

MYRIAD

My resilience in adolescence



<http://myriadproject.org>

A research programme over eight years explored whether schools-based mindfulness training could improve the mental health of young people in early adolescence (11-14 years olds).



MYRIAD

My resilience in adolescence



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KING'S
College
LONDON



MYRIAD Team



Principal Investigators: Mark Williams and Willem Kuyken (Oxford); Sarah-Jayne Blakemore (UCL->Cambridge); Tim Dalgleish (Cambridge)

Co-Investigators: Mark Greenberg (Penn State), Tamsin Ford (Exeter -> Cambridge), Obi Ukoumunne (Exeter), Sarah Byford (KCL), Susan Gathercole (MRC CBU), Russell Viner (UCH), Phil Zelaso (Minnesota)

Oxford research team: Matt Allwood, Louise Aukland, Ruth Baer, Eleanor-Rose Corney, Catherine Crane, Nicola Dalrymple, Kath De Wilde, Katie Fletcher, Jennifer Harper, Verena Hinze, Nils Kapplman, Konstantina Komnindou, Suzannah Laws, Liz Lord, Emma Meldicott, Jesús Montero-Marin, Elizabeth Nuthall, Lucy Palmer, Ariane Petit, Alice Phillips, Isobel Pryor-Nitsch, Lucy Radley, Anam Raja, Elsie Sellars, Jem Shackleford, Anna Sonley, Laura Taylor, Alice Tickell, Kate Tudor, Lucy Warriner and the remote research assistant team

Cambridge research team: Marc Bennett, Darren Dunning, Kirsty Griffiths, Rachel Knight, Jenna Parker, Blanca Piera Pi-Sunyer, Marie Vainre

University College London research team: Saz Ahmed, Lucy Foulkes, Cait Griffin, Jovita Leung, Ashok Sakhardande

Exeter research team: Susan Ball, Ben Jones

Kings College London research team: Poushali Ganguli

Public Engagement team: Catherine Aldridge and Ruth Mackay of Catalyst and David Owen of Gurukula

Collaborators: Alan Stein, Chris Fairburn (Oxford), Iroise Dumontheil (Birkbeck), Emérita S. Opaleye (Universidade Federal de São Paulo), Maarten Speekenbrink (UCL) Patrick Smith (IoP, KCL), Katherine Weare (Exeter), Duncan Astle, Ian Goodyer, Felicia Huppert (Cambridge), Richard Burnett and Chris Cullen (school teachers)

Scientific Advisory Board: Nick Allen, Susan Bogels, Pim Cuijpers, Celene Domitrovich, Uta Frith (Chair), Terrie Moffatt, Vikram Patel,

Trial Steering Committee: Nick Axford (Chair), Chris Bonnell, Sam Cartwright –Hatton, Cathy Creswell (previous Chair), Steve Hollon, Lucinda Powell, Paul Ramchandani (previous member), Paul Stallard, Una Sookun

Trial Data Monitoring and Ethics Committee: Ruth Baer (previous member), Jan R. Boehnke, Mike Campbell (Chair), Sona Dimidjian, Judy Kidger, Obi Ukoumunne

>28,000 children

>100 schools

>650 teachers

>100 researchers

>20 million data points

> 20 published peer reviewed science papers



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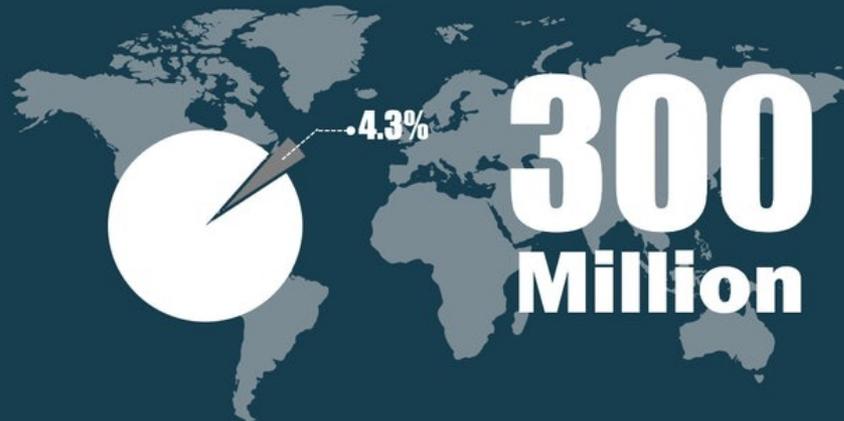
What problem were we trying to solve?
What do we know already?
What did we do?
What did we find?
Where to next?

The Challenge

1 in 10 people globally have suffered from major depressive disorders at least once in their lifetime.



4.3% of the global population, over 300 million people suffer from depression.



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Mental health of young people: a global public-health challenge

Vikram Patel, Alan J Flisher, Sarah Hetrick, Patrick McGorry

Lancet 2007; 369: 1302-13

Published Online

March 27, 2007

DOI:10.1016/S0140-

6736(07)60368-7

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Question

Has mindfulness training in adolescence the potential to shift the population away from psychological problems and toward improved mental health by addressing key processes of mental regulation and executive control that operate across the spectrum of risk/resilience?



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What problem were we trying to solve?

What do we know already?

What did we do?

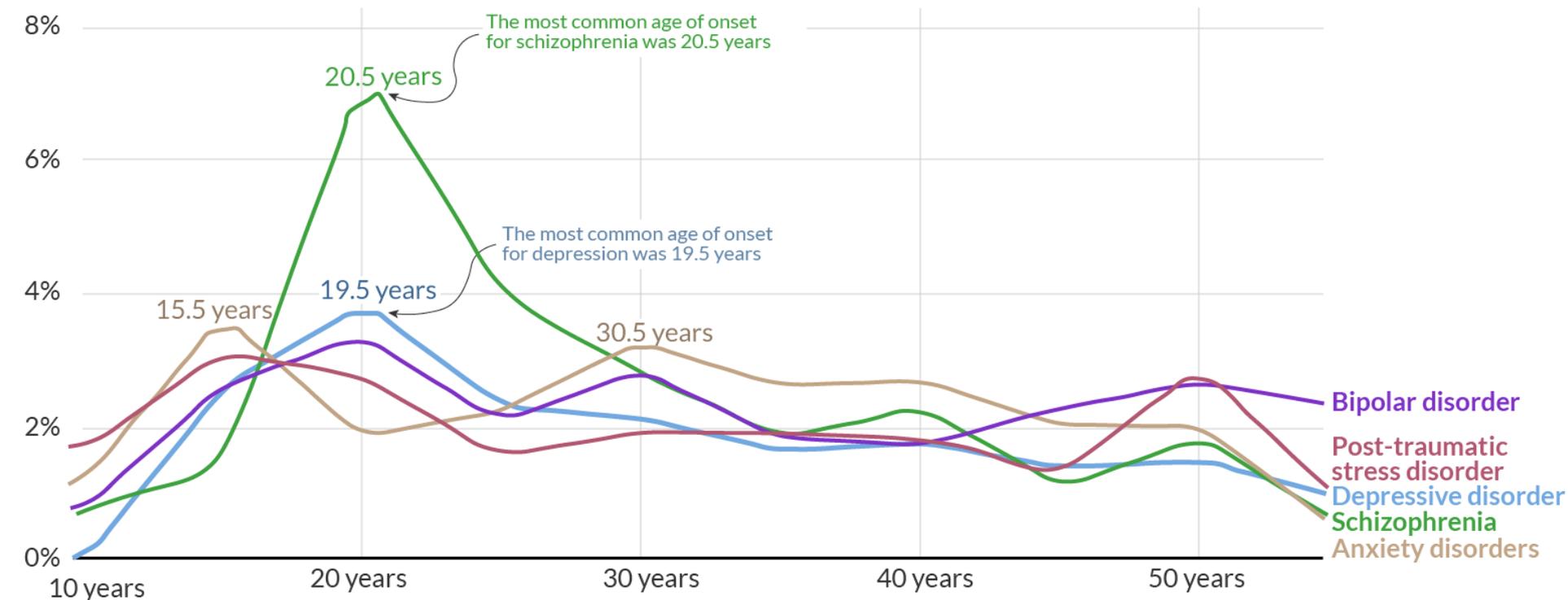
What did we find?

Where to next?

Adolescence is Key Developmental Window

Age of onset of mental health disorders

Share for whom the disorder begins at a given age



Source: Marco Solmi et al. (2021). Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. *Nature Molecular Psychiatry*. OurWorldinData.org – Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Saloni Dattani.

Why Mindfulness Training?

Universal prevention targets core mechanisms in the whole population

Mindfulness Training

- Designed for prevention
- Enhances core mechanism of self-regulation
- No active symptoms required

Why now? Work with Adults

Mindfulness-Based Cognitive Therapy for Preventing Relapse in Recurrent Depression: A Randomized Dismantling Trial

J. Mark G. Williams, Catherine Crane,
Thorsten Barnhofer, Kate Brennan,
Danielle S. Duggan, Melanie J. V. Fennell,
Ann Hackmann, Adele Krusche, Kate Muse,
Isabelle Rudolf Von Rohr, and Dhruvi Shah
University of Oxford

Rebecca S. Crane, Catrin Eames, Mariel Jones,
Sholto Radford, Sarah Silverton, Yongzhong Sun,
Elaine Weatherley-Jones, and
Christopher J. Whitaker
Bangor University

Daphne Russell and Ian T. Russell
Swansea University

Effectiveness and cost-effectiveness of mindfulness-based cognitive therapy compared with maintenance antidepressant treatment in the prevention of depressive relapse or recurrence (PREVENT): a randomised controlled trial

Willem Kuyken, Rachel Hayes, Barbara Barrett, Richard Byng, Tim Dalgleish, David Kessler, Glyn Lewis, Edward Watkins, Claire Brejcha, Jessica Cardy, Aaron Causley, Suzanne Cowderoy, Alison Evans, Felix Gradinger, Surinder Kaur, Paul Lanham, Nicola Morant, Jonathan Richards, Pooja Shah, Harry Sutton, Rachael Vicary, Alice Weaver, Jenny Wilks, Matthew Williams, Rod S Taylor, Sarah Byford

www.thelancet.com Published online April 21, 2015 [http://dx.doi.org/10.1016/S0140-6736\(14\)62222-4](http://dx.doi.org/10.1016/S0140-6736(14)62222-4)

JAMA Psychiatry | **Original Investigation**

Continuation of Antidepressants vs Sequential Psychological Interventions to Prevent Relapse in Depression An Individual Participant Data Meta-analysis

Josefien J. F. Breedvelt, MSc; Fiona C. Warren, PhD; Zindel Segal, PhD; Willem Kuyken, PhD; Claudi L. Bockting, PhD

JAMA Psychiatry. doi:10.1001/jamapsychiatry.2016.0076
Published online April 27, 2016.

