Doctorate in Educational and Child Psychology *Cassandra Neo*

Case study 1: An Evidence-based practice review report.

Theme: School/Setting Based Interventions for Social, Emotional and Mental Health.

The Effectiveness of MindUP

The 'MindUP Programô, herein referred to as 'MindUPô is a mindfulness-based intervention (MBI) for schools developed by The Goldie Hawn Foundation (TGHF) (n.d.) to respond to social, emotional and mental health (SEMH) difficulties in children and young people (CYP). This systematic literature review aims to evaluate how effective MindUP is for reducing internalising problems in CYP aged 3 to 14 years old.

The review was undertaken using five online databases: PsycINFO, Science Direct, Scopus, Web of Science and ERIC (EBSCOhost). Five studies were included for the review and evaluated using Goughôs (2007) Weight of Evidence Framework and the coding protocol by Gersten et al. (2005). All studies used an experimental group design with outcome measures collected at pre and post-intervention.

Results showed small effects for outcome measures related to internalising problems at post-intervention although the effects were larger than when the culturally adapted version of MindUP was used. The findings are discussed, and limitations and future recommendations are considered.

Introduction

Mental health difficulties have been impacting around 20% of children and young people (CYP) across the globe with 50% of them experiencing an

onset before 14 years old (Department of Health [DH], 2015). CYPôs psychosocial development and mental health difficulties need to be addressed before they become severe long-term conditions extending into adulthood (Department for Education [DfE], 2019). SEMH needs have been included as part of the special educational provision within schools (DfE & DH, 2015), and it is the responsibility of professionals working with CYP to regularly track whether children are developing well to meet their developmental milestones within the typical age range in comparison to peers of the same age especially in early years settings ï early tracking and identifying needs in the early years setting have been made statutory through the Early Years Foundation Stage framework (DfE, 2021).

Mindfulness and its benefits on SEMH

A growing body of systematic literature reviews show that mindfulness-based interventions (MBIs) within education around the world have made contributions to CYPôs social and emotional learning (SEL) with positive effects on SEMH (e.g. Corcoran et al., 2018; Maynard et al., 2017; W<00] TJETQq0 0 0 rg /GS32 86vBTt13<0i5

thoughts which indirectly impact their display of different behaviours. Thus, such strategies allow participants who have received MindUP to increase their own locus of control and experience fewer negative affect.

Aims and review question

With substantial evidence of MBIs yielding positive effects on internalising difficulties and a strong psychological basis, the main aim of this literature review is to find out how effective MindUP can be used as a universal school-based intervention to address internalising difficulties in CYP. This will inform policies and practices that are intrinsic to the work of Educational Psychologists (EPs) by providing evidence-based informed intervention to schools that can benefit from MindUP. Specifically, the reviewer aims to address the following research question: ñHow effective is MindUP for reducing internalising problems in children ages 3 to 14 years old?ò

