, there was no daylong retreat. Each session lasted ninety minutes and the daily structure of each session was the following: (a) *Awareness in breathing (5 minutes)*: Every day, upon arrival to the class, during the first five minutes, we practiced conscious breathing in order to connect with the present moment. At the same time, adolescents were encouraged to bring three core elements to bear for the session: intention, attention, and attitude; (b) *Sharing experiences (10 minutes)*: during the next 10 minutes participants share their feelings, findings and questions about the weekly practice; (c) *Topic of the session (1 hour)*: Once thinking was done, the topic of the day and main mindfulness practices were explained. Each session has the same contents and objectives as the MBSR program. The unique adaptation is the reduction of the time explanations and mindfulness practices. This part

of the session lasted 1 approximately hour. (d) *Group meeting (10 minutes)*: Participants sat down together in a circle with the program leader and share opinions, feelings and ideas about the program in general and the session in particular. (e) *Home practice (5 minutes)*: Still sat down in a circle, the daily session concluded reviewing home practice to be made for the following week, reemphasizing its importance, and addressing any potential obstacles.

- *Mindfulness session practices*: the program included standard experiential mindfulness practices such as body scan meditation, sitting meditation, hatha yoga, and walking meditation in different sessions, from 20 to 30 minutes maximum.
- *Mindfulness home practices*: mindfulness practices were reduced from 45-60 to 20-30 minutes in length and participants were encouraged to do daily home mindfulness practices.
- *Workbook and Cd's*: participants received a workbook as an adjunct to the group sessions in order to reinforce instruction and topics discussed during each of the eight lessons and a CD to guide and support their home practice.
- *Mindfulness practice diaries*: from the beginning of the program participants responded to a brief series of questions on each of the mindfulness practices (sitting meditation, body scan meditation, hatha yoga, and informal mindfulness practice), including the number of days of practice and the time weekly spent on practice.
- *E-mail communication*: we empower participants to share any comments, questions or concerns they may have during the week by e-mail. We also send an everyday e-mail to support the participants with their daily home practice.

A MBSR certified instructor facilitated the intervention and all sessions were recorded. Tapes were reviewed as a part of the program feasibility and acceptability evaluation by authors (Lee, Semple, Rosa, & Miller, 2008). Adolescents' questionnaires were administered in two sessions (pretest and posttest) of approximately twenty minutes in length. To guard against biases due to variability in reading proficiencies, a research assistant read each item on the questionnaire aloud, and adolescents marked their responses. Adolescents were encouraged to answer honestly and allowed to ask any questions they may have. They were also informed about the privacy of their responses.

Data analyses

A variance analysis 2 (group) x 2 (time) with repeated measures was conducted. With regard to the group factor (independent

variable) it included both, intervention and comparison groups. Time factor included two points: before intervention and after intervention. Research included seven dependent variables: optimism, perceived stress and five mindfulness factors (observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience). Eta squared (η^2), a measurement of size effect, was calculated for each effect on design. The measurement of size effect is particularly relevant in this case given the small sample size. Previously, its comparability of both groups was checked (intervention and control groups) excluding the existence of statistically significant differences between them, both in terms of sociodemographic variables (χ^2) and on the scores previously recorded on the seven dependent variables before the operation (*t-test*). In addition, Cronbach α has been calculated for the seven dependent variables. All analyses were performed with SPSS 19.

The interviews took place over two days in an office in the school, where they were recorded using a portable recording device. Interviews were transcribed and line numbered. The data were analysed using thematic analysis from an inductive stance (Braun & Clarke, 2006). This allowed the data to be explored for common themes without strong preconceptions.

Following the guidelines of Braun & Clark's structure of thematic analysis, the researcher was familiarised with the data through reading it over multiple times so initial ideas could be noted down. Preliminary codes were noted down for each interview, where each line or section of lines, was summarised in a word and short phrase, otherwise known as a code. Then when a list of codes for each of the interviews had been created, all the transcripts were analysed again to find the reoccurring themes across the data. Some of the themes were redefined after an initial draft and are reviewed in the analysis section.