DEPRESSION

THE NICE GUIDELINE ON THE TREATMENT AND
MANAGEMENT OF DEPRESSION IN ADULTS

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Why now? Work with Adolescents

1. Feasibility and pilot work

| | | |
|--|--|---|
| <p>J Abnorm Child Psychol (2010) 38:985–994 DOI 10.1007/s10802-010-9418-x</p> | <p>ORIGINAL PAPER</p> | <p>BJPsych The British Journal of Psychiatry 1–6. doi: 10.1192/bjp.bp.113.126649</p> |
| <p>Feasibility and Preliminary Outcomes of a School-Based Mindfulness Intervention for Urban Youth</p> <p>Tamar Mendelson · Mark T. Greenberg · Jacinda K. Dariotis · Laura Feagans Gould · Brittany L. Rhoades · Phillip J. Leaf</p> | <p>School-Based Prevention and Reduction of Depression in Adolescents: a Cluster-Randomized Controlled Trial of a Mindfulness Group Program</p> <p>Filip Raes · James W. Griffith · Katleen Van der Gucht · J. Mark G. Williams</p> | <p>Effectiveness of the Mindfulness in Schools Programme: non-randomised controlled feasibility study</p> <p>Willem Kuyken, Katherine Weare, Obioha C. Ukoumunne, Rachael Vicary, Nicola Motton, Richard Burnett, Chris Cullen, Sarah Hennelly and Felicia Huppert</p> |

N=97, yoga/mindfulness, instructors

N=407, MBCT/MBSR-based, instructors

N=522, MBCT-based; developers & trainers

2. Systematic review and meta-analysis

The Journal of Child Psychology and Psychiatry
Journal of Child Psychology and Psychiatry 60:3 (2019), pp 244–258
doi:10.1111/jcpp.12980

Research Review: The effects of mindfulness-based interventions on cognition and mental health in children and adolescents – a meta-analysis of randomized controlled trials

Darren L. Dunning,¹ Kirsty Griffiths,¹ Willem Kuyken,² Catherine Crane,² Lucy Foulkes,³ Jenna Parker,¹ and Tim Dalgleish^{1,4}

¹Medical Research Council Cognition and Brain Sciences Unit, University of Cambridge, Cambridge, UK; ²Department of Psychiatry, University of Oxford, Oxford, UK; ³Institute of Cognitive Neuroscience, University College London, London, UK; ⁴Cambridgeshire and Peterborough NHS Foundation Trust, Cambridge, UK

Table 2 Effect size analysis of RCT studies with active control conditions examining the efficacy of MBIs

| Mean effect size (d) | k | Number of effect sizes | Total n | Intervention effects | | | Heterogeneity | | | | | | |
|----------------------|----|------------------------|---------|---------------------------|------|----------------|---------------|------|----------------|------------------|---------------------|------|------|
| | | | | Publication bias (Eggers) | | | z | p | I ² | tau ² | tau ² CI | | |
| | | | | Q value | p | I ² | | | | | | | |
| All measures | 17 | 141 | 1,762 | 0.20 | 0.03 | [.14 to .26] | 6.84 | <.01 | 425.29 | <.01 | 67.08 | 0.20 | .83 |
| Mindfulness | 6 | 8 | 600 | 0.42 | 0.13 | [.16 to .67] | 3.23 | <.01 | 9.07 | .11 | 44.90 | 3.18 | <.01 |
| Social behaviour | 6 | 18 | 708 | -0.07 | 0.20 | [-.46 to .31] | -0.38 | .70 | 23.97 | <.01 | 79.14 | 0.96 | .39 |
| Negative behaviour | 5 | 15 | 580 | 0.22 | 0.19 | [-.16 to .59] | 1.13 | .26 | 15.86 | <.01 | 74.79 | 1.07 | .36 |
| Depression | 6 | 11 | 520 | 0.47 | 0.13 | [.22 to .72] | 3.71 | <.01 | 7.04 | .22 | 28.92 | 2.06 | .11 |
| Anxiety/ Stress | 9 | 23 | 844 | 0.18 | 0.07 | [.05 to .31] | 2.65 | <.01 | 4.21 | .90 | 0.00 | 0.63 | .55 |
| Executive functions | 7 | 12 | 958 | 0.10 | 0.07 | [-.03 to .23] | 1.49 | .14 | 6.32 | .39 | 5.10 | 0.01 | .99 |
| Attention | 5 | 5 | 787 | 0.13 | 0.07 | [-.01 to .28] | 1.87 | .06 | 2.93 | .57 | 0.00 | 0.86 | .45 |



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- What problem were we trying to solve?
- What do we know already?
- What did we do?
- What did we find?
- Call to action – where to next?

STUDY PROTOCOL

Open Access



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

Willem Kuyken^{1*}, Elizabeth Nuthall¹, Sarah Byford², Catherine Crane¹ , Tim Dalgleish³, Tamsin Ford⁴, Mark T. Greenberg⁵, Obioha C. Ukoumunne⁶, Russell M. Viner⁷, J. Mark G. Williams¹ and the MYRIAD team

Abstract

Background: Mindfulness-based approaches for adults are effective at enhancing mental health. However, few trials have evaluated their effectiveness or cost-effectiveness for young people. The present trial will evaluate the effectiveness and cost-effectiveness of a mindfulness training (MT) programme in schools on mental health, wellbeing and social-emotional behavioural functioning in adolescence.

Methods/design: To address this aim, the design will be a superiority, cluster randomised controlled trial in which schools offering social and emotional provision in line with good practice (Social, Health and Economic (PSHE) Education: A mapping study of the prevalent models of provision, 2010; OFSTED, Not Yet Good Enough: Personal, Social, Health and Economic (PSHE) Education, 2013) will be randomised to either continue this provision (control) or include MT in addition. The study will recruit and randomise 76 schools (clusters) and 5700 school students aged 11-16 years up for 2 years.

Discussion: The study will contribute to establishing if MT is an effective and cost-effective intervention for mental health in adolescence.

Trials registration: International Standard Randomised Controlled Trials, identifier: ISRCTN18544677, 3 June 2016.

Keywords: Adolescence, Schools, Resilience, Mindfulness, Depression, Prevention

Montero-Marin et al. *Trials* (2021) 22:254
<https://doi.org/10.1186/s13063-021-05213-9>

UPDATE

Open Access



Update to 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

Jesus Montero-Marin¹, Elizabeth Nuthall¹, Sarah Byford², Catherine Crane³, Tim Dalgleish⁴, Tamsin Ford⁵, Poushali Ganguli², Mark T. Greenberg⁶, Obioha C. Ukoumunne⁷, Russell M. Viner⁸, J. Mark G. Williams¹, The MYRIAD team¹ and Willem Kuyken^{1*} 

Trials

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Population and Co-primary Outcomes

Secondary schools & children
aged 11-14



Population %

SOCIO-EMOTIONAL- BEHAVIOURAL FUNCTIONING

- Restless, over-active
- Easily distracted
- Impulsive

RISK FOR DEPRESSION

- Sleep problems
- Crying spells
- “My life has been a failure”

WELL-BEING

- “I’ve been dealing with problems well”
- “.....thinking clearly”
- “.....feeling loved”

The Intervention

- Universal, delivered by school teachers
- Ten sessions + booster sessions: Psychoeducational and brief mindfulness practices
- Intervention includes teacher training, teacher delivery and ongoing support



The Mindfulness in Schools Project

www.mindfulnessinschools.org



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How can we optimise learning from trials in child and adolescent mental health?

Nick Axford ,¹ Vashti Berry,² Jenny Lloyd,² Katrina Wyatt²



“Use theory to frame the analysis and interpretation of results.”

Nick Axford,
Chair, Trial Steering Committee

BMJ *Evid Based Ment Health* 2022;**25**:93–95. doi:10.1136/ebmental-2022-300500

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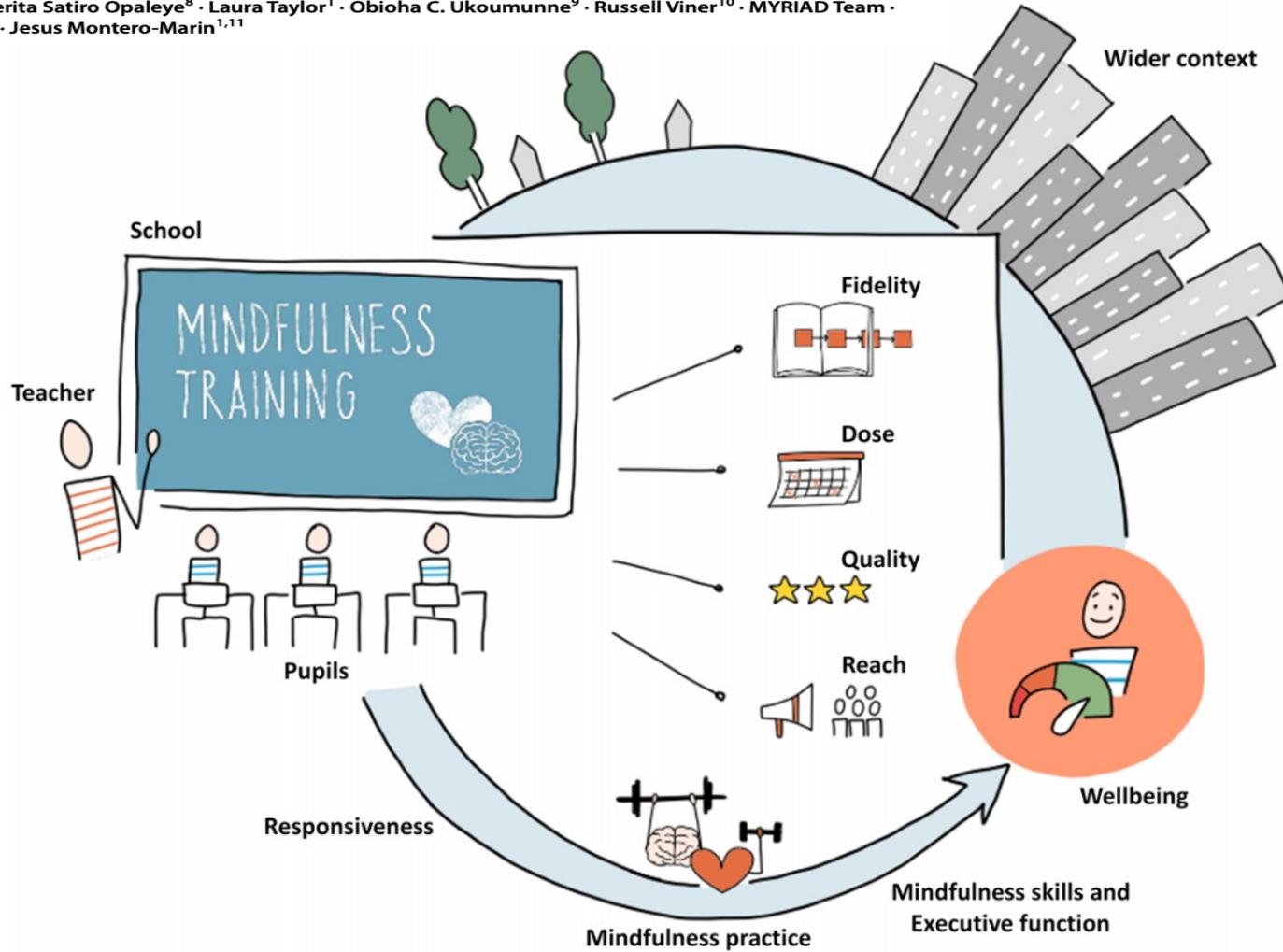