Critical Review of the Evidence Base

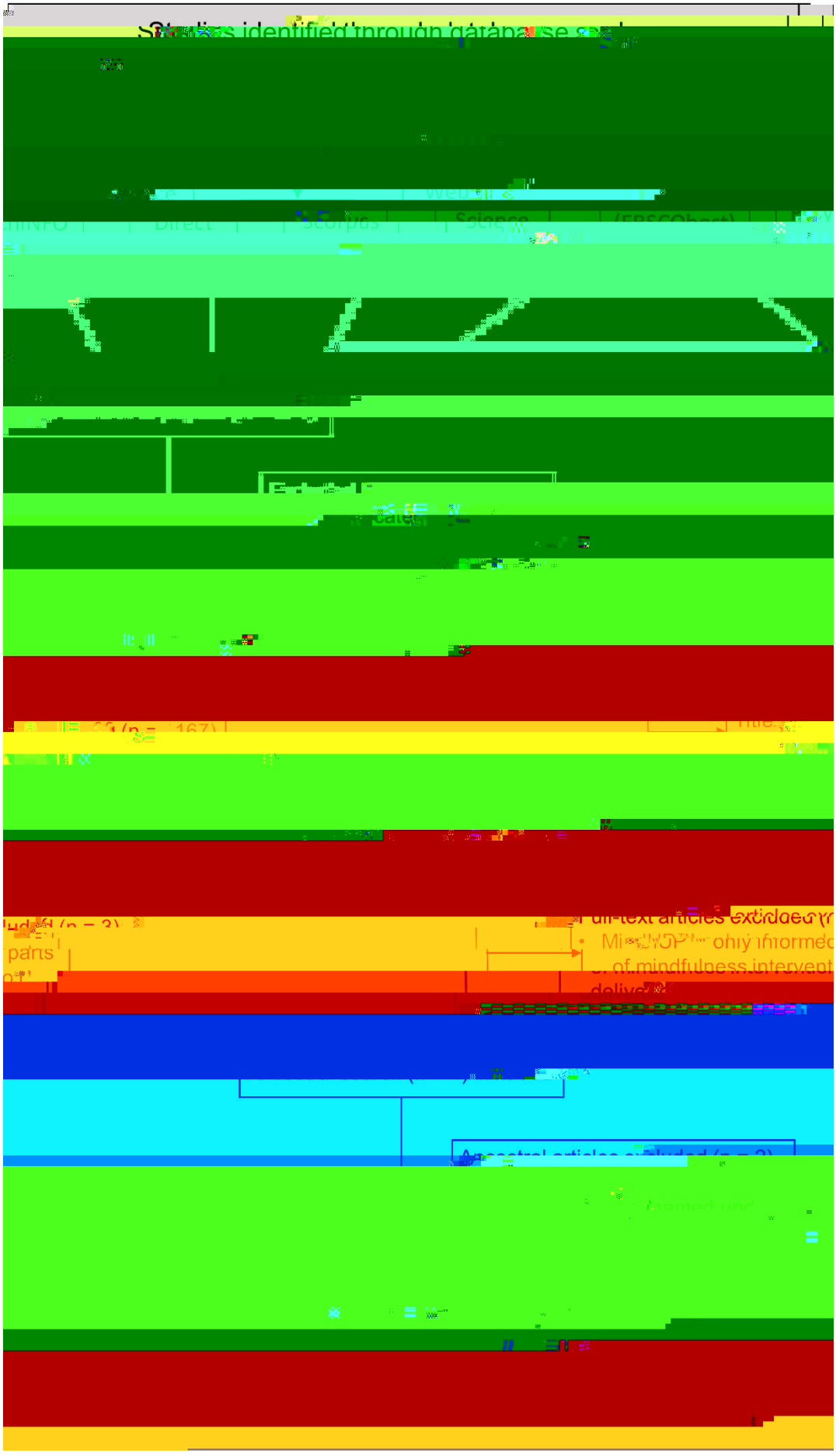
Literature search

On 21st January 2021, a literature search was conducted on PsycINFO, Science Direct, Scopus, Web of Science and ERIC (EBSCOhost). The following search terms in Table 2 were used to identify potential studies.

Table 2

Search Terms

Databases searched	Search Terms
PsycINFO ERIC (EBSCOhost) Scopus Web of Science	MindUP or MindUP* or "Mind UP" or "Mind UP*" (searched using ófull textô option) AND



Weight of Evidence (WoE)

The reviewer used Gough's (2007) Weight of Evidence (WoE) framework to critically appraise the quality and relevance of all five studies included in this review. WoE A appraises the general methodological quality of a study against other similar type of studies (see Appendix B). To do this, the coding protocol by Gersten et al. (2005) was used with all five studies to evaluate the description of participants, procedure for implementing the inter

Table 5

Summary of Weight of Evidence (WoE) ratings

Study	Child participant characteristics	Research design	Intervention delivery/training	Measures relevant to this literature review	Significant outcomes