Ethical considerations

The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000.

Results

Quantitative analysis

The χ^2 analyses performed showed the absence of statistical association between the belonging to one of the research groups (intervention group or control group) and a set of variables from the research participants (sex, age or school performance). As showed in table 1, the differences between both groups are not significant neither sex nor age variables

($\chi^2=.000, p=1.000$). There are no differences in school performance in any of both groups, being the scores previous to the intervention statistically similar ($\chi^2=.602, p=.740$).

Groups are also comparable in the scores recorded before the intervention in the dependent variables (table 2). The *t-test* confirms that means scores in the intervention and control groups before the intervention in optimism, perceived stress and in the five mindfulness factors (observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience) showed no statistically significant differences, being the *p* in the independent samples test above 0.05.

Table 1. Sociodemographic characteristics by study group.

	Intervention (n = 15) n (%)	Control (n = 15) n (%)	χ^2 (df)	<i>p</i>
Gender*				
Female	8 (53.3%)	7 (46.7%)	$\chi^2 (1) = 0.000$	1.000
Male	7 (46.7%)	8 (53.3%)		
Age*				
16	13 (86.7%)	13 (86.7%)	$\chi^2 (1) = 0.000$	1.000
18	2 (13.3%)	2 (13.3%)		
School performance				
5.0 – 6.0	5 (33.3%)	6 (40.0%)	$\chi^2 (2) = 0.602$	0.740
6.1 – 7.0	6 (40.0%)	4 (26.7%)		
7.1 – 9.0	4 (26.7%)	5 (33.3%)		

* Continuity correction for a 2x2 table has been applied

Table 2. T-test for equality (independent samples test) of means by study group.

	<i>t</i>	<i>df</i>	<i>p</i>	Mean difference	SE difference
Optimism *	0.667	23.5	0.511	0.933	1.399
Perceived stress *	-0.052	16.9	0.959	-0.133	2.555
Mindfulness: Observing	-0.136	28	0.893	-0.133	0.980
Mindfulness: Describing	-1.252	28	0.221	-0.933	0.745
Mindfulness: Acting with awareness	-0.370	28	0.714	-0.267	0.722
Mindfulness: Non judging of inner experience*	-0.350	22.4	0.730	-0.333	0.953
Mindfulness: Non reactivity to inner experience	-0.061	28	0.952	-0.067	1.092

* Equal variances not assumed

The analysis of internal consistency in the seven dependent variables shows positive results. As showed in table 3, all the

Cronbach's α , are above the level usually considered optimum of 0.8.

Table 3. Reliability α for optimism, perceived stress and the five dimensions of mindfulness

Source	Cronbach's α	N of Items
Optimism	0.844	8
Perceived stress	0.909	14
Mindfulness: Observing	0.834	8
Mindfulness: Describing	0.879	8
Mindfulness: Acting with awareness	0.873	8
Mindfulness: Non judging of inner experience	0.804	8
Mindfulness: Non reactivity to inner experience	0.890	7

To test the initial hypothesis of this research, a covariance analysis 2 (group) x 2 (time) with repeated measures in the last factor was conducted, in order to review the main effects and the interaction effects of the seven dependent variables already mentioned. As *time* and *group* factors were composed

of two levels, it did not make sense to calculate the Mauchly's *W* statistic to contrast the sphericity, since with two levels there is only a covariance, which is logically equal to itself. In any case, the results obtained were identical, whether or not the sphericity was assumed, and whether or not *epsilon*

corrector was applied in all its versions (Greenhouse-Geisser y Huynh-Feldt).

In the case of optimism, effects due to group and time are statistically significant: $F(1,28) = 9.981, p = .004$ y $F(1,28) = 20.167, p = .000$, respectively, as well as the interaction effects $F(1,28) = 13.183, p = .001$ (see table 4). These results show the significant effect of the intervention, which increase considerably the optimism level in the intervention groups' components while group control components remain practically at the same level (see figure 1). The three h^2 values are high, indicating that group, time and interaction differences should be attributed to the intervention.