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Universal Mindfulness Training in Schools for Adolescents: a Scoping Review and Conceptual Model of Moderators, Mediators, and Implementation Factors

Kate Tudor¹ · Shannon Maloney¹ · Anam Raja² · Ruth Baer¹ · Sarah-Jayne Blakemore³ · Sarah Byford⁴ ·
Catherine Crane¹ · Tim Dalgleish⁵ · Katherine De Wilde¹ · Tamsin Ford⁶ · Mark Greenberg⁷ · Verena Hinze¹ · Liz Lord¹ ·
Lucy Radley¹ · Emerita Satiro Opaleye⁸ · Laura Taylor¹ · Obioha C. Ukoumunne⁹ · Russell Viner¹⁰ · MYRIAD Team ·
Willem Kuyken¹ · Jesus Montero-Marín^{1,11}



DOI: 10.31219/osf.io/j2qz7

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Statistical Analysis Plans

**Effectiveness and cost-effectiveness of mindfulness training in schools (MYRIAD):
Statistical analysis plan for a cluster randomised controlled trial
1. Effectiveness and cost-effectiveness analyses**

1 BASIC TRIAL INFORMATION

| | |
|----------------------------------|--|
| Trial full title | A cluster randomised controlled trial of the effectiveness and cost-effectiveness of a mindfulness training programme in schools compared with normal school provision: the MYRIAD trial |
| Trial registration number | ISRCTN reference 86619085 (3 rd June 2016) |
| Trial chief investigator | Willem Kuyken |
| Trial manager | Elizabeth Nuthall |
| Trial statistician | Obioha Ukoumunne |
| SAP author | Obioha Ukoumunne, Sarah Byford and the wider MYRIAD team |
| CTU involvement | Peninsula Clinical Trials Unit (PenCTU) |
| Version | Version 1.1 (25.09.20) |

NOTE: This SAP should be reviewed alongside the Data Management Plan (date 18/08/20) and Code Book (10/09/20), the latter of which contains references and scoring information for all the measures cited here.

**Statistical analysis plan for the MYRIAD cluster randomised controlled trial:
Exploratory process-outcome analyses**

1. BASIC TRIAL INFORMATION

| | |
|----------------------------------|--|
| Trial full title | A cluster randomised controlled trial of the effectiveness and cost-effectiveness of a mindfulness training programme in schools compared with normal school provision: the MYRIAD trial |
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| Trial statistician | Obioha Ukoumunne |
| SAP author | Jesus Montero-Marin and the wider MYRIAD team |
| CTU involvement | Peninsula Clinical Trials Unit (PenCTU) |
| Version | Version 1.00 (05.06.20) |

NOTE: This SAP should be reviewed alongside the 'Effectiveness and cost-effectiveness of mindfulness training in schools (MYRIAD): Statistical analysis plan for a cluster randomised controlled trial', the Data Management Plan (date xx/xx/xx), and the Code Book (xx/xx/xx), the latter of which contains references and scoring information for all the measures cited here.



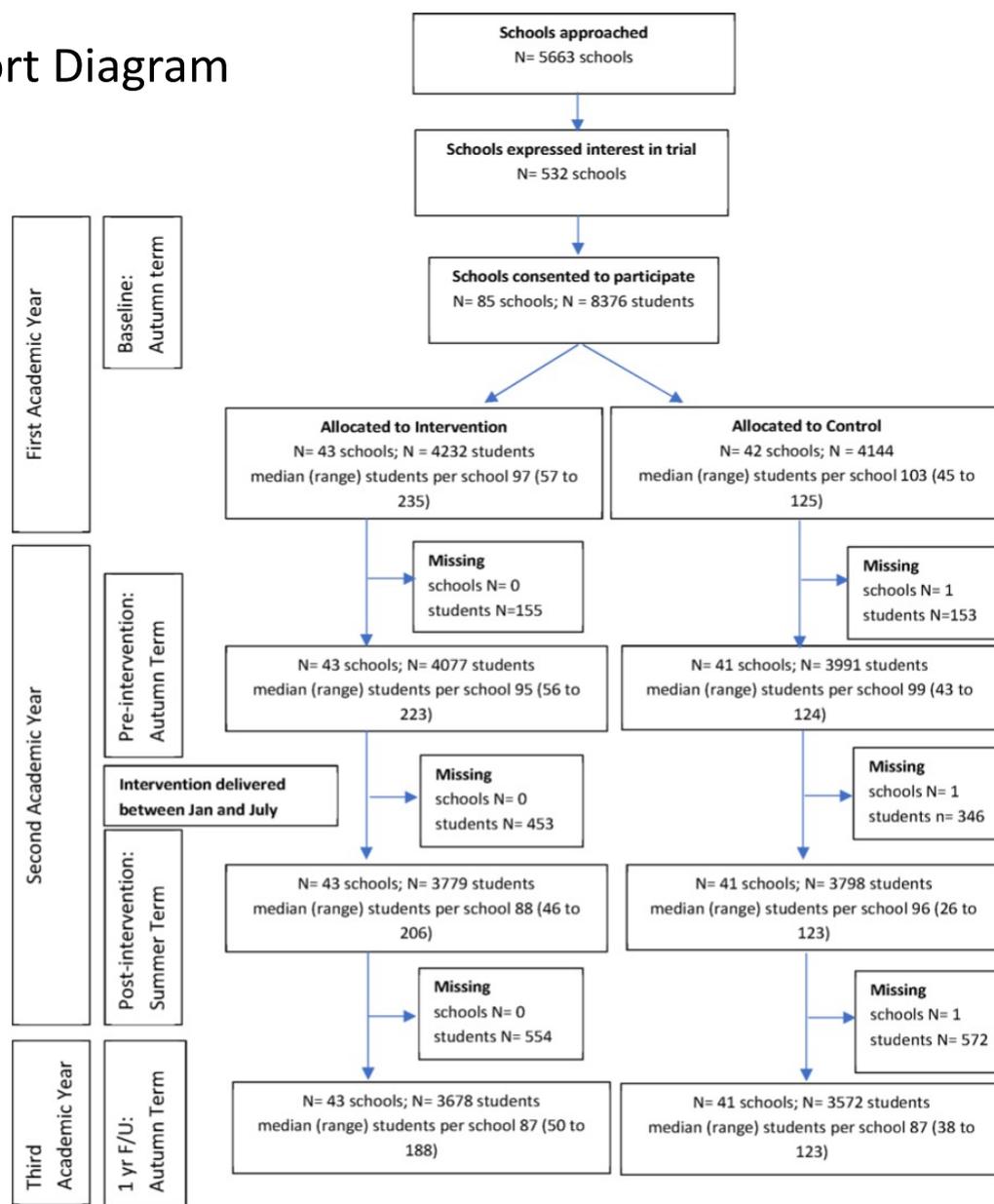
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What problem were we trying to solve?
What do we know already?
What did we do?
What did we find?
Where to next?

MYRIAD Trial Consort Diagram



BMJ *Evid Based Ment Health* 2022;0:1–11. doi:10.1136/ebmental-2021-300396

School Characteristics

| | SBMT arm | TAU arm | Total |
|---|----------|----------|----------|
| School (cluster) characteristics | n=43 | n=41 | n=84 |
| Region | | | |
| England, n (%) | 38 (88) | 36 (88) | 74 (88) |
| Scotland, n (%) | 2 (5) | 1 (2) | 3 (4) |
| Wales, n (%) | 1 (2) | 2 (5) | 3 (4) |
| Northern Ireland, n (%) | 2 (5) | 2 (5) | 4 (5) |
| School size—at least 1000 students, n (%) | 20 (47) | 22 (54) | 42 (50) |
| Type of school | | | |
| Mixed, n (%) | 36 (84) | 37 (90) | 73 (87) |
| Girls, n (%) | 7 (16) | 4 (10) | 11 (13) |
| School quality rating | | | |
| Requires improvement, n (%) | 6 (14) | 5 (12) | 11 (13) |
| Does not require improvement, n (%) | 37 (86) | 36 (88) | 73 (87) |
| Deprivation | | | |
| Above median percentage eligible for free school meals, n (%) | 15 (35) | 15 (37) | 30 (36) |
| Below median percentage eligible for free school meals, n (%) | 28 (65) | 26 (63) | 54 (64) |
| Provision of Social Emotional Learning, mean (SD) | 12 (2.5) | 12 (2.6) | 12 (2.6) |

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Student Characteristics

| | SBMT arm | TAU arm | Total |
|--|-------------|-------------|-------------|
| Student characteristics | n=4232 | n=4144 | n=8376 |
| Gender | | | |
| Female, n (%) | 2350 (56.5) | 2159 (53.1) | 4509 (54.9) |
| Male, n (%) | 1724 (41.5) | 1823 (44.9) | 3547 (43.2) |
| Other, n (%) | 14 (0.3) | 12 (0.3) | 26 (0.3) |
| Prefer not to say, n (%) | 69 (1.7) | 69 (1.7) | 138 (1.7) |
| Ethnicity—white, n (%) | 3237 (78.1) | 2965 (73.2) | 6202 (75.7) |
| Age, mean (SD) | 12.2 (0.6) | 12.2 (0.6) | 12.2 (0.6) |
| Year group | | | |
| Year 7, n (%) | 2082 (49.2) | 2142 (51.7) | 4224 (50.4) |
| Year 8, n (%) | 1878 (44.4) | 1827 (44.1) | 3705 (44.2) |
| Year 9, n (%) | 79 (1.9) | 64 (1.5) | 143 (1.7) |
| Year S1, n (%) | 193 (4.6) | 111 (2.7) | 304 (3.6) |
| Depression (CES-D), mean (SD) | 13.6 (10.0) | 13.3 (9.8) | 13.5 (9.9) |
| Social-emotional and behavioural functioning (SDQ) total difficulties—self report, mean (SD) | 11.8 (6.5) | 11.7 (6.4) | 11.8 (6.5) |
| Well-being (WEMWBS), mean (SD) | 49.7 (9.7) | 49.6 (9.7) | 49.7 (9.7) |