Study	Child participant characteristics	Research design	Intervention delivery/training	Measures relevant to this literature review	Significant outcomes
	grade and 100 in 4th grade.		Materials needed for the implementation of MindUP were translated from English into Portuguese by teachers and a linguist.	Common humanity Self-judgment Mindfulness Modified Mindful Attention Awareness Scale adapted for children (MAAS-C; Lawlor et al., 2014)	affect [F(1, 443) = 4.339, p = 0.037, d = 0.20]. Expressive suppression decreased from 3.00(1.21) to 2.62(1.09) in the intervention group, and from 2.81(1.09) to 2.69(1.17) in the comparison group. There is a significant decrease in the intervention group compared to the comparison group for expressive suppression [F(1, 435) = 4.288, p = 0.039, d = 0.20]. Common humanity increased from 2.78(1.04) to 3.08(1.11) in the intervention group and decreased from 3.13(1.90) to 3.12(1.09) in the comparison group. There is a quasi-significant improvement in the intervention group compared to the comparison group for common humanity [F(1, 435) = 3.317, p = 0.069, d = 0.25].
Matsuba et al. (2020)	Country Gulu district, Northern Uganda. Two small private primary schools.	Quasi-experimental design. Pre- and post-tests. Intervention group versus comparison group.	Culturally adapted MindUP program: 15 lessons over 2 terms Core mindfulness activity 3 times a day for 3 minutes each. It	Self-reported outcome measures were presented orally and in written form to the children at two time points. English, together with Luo translation, were used to support comprehension	Overall, there were significant differences between groups where the comparison group who did not receive the MindUP intervention had significant increases in Anger, Loneliness, Perceived hostility and Perceived rejection [F(9, 63) = 2.73, p=0.014, d = 1.12].

Study	Child participant characteristics	Research design	Intervention delivery/training	Measures relevant to this literature review	Significant outcomes
			completed during the first 3 weeks of school.	1997, original measure from; Davis, 1983).	
Schonert-Reichl et al. (2015)	<u>Country</u> Western Canada. Large public school district in a suburban community. Four elementary schools with similar socio-economic status, racial and ethnic diversity, and achievement level were identified. <u>Intervention group (n = 48)</u> Females (46%). Mean age of children (10.16 years, SD = 0.52 years). Children from Grades 4 and 5. First language English (63%), East Asian (27%), other (10%). Living with two parents (77%). Living with single parent (10%). Joint physical custody arrangement (10%).	Randomised controlled trial. Pre- and post-tests. To prevent diffusion effects, only one classroom in each of the four schools were selected for participation. When teachers consented to participation, they knew they had 50% chance of being randomised into the comparison group. Two classes from two schools were selected for the intervention group.	The first author was contacted for the following information: Altered MindUP program: 12 weekly lessons, 40 to 50 minutes each. There were fewer lessons about the brain compared to the 15-lesson curriculum by TGHF. Core mindfulness activity 3 times a day for 3 minutes each. Teachers were trained by a certified MindUP trainer First full day training at the start of the academic year Booster session at the middle of the academic year Intervention began after the baseline data were collected and randomization was allocated.	Child self-report measures were administered in a group setting during a class period by a member of the research team at two time points. Research assistants	

Study	Child participant characteristics	Research design	Intervention delivery/training	Measures relevant to this literature review	Significant outcomes
	Control group (n = 51) Females (42%). Mean age of children (10.31 years, SD = 0.52 years). Children from Grades 4 and 5. First language English (68%), East Asian (22%), other (10%). Living with two parents (89%). Living with single parent (7%). Joint physical custody arrangement (4%).		Teachers filled out lesson tracking sheets indicating the following to assess implementation fidelity: Whether or not they delivered the lesson Track and record core practices delivered	Optimism and Emotional control measured by a sub-scale from the Resiliency Inventory (RI; Noam & Goldstein, 1998; Song, 2003). School self-concept measured by Marsh's Self-Description Questionnaire (SDQ; Marsh et al., 1984) Depressive symptoms measured by Seattle Personality Questionnaire for Children (SPQC; Kusché et al., 1988). Mindfulness measured by Mindful Attention Awareness Scale adapted for children (MAAS-C; Lawlor et al., 2014). Social responsibility measured by subscale of the Social Goals Questionnaire (Wentzel, 1993).	Optimism increased in the intervention group 0.22(0.82) but decreased 745 034.78 379.51 M 0 0