Table 4. ANOVA results: F statistics and effect size (h^2).

Source	df	F	h^2	p
Optimism				
Group	1, 28	9.981	0.261	0.004
Time	1, 28	20.167	0.419	0.000
Time x Group	1, 28	13.183	0.320	0.001
Perceived stress				
Group	1, 28	19.930	0.416	0.000
Time	1, 28	33.079	0.542	0.000
Time x Group	1, 28	28.916	0.508	0.000
Mindfulness: Observing				
Group	1, 28	54.510	0.661	0.000
Time	1, 28	51.575	0.648	0.000
Time x Group	1, 28	32.612	0.538	0.000
Mindfulness: Describing				
Group	1, 28	110.161	0.797	0.000
Time	1, 28	65.907	0.702	0.000
Time x Group	1, 28	85.277	0.753	0.000
Mindfulness: Acting with awareness				
Group	1, 28	104.893	0.789	0.000
Time	1, 28	173.852	0.861	0.000
Time x Group	1, 28	185.187	0.869	0.000
Mindfulness: Non judging of inner experience				
Group	1, 28	40.065	0.589	0.000
Time	1, 28	43.792	0.610	0.000
Time x Group	1, 28	49.392	0.638	0.000
Mindfulness: Non reactivity to inner experience				
Group	1, 28	28.912	0.508	0.000
Time	1, 28	43.206	0.607	0.000
Time x group	1, 28	33.957	0.548	0.000

Results are also positive in perceived stress factor. As showed in figure 2, both groups remain at the same level when star-

ting; although this factor decreases in the intervention group after the analysis. The repeated measures ANOVA shows that, group, time and interaction effects are significant: $F(1,28) = 19.930, p = .000$; $F(1,28) = 33.079, p = .000$ y $F(1,28) = 28.916, p = .000$, respectively. Also, in this case the three values calculated for h^2 are high ($h^2 = .416$; $h^2 = .542$ y $h^2 = .508$) which evidences the decisive influence of the intervention on the observed differences.

The five mindfulness factors have obtained substantial increases as a result of the intervention. When observing the scores prior to the intervention (figures 3, 4, 5, 6 and 7) it is verified that in the three cases (describing, acting with awareness, non-judging of inner experience) the initial average is even higher than in the control group. However, after the intervention the control group remains statistically at the same level; while the intervention group experiences substantial increases. The repeated measures ANOVA indicate that group, time and interaction group-time effects are significant statistically in the mindfulness five components. Also, the h^2 values are above 0.5 in the observing, non-judging of inner experience and non-reactivity to inner experience factors, and above 0.7 in describing and acting with awareness, which confirms the influence of the intervention when explaining the differences founded.

Qualitative analysis

Stress reduction. All of the participants articulated a shifting in state from before the mindfulness class (stressed state) compared to after the mindfulness class (calm state):

“I used to come in a bit stressed sometimes because loads of homework but when I come out I just feel so relaxed and chilled out” (Sarah, line 16).

Participants also reported that the mindfulness program allowed them to re-evaluate their values and change their outlook on dealing with certain stress situations. For example, Peter stated that:

“When I go in I might just be a bit cross because I've had an argument with one of my friends then when I come back out and I feel just like sort of holy if you could say that and I can just like go up to that friend and just say look I'm really sorry I miss you and then we just make friends again?” (Line 166).

Mindfulness awareness. The majority of participants reported that since attending the mindfulness program they felt were able to notice a positive change in being more conscious of different aspects of their life.

"The program give me the opportunity to live every second and to be aware of it. Leave a little aside the eternal plans and be the protagonist of my life. On the other hand it has also helped me a lot to hear. Note that need and asking me how do I feel and what is happening in my body" (Maria, Line 14).

Optimism. One of the key themes that emerged was a sense of personal growth where participants were able to notice a measurable improvement in their optimism, which lead to an increase a better response in their daily life:

"I must also emphasize that it has made me a much more optimistic and be grateful to how I can improve a relationship with a person of my family". (Lucas, Line 22).