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Follow-up of pupils

| Pupils: numbers at each wave | Group A | Group B | Total |
|------------------------------|--------------------|--------------------|--------------------|
| | N (% of recruited) | N (% of recruited) | N (% of recruited) |
| Recruited | 4232 (100%) | 4144 (100%) | 8376 (100%) |
| Post-intervention follow-up | 3779 (89.3%) | 3798 (91.7%) | 7577 (90.5%) |
| 1 year follow-up | 3678 (86.9%) | 3572 (86.2%) | 7250 (86.6%) |

A= School-based Mindfulness Training

B= Teaching as Usual

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The Role of Schools in Early Adolescents' Mental Health: Findings From the MYRIAD Study

Tamsin Ford, FRCPsych, PhD , Michelle Degli Esposti, DPhil , Catherine Crane, DPhil ,
Laura Taylor, DPhil , Jesús Montero-Marín, PhD , Sarah-Jayne Blakemore, PhD ,
Lucy Bowes, PhD , Sarah Byford, PhD , Tim Dalgleish, PhD , Mark T. Greenberg, PhD ,
Elizabeth Nuthall, PGDip , Alice Phillips, MRes , Anam Raja, MSc ,
Obioha C. Ukoumunne, PhD , Russell M. Viner, PhD , J. Mark G. Williams, PhD ,
Matt Allwood, BSc , Louise Aukland, PGCE , Triona Casey, MSc , Katherine De Wilde, PGCE ,
Eleanor-Rose Farley, MSc , Nils Kappelmann, MSc , Liz Lord, MSc, Emma Medicott, MSc ,
Lucy Palmer, PhD , Ariane Petit, MSc , Isobel Pryor-Nitsch, MSc , Lucy Radley, BSc,
Lucy Warriner, BSc , Anna Sonley, MEd , the MYRIAD Team, Willem Kuyken, PhD 

Objective: Recent studies suggest mental health in youths is deteriorating. The current policy in the United Kingdom emphasizes the role of schools for mental health promotion and prevention, but little data exist on what aspects of schools influence mental health in pupils. This study explored school-level influences on the mental health of young people in a large school-based sample from the United Kingdom.

Method: Baseline data from a large cluster randomized controlled trial collected between 2016 and 2018 from mainstream secondary schools selected to be representative in relation to their quality rating, size, deprivation, mixed or single-sex pupil population, and country were analyzed. Participants were pupils in their first or second year of secondary school. The study assessed whether school-level factors were associated with pupil mental health.

Results: The study included 26,885 pupils (response rate = 90%; age range, 11–14 years; 55% female) attending 85 schools in the United Kingdom. Schools accounted for 2.4% (95% CI: 2.0%–2.8%; $p < .0001$) of the variation in psychopathology, 1.6% (95% CI: 1.2%–2.1%; $p < .0001$) of depression, and 1.4% (95% CI: 1.0%–1.7%; $p < .0001$) of well-being. Schools in urban locations, with a higher percentage of free school meals and of White British, were associated with poorer pupil mental health. A more positive school climate was associated with better mental health.

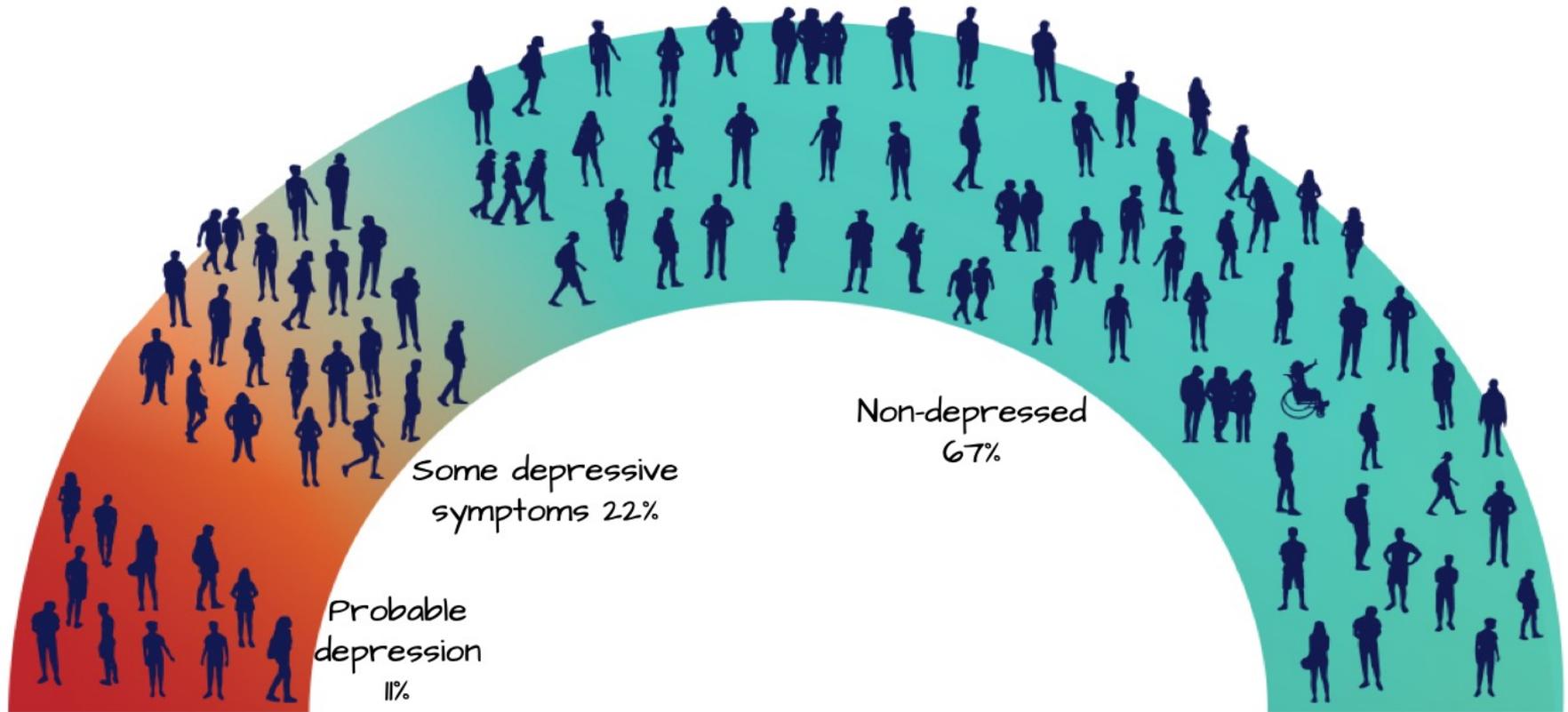
Conclusion: School-level variables, primarily related to contextual factors, characteristics of pupil population, and school climate, explain a small but significant amount of variability in mental health of young people. This information might be used to identify schools that are in need of more resources to support mental health of young people.

Clinical trial registration information: MYRIAD: My Resilience in Adolescence, a Study Examining the Effectiveness and Cost-Effectiveness of a Mindfulness Training Programme in Schools Compared With Normal School Provision; <https://www.isrctn.com/>; 86619085.

Key words: adolescents, mental health, school climate, schools, well-being

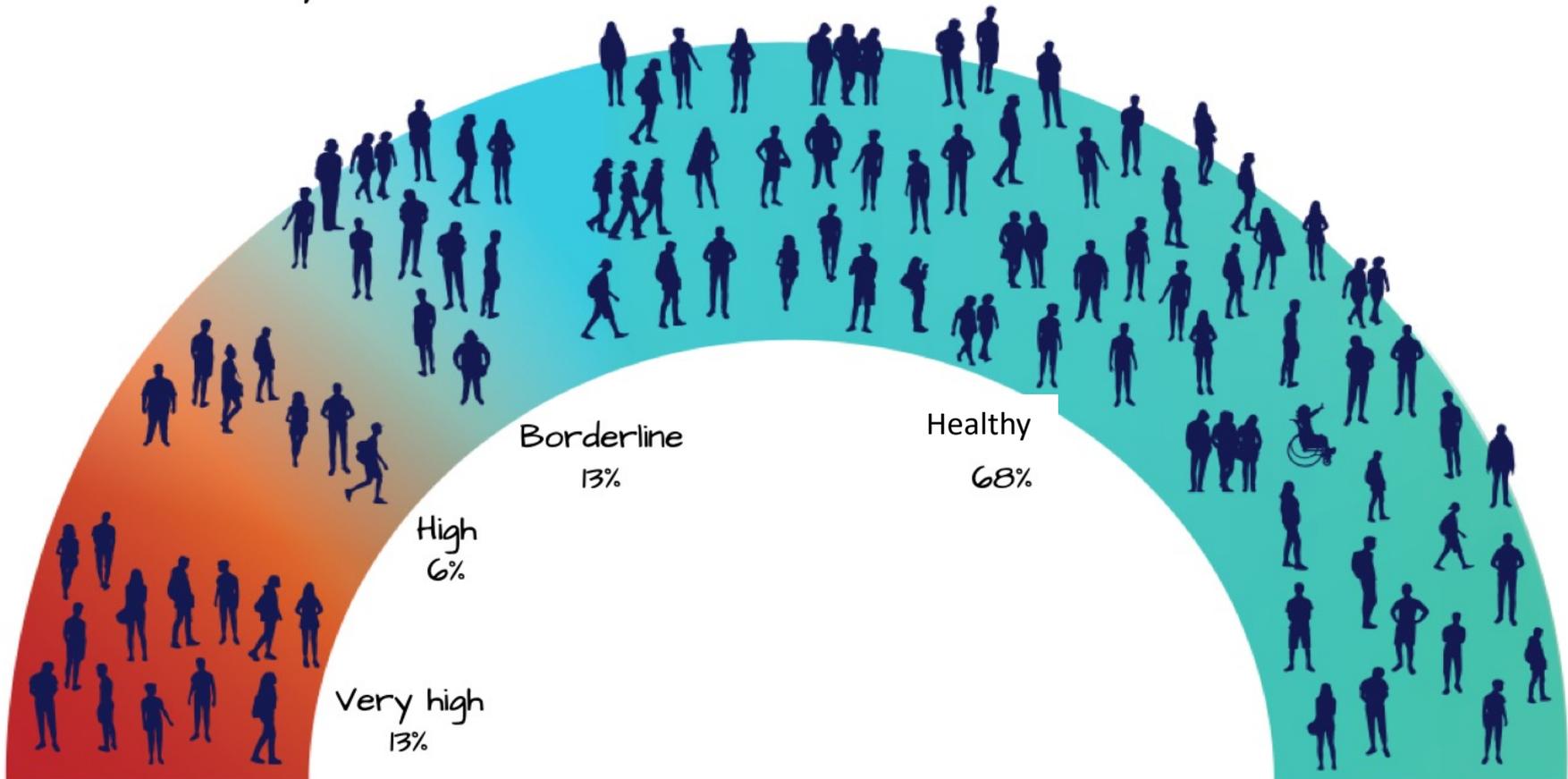
J Am Acad Child Adolesc Psychiatry 2021;60(12):1467–1478.  