Study	Child participant characteristics	Research design	Intervention delivery/training	Measures relevant to this literature review	Significant outcomes
					group for mindfulness [F(1, 97) = 7.94, p = 0.006, d = 0.55]. Depressive symptoms decreased in the intervention group -0.19(0.72), and increased in the control group 0.10(0.55). There is a significant decrease in the intervention group compared to the control group for expressive suppression [*F*(1, 97) = 4.14, *p* = 0.04, *d* = -0.45].
Thierry et al. (2016)	<u>Country</u> Southwestern part of the United States of America. Urban elementary school in a large city. <u>Intervention group (n = 23)</u> Children experienced the intervention throughout pre-kindergarten and kindergarten years. Females (52%). Mean age of children (4.56 years, SD = 0.33 years).	Quasi-experimental design. Pre- and post-tests. Intervention group was one cohort of pupils versus comparison group which was the previous-year cohort of pupils at the same school.	MindUP program: 15 lessons, 20 to 30 minutes each. Teachers spent 2 to 3 weeks covering each lesson over the course of the academic year. Core mindfulness activity 3 times a day. In the first few weeks, the activity lasted 30 seconds; it extended to 60 seconds when children gained experience.	Teacher and parent reports collected at two time points: Beginning and end of the prekindergarten academic year Behavior Rating Inventory	

Study	Child participant characteristics

Participants

Schonert-Reichl et al. (2015) conducted random sampling which gave it a high rating on WoE B. After convenience sampling, Matsuba et al. (2020) managed to randomly select the school for the intervention while de Carvalho et al. (2017) distributed selected participants randomly to the intervention group which gave them a medium WoE B rating. The remaining two studies selected participants based on convenience sampling only and had a low WoE B rating.

Altogether, there are 1219 participants. The sample size varied from 47 to 584. 51% of all the participants were females. This shows even gender distribution, and attrition rates were negligible in Matsuba et al. (2020) and Thierry et al. (2016) so they were not penalised in WoE A. All studies evaluated MindUP on different age groups: ages 3 to 5 years in Crooks et al. (2020), 4 to 6 years in Thierry et al. (2016), 7 to 9 years in de Carvalho et al. (2017), 9 to 11 years in Schonert-Reichl et al. (2015) and 12 to 14 years in Matsuba et al. (2020). The type and location of schools varied from private to public schools, and located in the city (de Carvalho et al., 2017; Matsuba et al., 2020; Thierry et al., 2016) versus the suburbs (Schonert-Reichl et al., 2015). Crooks et al. (2020) was allocated schools that had high Social Risk Index (SRIs) indicating the presence of disadvantage characteristics such as lower income, unemployment and children living with a lone-parent

The studies took place in Canada, Portugal, Uganda, and the US where educational systems are likely to be different. As the reviewer is unfamiliar with the differences, this was not part of the WoE appraisal

variation in demographics, and the different types of education systems, generalisability of the findings from this review could be a strength.

Research Design

All studies conducted an experimental study with an intervention and comparison group with pre and post-testing done. None of the studies collected follow-up measures to track long-term effects. Schonert-Reichl et al. (2015) conducted an RCT meeting all the essential quality indicators (Gersten et al., 2005) and was rated high on WoE A. The remaining studies used a quasi-experimental design but this could contribute to ecological

to clearly identify the independent variable of interest and to be aware of possible confounding variables that could influence the outcome.

Intervention

Comparing the delivery of intervention, Crooks et al. (2020) and Thierry et al. (2016) delivered the MindUP curriculum as intended and were given high WoE B ratings. While de Carvalho et al. (2017) and Matsuba et al.

have construct validity and provides a measure of internalising problems. de Carvalho et al. (2017) used a modified Portuguese version of the PANAS-C (Laurent et al., 1999) which has good convergent and discriminant validity. After analysing, it showed that the negative affect measure was invariant which gave it a high WoE C rating. Schonert-Reichl et al. (2015) used the SPQC (Kusché et al., 1998) which was found to be reliable and valid for the depression subscale with good internal consistency (Ŭ = 0.67) (Aber et al.,1998). It directly measured internalising problems and was rated high on WoE C.