"Another aspect in which the program has helped me a lot is to be more optimistic. I am an explosive person, in the sense that I am very passionate in everything I do and that makes me sometimes react disproportionately. Now I think before acting, I am aware that my body and I can take better decisions. That makes me feel very optimistic about the life I want to create for me and for others. (Elena, line 33).

Discussion

This study aimed to evaluate the effects of an out-of-school mindfulness program on adolescents' perceived levels of stress, optimism and mindfulness skills. Meanwhile, some different researches report that stress is having an impact on adolescent's performance at home, work and school (Eisenberg, Spinrad, & Eggum, 2010; Eiland & Romeo, 2013; Napoli et al., 2005; Rutter, Kim-Cohen, & Maughan, 2006; Solomon et al., 2000)

The results of our study demonstrate that participants in the intervention group reported reductions in perceived stress and increases in levels of optimism and in five specific mindfulness skills (observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience) from pre-test to post-test. These findings suggest that using an out-of-school mindfulness program may be an effective setting to teach adolescents to use mindfulness to manage stress and to cultivate more positive emotional and social habits (Huppert, & Johnson, 2010; Shapiro et al., 2007; Zoogman et al., 2014). Yet much more research is needed to identify the key ingredients of the curriculum of the out of school mindfulness' programs and further assessment instruments and scrutiny of the effects in the cognitive and social-emotional adolescent development (Bach, & Guse, 2014; Baer et al., 2006; Black et al., 2009; Burke, 2010; Schonert-Reichl et al., 2015).

The results of this study provide additional support to

previous research suggesting that mindfulness programs for youth may be an effective approach for reducing stress and promoting social and emotional wellbeing (Greenberg & Harris, 2012; Schonert-Reichl et al., 2015). The contribution of this study is extending these findings to demonstrate preliminary evidence of an out-of-school mindfulness curriculum for youth. These findings have implication for policymakers and teachers working in out-of-school settings, demonstrating that mindfulness is a feasible and potentially effective tool for building key socioemotional competencies and reducing risks among youth in these challenging settings.

Conclusion

The results of this pilot study are promising but have important limitations. First, this study relied on a relatively homogeneous adolescent sample. Therefore, this is a limitation to the generalizability of this program to other groups differing in gender, ethnicity and social class. The program curriculum was designed to be adapted for adolescents between 14 and 16 years. It would be helpful for future studies to assess its effectiveness for younger and older groups. Second, reliance on youth self-report for most outcome measures is another methodological limitation. Although most of the general affect and mental health measures are most appropriately assessed via self-report, supporting evidence from teacher or parent report is an important direction for future research. Third, the 8-week length of the program raises the question of whether gains persist after its completion. It is likely that gains would be enhanced with on-going opportunities to practice mindfulness skills. Offering other structured mindfulness learning environments outside the traditional school day, through before- and after-school; summer; and extended-day, -week or -year programs could be a complement for the 8-week program. Long-term follow-up studies could clarify this question.

However, its limitations and unexplored questions, offer an opportunity for further study in order to advance understanding about the most effective ways to facilitate mindfulness interventions in out of school settings that respond to each adolescents' needs, thus helping to encourage continued participation and applying this practice in their daily life.

Practical Applications

Out-of-school scenarios are considered one of the primary settings in which prevention and intervention initiatives can be implemented successfully, reaching a large number of young people. Especially when promoting social and emotional learning, many adolescents could benefit from mindfulness based programs. This study shows recommendations for successful out-of-school based implementation of mindful-

ness, drawing from previous empirical evidence for successful programming. Practical resources and recommendations for

successfully implementing and sustaining an out-of-school mindfulness program are provided in the appendix.