MYRIAD Study - Distribution of Depression in 11-14 Years-Olds



Ford et al., 2021. Journal of the American Academy of Child & Adolescent Psychiatry DOI:<https://doi.org/10.1016/j.jaac.2021.02.016>

MYRIAD Study - Social-Emotional-Behavioural Problems in 11-14 Year-Olds



Ford et al., 2021. Journal of the American Academy of Child & Adolescent Psychiatry DOI:<https://doi.org/10.1016/j.jaac.2021.02.016>

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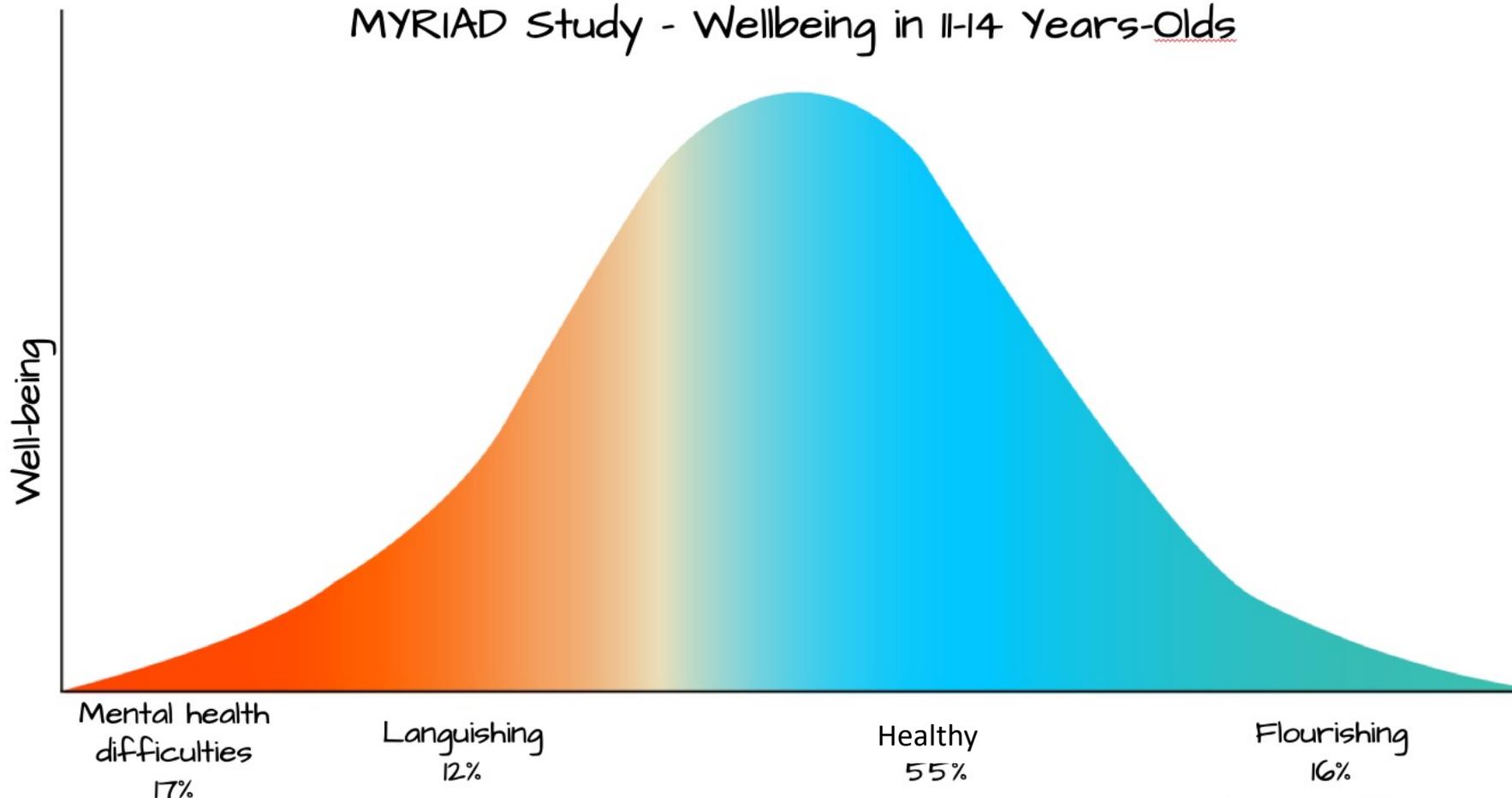
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MYRIAD Study - Wellbeing in 11-14 Years-Olds



Ford et al., 2021. Journal of the American Academy of Child & Adolescent Psychiatry DOI:<https://doi.org/10.1016/j.jaac.2021.02.016>

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Student Primary Outcomes at 1-year Follow-up

The schools-based mindfulness training programme did not help the early teenagers' mental health or well-being overall.

| Outcome | Intervention arm (I) | | Control arm (C) | | Unadjusted | Adjusted mean difference (I-C)/OR (I/C)* | | | |
|--|----------------------|-----------------|-----------------|-----------------|----------------------------|--|-------------|---------|-------|
| | N | Mean (SD)/N (%) | N | Mean (SD)/N (%) | Mean diff. (I-C)/OR (I/C)* | Estimate | 95% CI | P value | ICC† |
| Co-primary outcomes | | | | | | | | | |
| Depression (CES-D) | 3672 | 17.1 (11.9) | 3566 | 16.6 (11.9) | 0.4 | 0.1 | -0.6 to 0.7 | 0.86 | 0.018 |
| Social-emotional and behavioural functioning (SDQ)—self report | | | | | | | | | |
| Total difficulties | 3664 | 13.2 (6.8) | 3561 | 12.9 (6.8) | 0.2 | 0.2 | -0.2 to 0.5 | 0.33 | 0.019 |
| Well-being (WEMWBS) | 3678 | 47.6 (9.8) | 3566 | 47.6 (9.8) | 0.1 | 0.2 | -0.3 to 0.7 | 0.50 | 0.014 |

*Mean difference reported for quantitative outcomes and OR reported for binary outcomes.

†Intracluster (intraschool) correlation coefficients (ICCs) from crude (unadjusted) analyses.

BRIEF-2, Behaviour Rating Inventory of Executive Function, Second Edition; CAMM, Child and Adolescent Mindfulness Measure; CES-D, Center for Epidemiologic Studies for Depression Scale; RCADS, Revised Child Anxiety and Depression Scale; SCCS, School Climate and Connectedness Survey; SDQ, Strengths and Difficulties Questionnaire; WEMWBS, Warwick-Edinburgh Mental Well-Being Scale.

BMJ *Evid Based Ment Health* 2022;0:1–11. doi:10.1136/ebmental-2021-300396

Student Secondary Outcomes at 1-Year Follow-up

| Outcome | Intervention arm (I) | | Control arm (C) | | Unadjusted Mean diff. (I-C)/OR (I/C)* | Adjusted mean difference (I-C)/OR (I/C)* | | | | |
|---|----------------------|--------------------|-----------------|-----------------|---|---|-------------|---------|-------|--|
| | N | Mean (SD)/N (%) | N | Mean (SD)/N (%) | | Estimate | 95% CI | P value | ICC† | |
| Secondary outcomes | | | | | | | | | | |
| Social-emotional and behavioural functioning (SDQ)—self report | | | | | | | | | | |
| Emotional symptoms | 3664 | 4.0 (2.7) | 3562 | 3.8 (2.7) | 0.1 | 0.1 | -0.1 to 0.2 | 0.25 | 0.019 | |
| Conduct problems | 3664 | 2.4 (2.0) | 3562 | 2.5 (2.0) | -0.04 | -0.1 | -0.2 to 0.1 | 0.30 | 0.014 | |
| Hyperactivity/inattention | 3664 | 4.6 (2.6) | 3562 | 4.5 (2.5) | 0.2 | 0.2 | 0.04 to 0.3 | 0.01 | 0.015 | |
| Peer relationship problems | 3664 | 2.2 (1.9) | 3561 | 2.2 (1.9) | -0.01 | -0.01 | -0.1 to 0.1 | 0.78 | 0.016 | |
| Prosocial behaviour | 3664 | 7.4 (2.0) | 3562 | 7.4 (2.0) | 0.03 | -0.01 | -0.1 to 0.1 | 0.81 | 0.025 | |
| Executive processing (BRIEF-2)— self-report | 3288 | 84.3 (22.7) | 3329 | 83.6 (22.4) | 0.5 | 0.2 | -1.4 to 1.7 | 0.84 | 0.019 | |
| Executive processing (BRIEF-2)— teacher report | 2489 | 77.8 (22.8) | 1990 | 78.7 (24.3) | -0.3 | 0.02 | -2.8 to 2.9 | 0.99 | 0.063 | |
| Drug use—self-report | 3401 | 587 (17.3) | 3429 | 635 (18.5) | 0.9 | 0.9 | 0.8 to 1.1 | 0.38 | 0.016 | |
| Alcohol use—self-report | 3436 | 1703 (49.6) | 3451 | 1729 (50.1) | 1.0 | 1.0 | 0.8 to 1.3 | 0.77 | 0.078 | |
| Anxiety (RCADS)—self-report | | | | | | | | | | |
| Total score | 3504 | 30.0 (21.5) | 3483 | 28.8 (21.6) | 1.0 | 0.4 | -1.0 to 1.9 | 0.56 | 0.026 | |
| Social phobia | 3510 | 10.6 (6.9) | 3488 | 10.3 (6.8) | 0.2 | -0.01 | -0.4 to 0.4 | 0.96 | 0.033 | |
| Panic disorder | 3504 | 6.2 (6.1) | 3485 | 5.8 (6.1) | 0.4 | 0.2 | -0.2 to 0.6 | 0.30 | 0.022 | |
| Separation anxiety | 3508 | 3.2 (3.5) | 3488 | 3.1 (3.6) | 0.2 | 0.1 | -0.1 to 0.3 | 0.45 | 0.016 | |
| Generalised anxiety | 3512 | 5.9 (4.4) | 3490 | 5.7 (4.4) | 0.1 | 0.03 | -0.3 to 0.3 | 0.86 | 0.025 | |
| Obsessive-compulsive | 3512 | 4.1 (3.7) | 3489 | 3.9 (3.8) | 0.2 | 0.1 | -0.1 to 0.4 | 0.39 | 0.017 | |
| Social-emotional and behavioural functioning (SDQ)—teacher-report | | | | | | | | | | |
| Total difficulties | 2496 | 5.3 (5.7) | 1981 | 5.1 (5.8) | 0.5 | 0.6 | -0.2 to 1.3 | 0.14 | 0.065 | |
| Emotional symptoms | 2496 | 1.1 (1.9) | 1981 | 1.0 (1.8) | 0.3 | 0.3 | 0.1 to 0.5 | 0.01 | 0.053 | |
| Conduct problems | 2496 | 0.7 (1.5) | 1981 | 0.8 (1.5) | 0.05 | 0.1 | -0.1 to 0.2 | 0.48 | 0.035 | |
| Hyperactivity/inattention | 2496 | 2.2 (2.6) | 1981 | 2.2 (2.6) | 0.1 | 0.1 | -0.2 to 0.4 | 0.59 | 0.049 | |
| Peer relationship problems | 2496 | 1.2 (1.7) | 1981 | 1.2 (1.7) | 0.1 | 0.1 | -0.1 to 0.3 | 0.31 | 0.046 | |
| Prosocial behaviour | 2496 | 7.6 (2.5) | 1981 | 7.5 (2.6) | 0.1 | 0.1 | -0.3 to 0.4 | 0.76 | 0.086 | |
| Self-harm—self-report | 3364 | 389 (11.6) | 3234 | 385 (11.9) | 1.0 | 0.9 | 0.8 to 1.1 | 0.53 | 0.012 | |
| Suicide ideation—self-report | 3224 | 779 (24.2) | 3098 | 709 (22.9) | 1.1 | 1.1 | 0.9 to 1.2 | 0.45 | 0.013 | |
| Mindfulness skills (CAMM)—self- report | 3625 | 26.4 (8.5) | 3546 | 26.7 (8.7) | -0.3 | -0.1 | -0.6 to 0.5 | 0.78 | 0.019 | |

* Mean difference reported for quantitative outcomes and OR reported for binary outcomes.