Matsuba et al. (2020) used the ôangerô, ôfearôand ôsadnessôoutcome measures which makes up the negative affect subdomain of the ôemotionô domain in the NIH Toolbox (Gershon et al., 2013); it was given a medium WoE C rating because it shows test-retest reliability with suitable use in culturally diverse populations and across different developmental stages (Gershon et al., 2013). Crooks et al. (202011(Cr-3(le l. (2)n(2)n(2)n(2)n(2)n(2)n(2)n(2(2)n(2

Findings and effect sizes

Table 7 below provides a description of the outcome measures relevant to assessing internalising problems and its effect sizes. The effect sizes represented by Cohen's d (1992) were all calculated using the

Figure 2 shows a forest plot of the four studies. The blue points represent the effect size of each study, while the green point is the overall effect size. The black whiskers are the 95% confidence intervals while the green whiskers represent 95% prediction interval to account for random variation. Although the effect size point estimate was significant overall, the findings showed moderate heterogeneity (Cochran's Q = 4.42, p = 0.220, I^2 = 32.07%, ^{2} = 0.01) where 32% of variability is due to real differences and not by chance (West et al., 2010, p.21). However, Deeks et al. (2021) suggested that the interpretation of I^2 could be misleading as heterogeneity can be due to several factors and 32% might be negligible and therefore little heterogeneity. Thus, the effect of the intervention on internalising problems appears to differ depending on the context in which the intervention was delivered. The different effect sizes from individual studies seem to support this finding. The culturally adapted MindUP intervention produced smaller effect sizes for de Carvalho et al. (2017) (d = -0.20) and Matsuba et al. (2020) (d = -0.27) compared to Crooks et al. (2020) (d = -0.45) and Schonert-Reichl et al. (2015) (d = -0.41). More research needs to be conducted before MindUP can be recommended as a school-based universal intervention for reducing internalising problems.

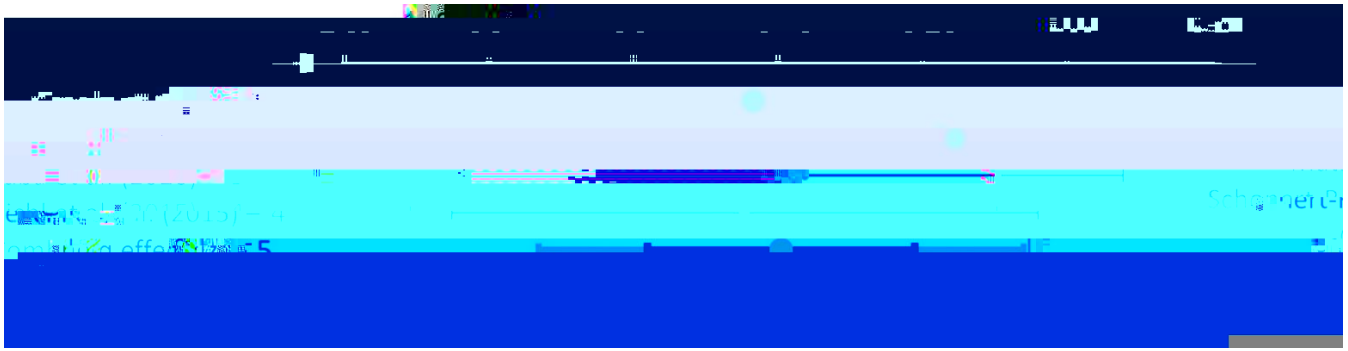
Table 7

Calculation of effect size for the included studies

Study	Sample size (n)	Measure

Thierry et

Table 8



Department for Education. (2019). *State of the nation 2019: Children and young people's wellbeing research report.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/838022/State_of_the_Nation_2019_young_people_children_wellbeing.pdf

Department for Education. (2021). *Statutory framework for the early years foundation stage: Setting the standards for learning, development and care for children from birth to five.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974907/EYFS_framework_-_March_2021.pdf

Department of Health. (2015). *Future in mind: Promoting, protecting and improving our children and young people's mental health and wellbeing.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/414024/Childrens_Mental_Health.pdf

Diamond, A. (2009). The interplay of biology and the environment broadly defined. *Developmental Psychology*, *45*(1), 1. https://doi.org/10.1037/a0014601

Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckley, J. A., Olin, S., Romanelli, L. H., Leaf, P. J., Greenberg, M. T., & Ialongo, N. S. (2008). Maximizing the Implementation Quality of Evidence-Based Preventive Interventions in Schools: A Conceptual

Framework. *Advances in School Mental Health Promotion*, *1*(3), 6ï 28. https://doi.org/10.1080/1754730x.2008.9715730

Dunning, D. L., Griffiths, K., Kuyken, W., Crane, C., Foulkes, L., Parker, J., & Dalgleish, T. (2019). Research Review: The effects of mindfulness based interventions on cognition and mental health in children and adolescentsï a meta analysis of randomized controlled trials. *Journal of Child Psychology and Psychiatry*, *60*(3), 244-258. https://doi.org/10.1111/jcpp.12980

Durlak, J. A., & Wells, A. M. (1997). Primary prevention mental health programmes for children and adolescents: A meta analytic review. *American Journal of Community Psychology*, *25*(2), 115-152. https://doi.org/10.1023/A:1024654026646

Gershon, R. C., Wagster, M. V., Hendrie, H. C., Fox, N. A., Cook, K. F., & Nowinski, C. J. (2013). NIH toolbox for assessment of 3

Kabat Zinn, J. (2003). Mindfulness based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, *10*(2), 144-156. https://doi.org/10.1093/clipsy.bpg016

Kusché, C. A., Greenberg, M. T., & Beilke, R. (1988). *Seattle personality questionnaire for young school-aged children.* [*Unpublished manuscript].* University of Washington, Department of Psychology, Seattle.

Kuyken, W., Nuthall, E., Byford, S., Crane, C., Dalgleish, T., Ford, T., ... & Williams, J. M. G. (2017). The effectiveness and cost-effectiveness of a mindfulness training programme in schools compared with normal school provision (MYRIAD): study protocol for a randomised controlled trial. *Trials*, *18*(1), 1-17. https://doi.org/10.1186/s13063-017-1917-4

Kuyken, W., Weare, K., Ukoumunne, O., Vicary, R., Motton, N., Burnett, R., . . . Huppert, F. (2013). Effectiveness of the Mindfulness in Schools Programme: Non-randomised controlled feasibility study. *British Journal of Psychiatry, 203*(2), 126-131. doi:10.1192/bjp.bp.113.126649

Laurent, J., Catanzaro, S. J., Joiner, T. E., Rudolph, K. D., Potter, K. I., Lambert, S., & Gathright, T. (1999). A measure of positive and negative affect for children: S

concept for preadolescent children. *Journal of Educational Psychology, 76*(5), 940ï 956. https://doi.org/10.1037/0022-0663.76.5.940

Matsuba, M. K., Schonert-Reichl, K. A., McElroy, T., & Katahoire, A. (2020). Effectiveness of a SEL/mindfulness program on Northern Ugandan children. *International Journal of School & Educational Psychology*, 1-19. https://doi.org/10.1080/21683603.2020.1760977

https://www.lbbonline.com/news/mindup-rebrands-as-mindup-for-life-and-evolves-visual-identity-to-embody-new-holistic-direction

Petticrew, M., & Roberts, H. (2003). Evidence, hierarchies, and typologies: Horses for courses. *Journal of Epidemiology and Community Health*, *57*, 527ï 529. http://dx.doi.org/10.1136/jech.57.7.527

Reynolds, C. R., & Kamphaus, R. W. (2015). Behavior assessment system for childrenï third edition (BASC-3). PQq0.871 0 595.32 841.96r-3(d9g0 24,iera871 (

Sibinga, E. M., Webb, L., Ghazarian, S. R., & Ellen, J. M. (2016). School-based mindfulness instruction: an RCT. *Pediatrics*, *137*(1).