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Appendix

Table 5. Curriculum overview of the 8-week out-of-school mindfulness program (adapted from MBSR; Kabat-Zinn, 2003)

WEEK	GOALS AND TOPICS	Mindfulness session practices	Mindfulness home practices
1	Mindfulness: how to step out of automatic pilot <ul style="list-style-type: none"> - Consequences of living in “automatic pilot” - What is mindfulness - Elements and qualities of mindfulness 	<ul style="list-style-type: none"> - Discuss in pairs or small groups: moments of being or acting in “automatic pilot” - The raisin mindful eating practice - Body scan practice 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Choose a meal and eat it mindfully (only one day) - Practice body scan (six days a week) - Use the meditation log and record the meditation experience in the diary (after every practice during the 8-week program)
2	The power of perceptions: observing the reality as it is <ul style="list-style-type: none"> - Becoming conscious of the subjectivity of perceptions - Judgements of self and others - Working with what is 	<ul style="list-style-type: none"> - Mindful breathing practice - Discuss in pairs or small groups: weekly practice experiences - Body Scan practice 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Fill out pleasant events calendar for the week (one entry per day) - Practice body scan (six days a week) - Practice sitting Mindful Breathing (six days a week)
3	Mindfulness of emotions <ul style="list-style-type: none"> - See emotions as “just emotions” rather than getting caught up in them - Being with all emotions - 5 Step process for mindfully dealing with difficult emotions 	<ul style="list-style-type: none"> - Mindful breathing practice - Discuss in pairs or small groups: weekly practice experiences and pleasant events - The 4 basic emotions practice - Mindfulness stretching exercises on the floor 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Fill out unpleasant events calendar for the week (one entry per day) - Alternate <i>Mindfulness stretching exercises on the floor</i> with <i>body scan practice</i> (six days a week) - Practice <i>mindful breathing practice</i> (six days a week)

4	What is stress? <ul style="list-style-type: none"> - How do you define stress - Our patterns of reactivity to Stress - How to break the negative stress cycle and step out of reactivity 	<ul style="list-style-type: none"> - Mindful breathing practice - Discuss in pairs or small groups: weekly practice experiences and Unpleasant Events - Mindfulness stretching exercises on the floor 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Fill out stressful events calendar - Alternate <i>mindfulness stretching exercises on the floor</i> with <i>body scan practice</i> (six days a week) - Practice <i>mindful breathing practice</i> (six days a week)
5	Coping with stress <ul style="list-style-type: none"> - Reduce the negative physiological and psychological effects of stress reactivity - Discovering effective ways of responding positively and proactively to stressful situations and experiences (at school, family, sports...) 	<ul style="list-style-type: none"> - Mindful breathing practice - Discuss in pairs or small groups: weekly practice experiences and stressful events - Mindfulness stretching exercise standing - Sitting guided meditation 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Fill out stressful communications calendar - Alternate <i>mindfulness stretching exercise standing</i> with <i>sitting guided meditation</i> (six days a week)
6	The art of mindful communication <ul style="list-style-type: none"> - Stressful communications: how to be mindful in interpersonal relationships (especially under conditions of acute or chronic stress) - Assertiveness: knowing your feelings and expressing effectively 	<ul style="list-style-type: none"> - Mindful breathing practice - Discuss in pairs or small groups: weekly practice experiences and stressful communications - Mindful communication and listening practice - Sitting guided meditation 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness attitude (everyday) - Sitting guided meditation (six days a week)
7	Time management and compassion cultivation <ul style="list-style-type: none"> - Create more time for what you care about - Developing kindness for ourselves - Reconnect with the world and open into kindness and compassion for others 	<ul style="list-style-type: none"> - Mindful breathing practice - Walking meditation - Self-compassion meditation 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness (everyday) - Choose freely any of the above practices of mindfulness without recordings (six days a week) (Note: if this is too difficult, suggest alternating between the recordings and self-guidance every other day)
8	Going forward a Mindful Life <ul style="list-style-type: none"> - Evaluation of the program - Things that nourish and drain you - How to keep up the practice and make it your own 	<ul style="list-style-type: none"> - Mindful breathing practice - Body scan practice 	<ul style="list-style-type: none"> - Choose a routine activity and experience it with mindfulness (everyday) - Choose freely any of the above practices of mindfulness without recordings (six days a week) - Action plan: continue practicing day by day