† Intracluster (intraschool) correlation coefficients (ICCs) from crude (unadjusted) analyses.

BRIEF-2, Behaviour Rating Inventory of Executive Function, Second Edition; CAMM, Child and Adolescent Mindfulness Measure; CES-D, Center for Epidemiologic Studies for Depression Scale; RCADS, Revised Child Anxiety and Depression Scale; SCCS, School Climate and Connectedness Survey; SDQ, Strengths and Difficulties Questionnaire; WEMWBS, Warwick-Edinburgh Mental Well-Being Scale.

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Mean costs in UK pounds sterling (£) per student and health-related quality-of-life outcomes at 1 year follow-up

Table 4 Mean costs in UK pounds sterling (£) per student and health-related quality-of-life outcomes at 1 year follow-up

| | Intervention arm (I) | | Control arm (C) | | Unadjusted mean difference (I-C) | Adjusted mean difference (I-C) | | | |
|---|----------------------|---------------------|-----------------|---------------------|----------------------------------|--------------------------------|-------------------|---------|--|
| | N | Mean (SD) | N | Mean (SD) | | Estimate | 95% CI | P value | |
| Costs (£) | | | | | | | | | |
| Preintervention | 4080 | 360.28 (1,242.25) | 3995 | 378.90 (1,444.81) | -18.62 | -18.81 | -84.96 to 47.33 | 0.57 | |
| Intervention | 3424 | 70.73 (21.66) | 3370 | 0.00 (0.00) | 70.73 | 71.61 | 64.84 to 78.38 | <0.0001 | |
| Hospital | 3424 | 601.55 (1,569.74) | 3370 | 636.51 (1,660.74) | -35.73 | -36.70 | -120.64 to 47.24 | 0.39 | |
| Community health and social care | 3424 | 377.92 (1,014.23) | 3370 | 636.51 (1,660.74) | -6.14 | -21.97 | -73.21 to 29.27 | 0.40 | |
| Medication | 3424 | 17.18 (76.98) | 3370 | 18.81 (83.44) | -2.74 | -2.08 | -6.94 to 2.78 | 0.40 | |
| Accommodation | 3424 | 23.54 (458.70) | 3370 | 18.03 (426.27) | 5.51 | 5.30 | -14.96 to 25.57 | 0.61 | |
| Teaching support | 3424 | 242.59 (810.92) | 3370 | 232.54 (755.87) | 3.72 | -6.33 | -53.35 to 40.69 | 0.79 | |
| Total | 3424 | 1,333.57 (2,389.42) | 3370 | 1,290.79 (1,379.13) | 34.90 | 6.84 | -128.04 to 141.72 | 0.92 | |
| Health-related quality of life (CHU9D) | | | | | | | | | |
| Utility score preintervention | 4029 | 0.838 (0.118) | 3953 | 0.837 (0.116) | | | | | |
| Utility score postintervention | 3736 | 0.825 (0.127) | 3779 | 0.828 (0.124) | | | | | |
| Utility score at 1 year follow-up | 3651 | 0.824 (0.129) | 3551 | 0.823 (0.129) | | | | | |
| Total QALYs | 3313 | 0.871 (0.130) | 3287 | 0.847 (0.131) | 0.017 | 0.012 | -0.015 to 0.038 | 0.39 | |

CHU9D, Child Health Utility 9D; QALY, quality-adjusted life year.

Teacher and School Climate Outcomes

The schools-based mindfulness training programme did reduce teachers' burn out and improve the school climate.



Burn out –

- Emotional exhaustion
- Depersonalization
- Personal accomplishment

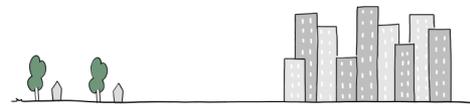


School climate–

- Views of leadership, teaching/learning, relationships, connectedness, respect, social/emotional/physical safety, discipline, and facilities.”

BMJ *Evid Based Ment Health* 2022;**0**:1–10. doi:10.1136/ebmental-2022-300424

SBMT – What Works for Whom?



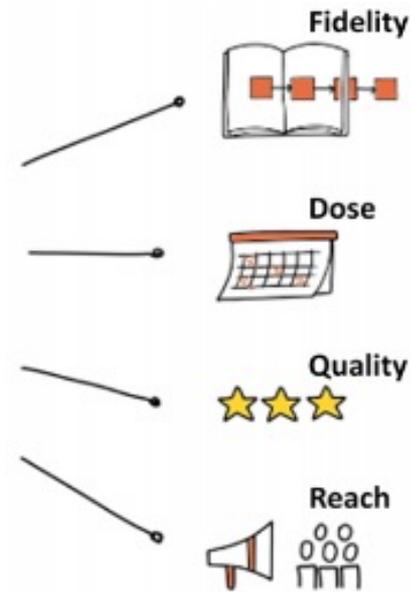
Wider (macro) context

School (meso) context – climate,
SEL provision



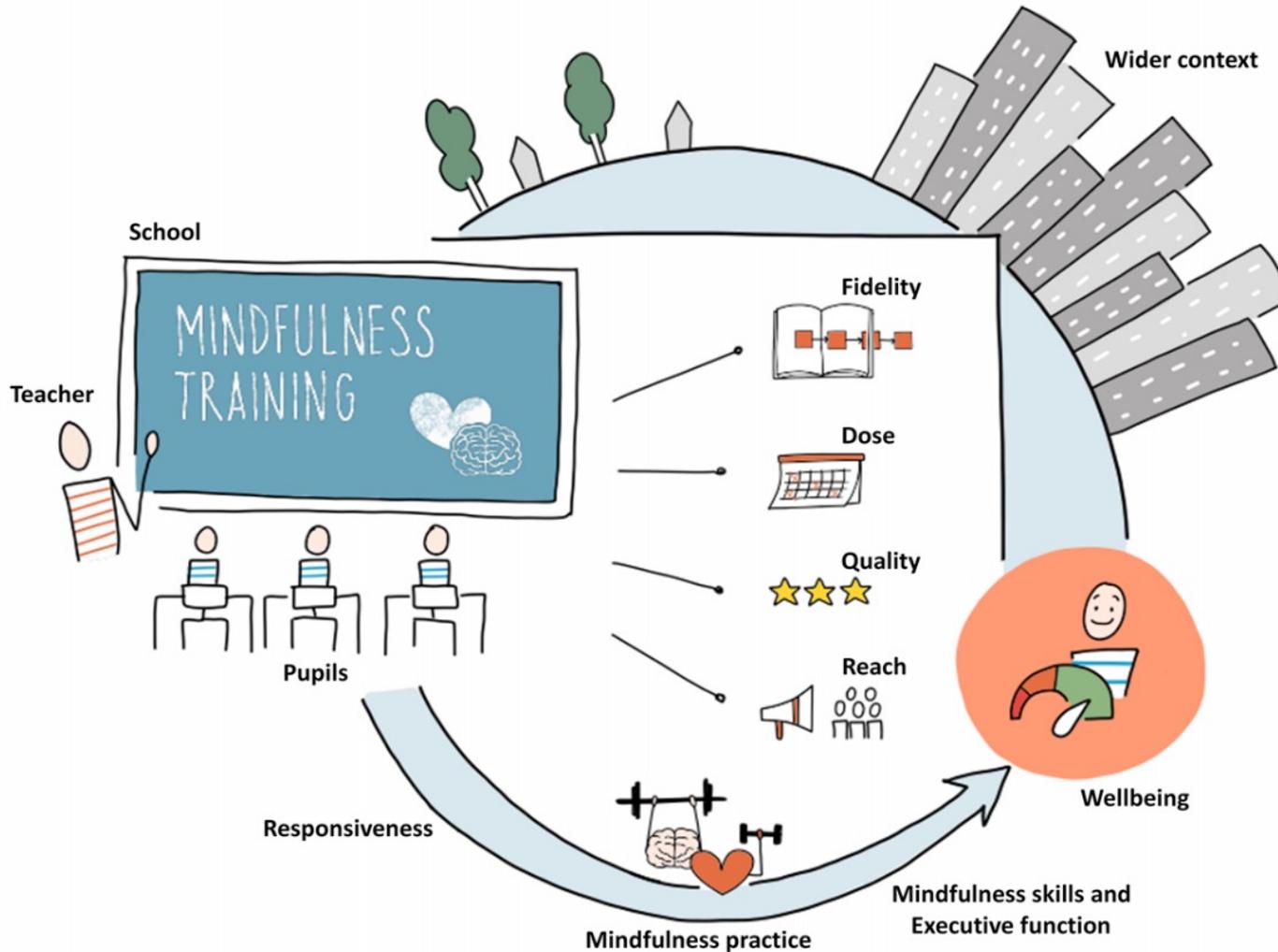
Teacher

Students



Outcomes

SBMT – Mechanisms of Action?