Zelazo, P. D., & Lyons, K. E. (2012). The potential benefits of mindfulness training in early childhood: A developmental social cognitive neuroscience perspective. *Child Development Perspectives, 6*(2), 154ï 160. https://doi.org/10.1111/j.1750-8606.2012.00241.x

Appendices

Table 1

List of Content in Appendices

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Appendix A

Table 2

Excluded studies from the review at full text screening and ancestral search

adolescentsô well-being and social and emotional competence. *Mindfulness*, *1*(3), 137-151. Excluded at ancestral search full text screening	õMindUPö the intervention described within the paper was a different one called Mindfulness Education (ME) program, and õteachers underwent an intensive 1-day training session and received bi-weekly consultation from one of the authors of the ME program curriculum (Nancy Fischer).ò (Schonert-Reichl & Lawlor, 2010, p. 143).
Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., Diamond, A. (2010). Accelerating cognitive and social emotional development in elementary school classrooms: Benefits of a simple to administer program. Manuscript submitted for publication (copy on file with author). Excluded at ancestral search full text screening	Having contacted the first author, this paper was published with the reference below and is already included for this review. Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., & Diamond, A. (2015). Enhancing cognitive and socialï emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomised controlled trial. *Developmental psychology*, *51*(1), 52. https://doi.org/10.1037/a0038454

Appendix B

Weight of Evidence A: Methodological quality

Table 9 below shows the criteria to be met for each respective WoE A rating. It has been adapted from Gersten et al. (2005). A study that is given a WoE A rating of óhighô is also considered óhigh qualityô by Gersten et al. (2005). A study that is given a ómediumôrating is considered as áacceptable qualityô by Gersten et al. (2005). A study is given a ólowôrating by the reviewer as it did not meet the óhighônor áacceptableôqualities suggested by Gersten et al. (2005).

Table 3

WoE A Rating Criteria Adap

Appendix C

Changes made to Gersten et al. (2005) coding protocol

8	Was any documentation of the nature of instruction or series provided in comparison conditions?
9	Did the research report include ~~actual audio or videotape excerpts~~ [examples of paper work such as lesson plans or worksheets] that capture the nature of the intervention? *Rationale: Some studies included appendices with lessons plans which captures the full nature of the intervention. This was judged to provide similar ecological validity to audio or videotape excerpts.*
10	Were results presented in a clear, coherent fashion?

Appendix D

Example of a completed coding protocol

Coding protocol: Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti, M. (2005). Quality indicators for group experimental and quasi-experimental research in special education. Exceptional Children, 71,149-164.

Reference for this study: Crooks, C. V., Bax, K., Delaney, A., Kim, H., & Shokoohi, M. (2020). Impact of mindUP among young children: Improvements in behavioral problems, adaptive Skills, and executive functioning. *Mindfulness*, *11*(10), 2433-2444.

Table 5

Essential and Desirable Quality Indicators for Group Experimental and Quasi-Experimental Research Articles and Reports

Essential Quality Indicators
Quality Indicators for Describing Participants
1 Was sufficient information provided to indicate and explain why certain participants were excluded from the intervention?

Quality Indicators for Implementation of the Intervention and Description of Comparison Conditions

1 Was the intervention clearly described and specified?

Yes
No
Unknown/Unable to Code

2 Was the fidelity of implementation described and assessed?

Yes
No
Unknown/Unable to Code

3 Was the nature of services provided in comparison conditions described?

Yes
No
Unknown/Unable to Code

Quality Indicators for Outcome Measures

1 Were multiple measures used to provide an appropriate balance between measures closely aligned with the intervention and measures of generalised performance?

Yes
No
Unknown/Unable to Code

2 Were outcomes for capturing the interventionôs effect measured at the appropriate times?

Yes
No
Unknown/Unable to Code

Quality Indicators for Data Analysis

1 Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

Table 11

Summary of WoE B Rating

	Selection of participants	Intervention delivered	Comparison group intervention	WoE B rating
Crooks et al. (2020)	1	3	2	2
de Carvalho et al. (2017)	2	2	1	1.67
Matsuba et al. (2020)	2	2	1	1.67

Appendix F

Weight of Evidence C: Topic relevance

Table 12

WoE C Rating Criteria

Table 13

Summary of WoE C Rating

	The intervention seeks to address internalising problems in children	Cultural sensitivity	WoE C rating
Crooks et al. (2020)	2	2	2
de Carvalho et al. (2017)	3	3	3