BMJ *Evid Based Ment Health* 2022;0:1–8. doi:10.1136/ebmental-2022-300439

Mechanisms of Action

Main Trial Mindfulness Skills & Executive Function

Table 3 Path estimates and IEs of trial status through mindfulness skills or executive function on the primary outcomes of risk for depression, social-emotional-behavioural functioning, and well-being

| Outcome/mediator | N | A (SE) | P | R ² (a) | B (SE) | P | R ² (b) | c' (SE) | P | IE | MC 95% CI | CFI | RMSEA |
|--|------|--------------|--------|--------------------|--------------|--------|--------------------|-------------|-------|--------|------------------|-------|-------|
| Risk of depression | | | | | | | | | | | | | |
| Mindfulness skills | 7865 | 0.02 (0.01) | 0.050 | 0.001 | -0.28 (0.02) | <0.001 | 0.23 | 0.06 (0.32) | 0.844 | -0.01 | -0.010 to -0.001 | 0.971 | 0.029 |
| Executive function | 7683 | -0.02 (0.02) | 0.388 | 0.000 | 0.13 (0.01) | <0.001 | 0.23 | 0.25 (0.33) | 0.440 | -0.003 | -0.008 to 0.003 | 0.994 | 0.014 |
| Social-emotional-behavioural function | | | | | | | | | | | | | |
| Mindfulness skills | 7755 | 0.03 (0.02) | 0.055 | 0.001 | -0.15 (0.01) | <0.001 | 0.31 | 0.09 (0.16) | 0.555 | -0.004 | -0.008 to 0.000 | 0.979 | 0.030 |
| Executive function | 7575 | -0.12 (0.03) | <0.001 | 0.002 | 0.09 (0.01) | <0.001 | 0.33 | 0.19 (0.15) | 0.226 | -0.01 | -0.015 to -0.006 | 0.997 | 0.012 |
| Well-being | | | | | | | | | | | | | |
| Mindfulness skills | 7835 | -0.01 (0.01) | 0.380 | 0.000 | 0.17 (0.02) | <0.001 | 0.19 | 0.16 (0.27) | 0.554 | -0.002 | -0.004 to 0.001 | 0.965 | 0.029 |
| Executive function | 7654 | 0.01 (0.02) | 0.818 | 0.000 | -0.09 (0.01) | <0.001 | 0.20 | 0.05 (0.28) | 0.871 | 0.000 | -0.004 to 0.003 | 0.991 | 0.015 |

Hinze & Montero-Marin et al, in preparation

MYRIAD

My resilience in adolescence



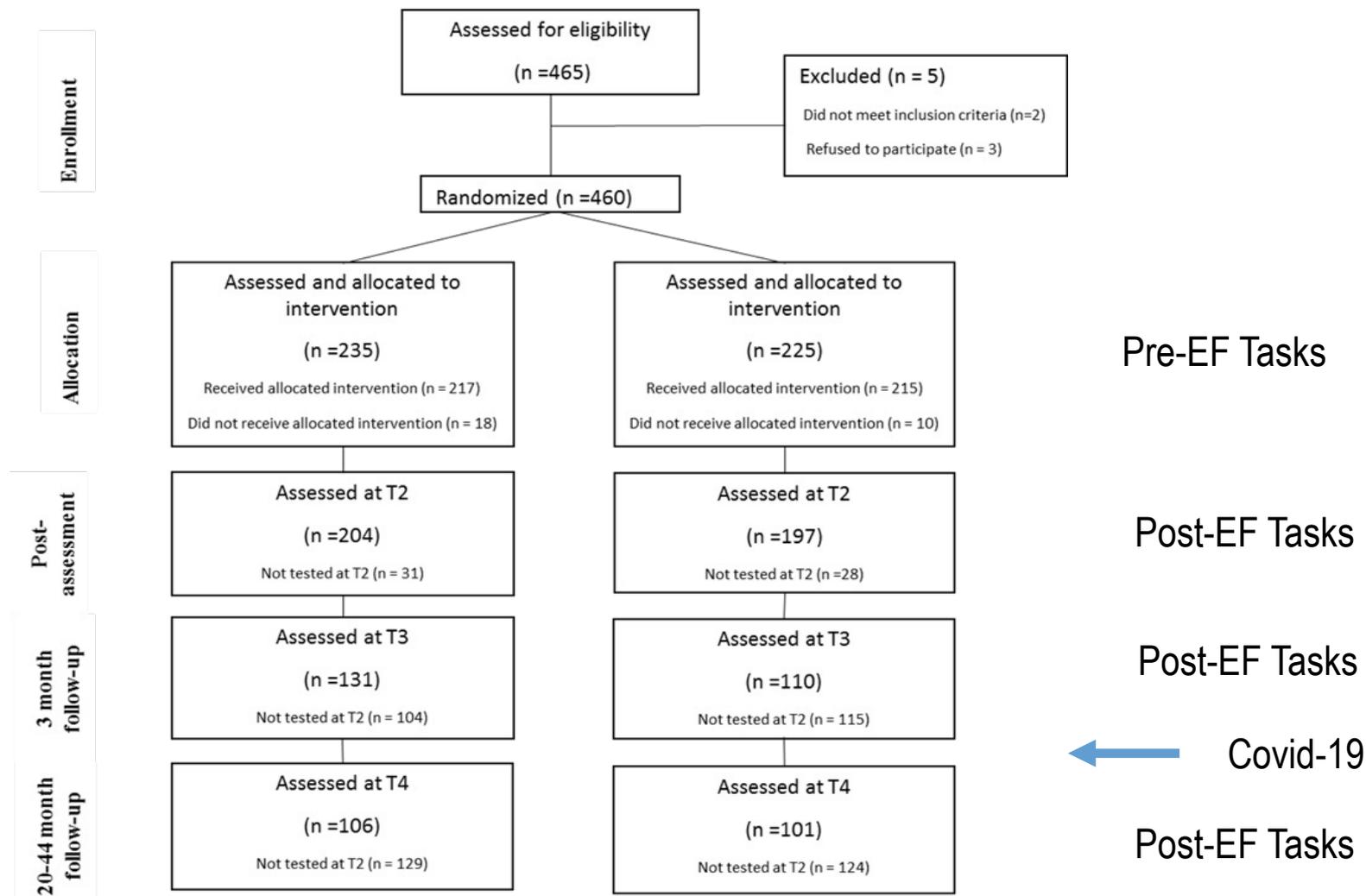
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EXETER



A Mechanisms Trial comparing Mindfulness Training with Student Success Skills



BMJ *Evid Based Ment Health* 2022;0:1–8. doi:10.1136/ebmental-2022-300439

MYRIAD

My resilience in adolescence



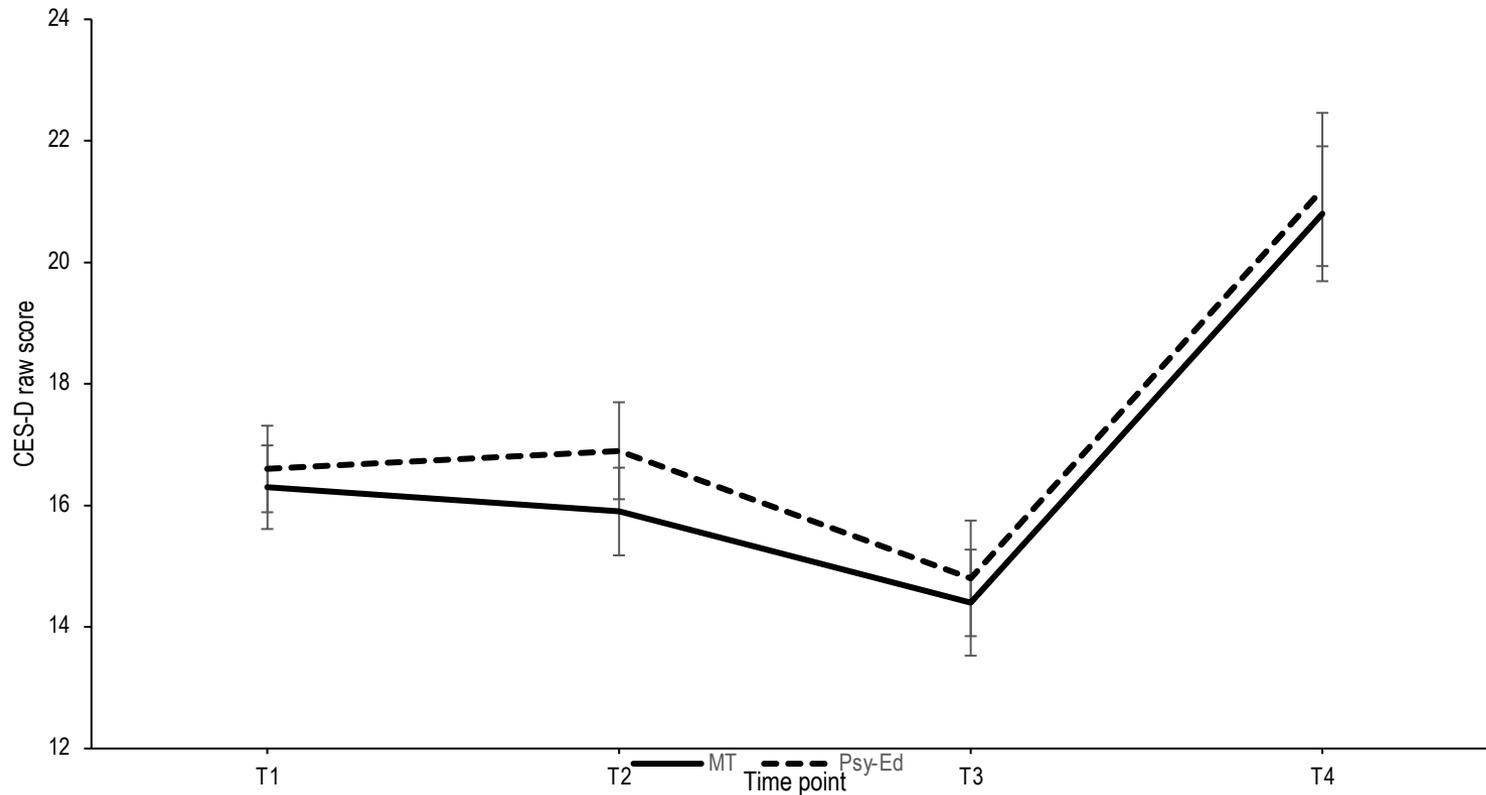
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Mental Health Outcomes



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MYRIAD

My resilience in adolescence



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EXETER





MYRIAD

My resilience in adolescence



What problem were we trying to solve?
What do we know already?
What did we do?
What did we find?
Where to next?

One size doesn't fit all. Is universal mindfulness training, in this form indicated?

Future research should explore different ways for young people to learn these skills. Perhaps young people might learn skills best through what they like and are already doing: friendship, sport, music, gaming ...

Willem Kuyken

Co-Principal Investigator

Ritblat Professor, University of Oxford



It is likely that if interventions are co-designed with young people, they will be more accessible, engaging and effective.

We need to rethink these programmes and develop them with young people so that they are relevant, engaging and useful.



There is no magic bullet, interventions focused on ...

Wider context

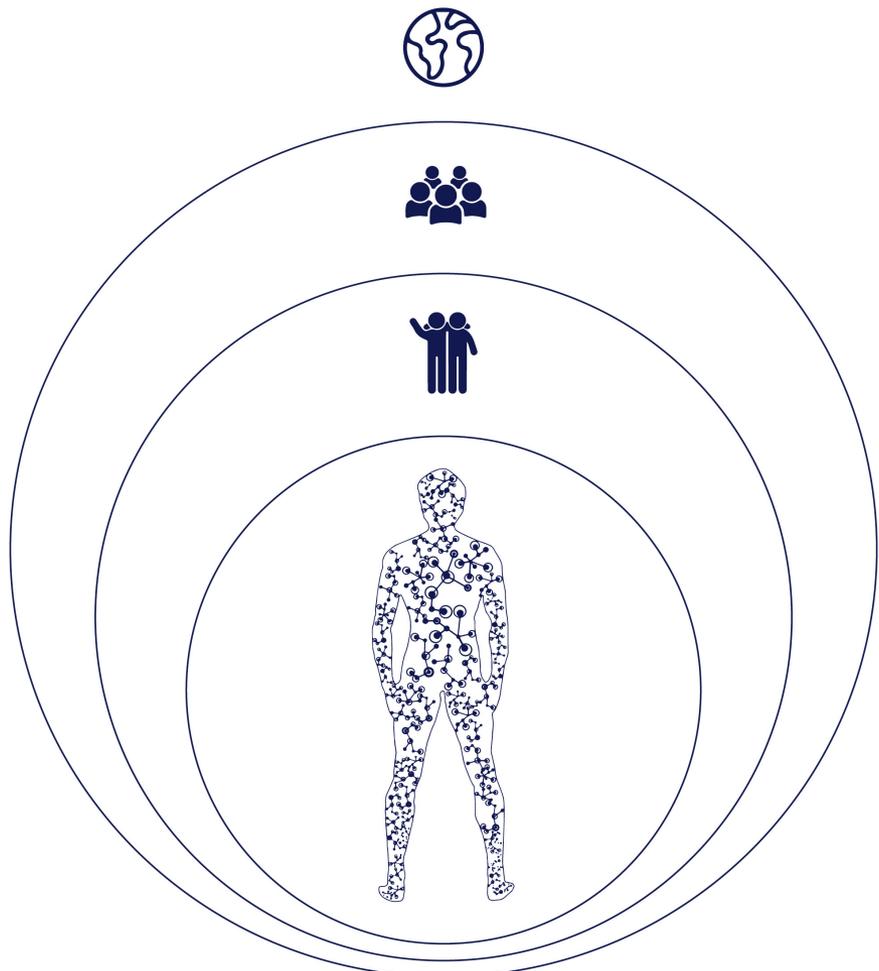
e.g.,
Environment
Access to opportunity

Meso context

e.g.,
Space and place
People
Culture
Technology

Individual level

e.g.,
Values, strengths, goals
individual differences
Mental health status
Motivation



Patel (2017) <https://doi.org/10.1371/journal.pmed.1002257>;
Patel et al. (2018) [https://doi.org/10.1016/s0140-6736\(18\)31612-x](https://doi.org/10.1016/s0140-6736(18)31612-x)

“There are no free lunches in behaviour change.”
Nick Allen,
Ann Swindells Professor, University of Oregon
Member Scientific Advisory Board

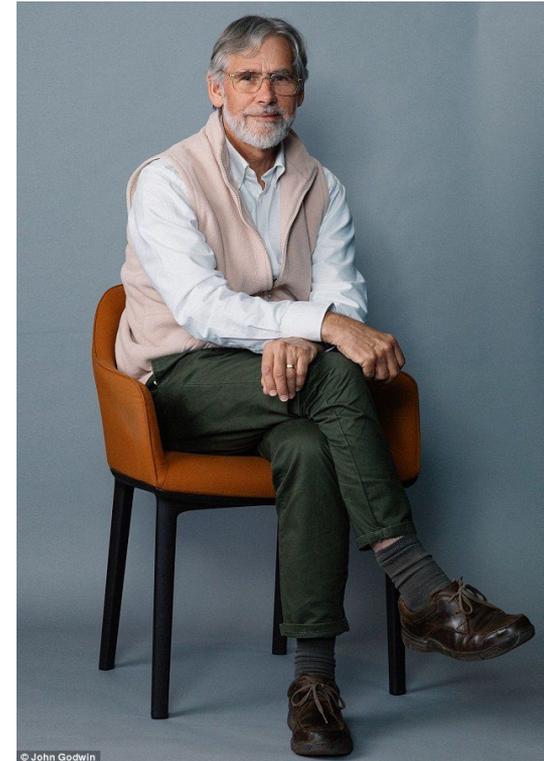


“The findings from MYRIAD show that the idea of mindfulness doesn’t help – it’s the practice that matters. If today’s young people are to be enthused enough to practice mindfulness, then updating training to suit different needs and giving them a say in the approach they prefer are the vital next steps.”

Mark Williams

Co-Principal Investigator

Emeritus Professor of Clinical Psychology,
University of Oxford



Our work adds to the evidence that translating mental health treatments into classroom curricula is difficult and that teachers may not be best placed to deliver them without considerable training and support – another model would be for mindfulness practitioners to deliver to those at risk of poor mental health and expressing an interest in attending.

Tamsin Ford,
Co-Investigator
Professor of Child and Adolescent Psychiatry,
University of Cambridge



Mechanisms of Risk and Resilience in Adolescence



University of Cambridge Research Team

Darren Dunning, Jenna Parker, Kirsty Griffiths, Marc Bennett, Marie Vainre and Rachel Knight.

University College London Research Team

Ashok Sakhardande, Blanca Piera Pi-Sunyer, Cait Griffin, Jovita Leung, Lucy Foulkes and Saz Ahmed.

MYRIAD

My resilience in adolescence



The effect of puberty on rumination and mental health in girls

Time 1: Oct 2019 – Feb 2020: N=183 girls aged 9-15 years

Time 2: Oct 2020 – March 2021: N=124 girls aged 10-16 years

Pubertal Development Scale (PDS)

Is there a relationship between puberty stage and mental health?

Is there a relationship between puberty stage and cognitive or social-affective processing?

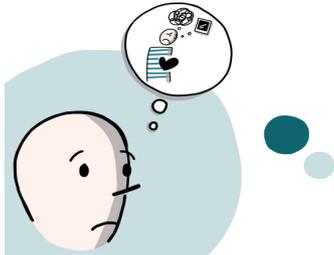
Is the relationship between puberty stage and mental health measures mediated by cognitive or social-affective processing?

REVIEW ARTICLE

Open Access

Decentering as a core component in the psychological treatment and prevention of youth anxiety and depression: a narrative review and insight report

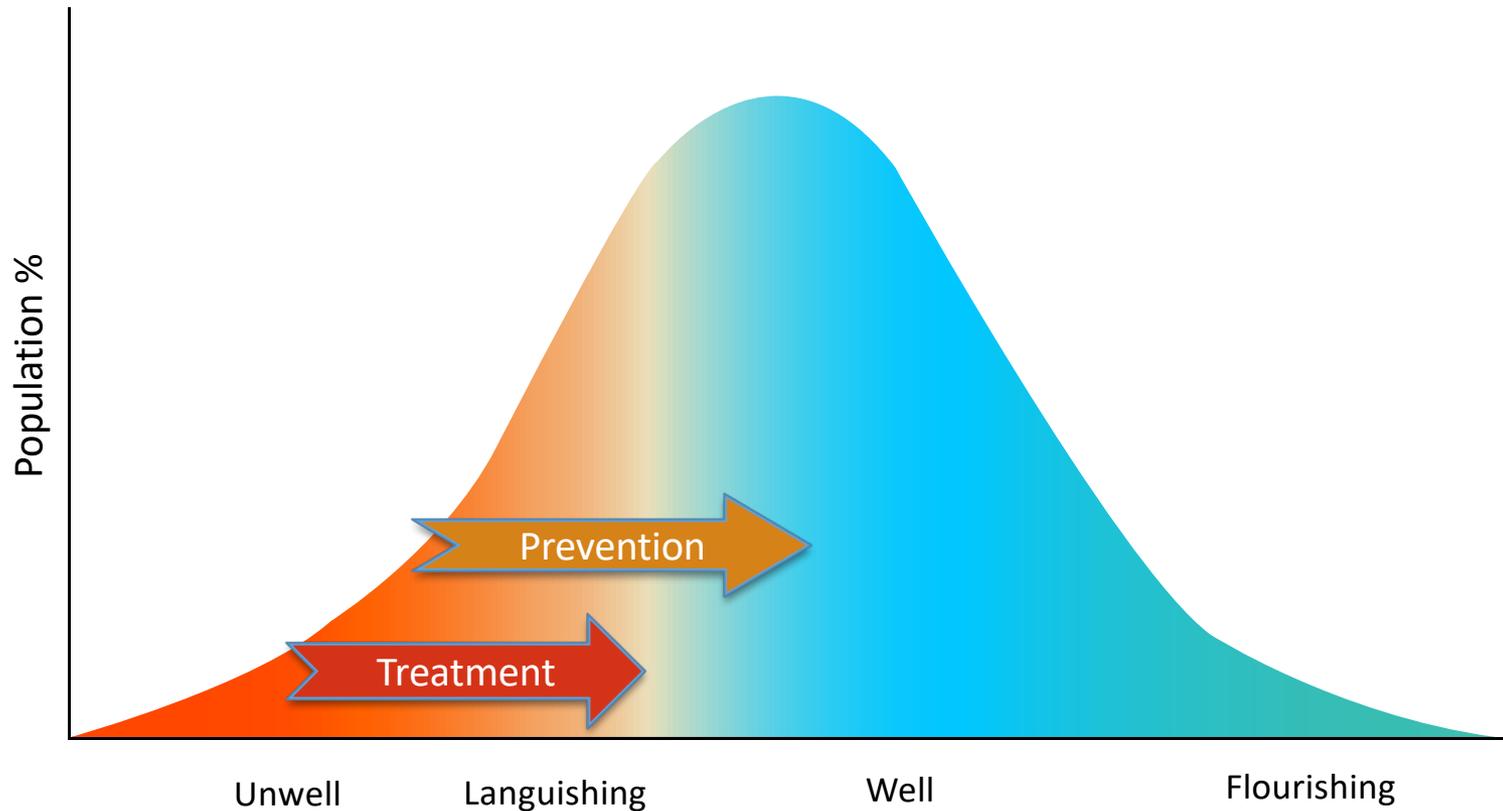
Marc P. Bennett¹, Rachel Knight¹, Shivam Patel¹, Tierney So¹, Darren Dunning¹, Thorsten Barnhofer², Patrick Smith³, Willem Kuyken⁴, Tamsin Ford⁵ and Tim Dalgleish^{1,6}



Decentering Training Programme

A five-week skills training programme aimed at improving decentering and psychological wellbeing.

From Treatment, to Prevention, to ...



Rose, G. (1992) *Strategy of preventative medicine*.

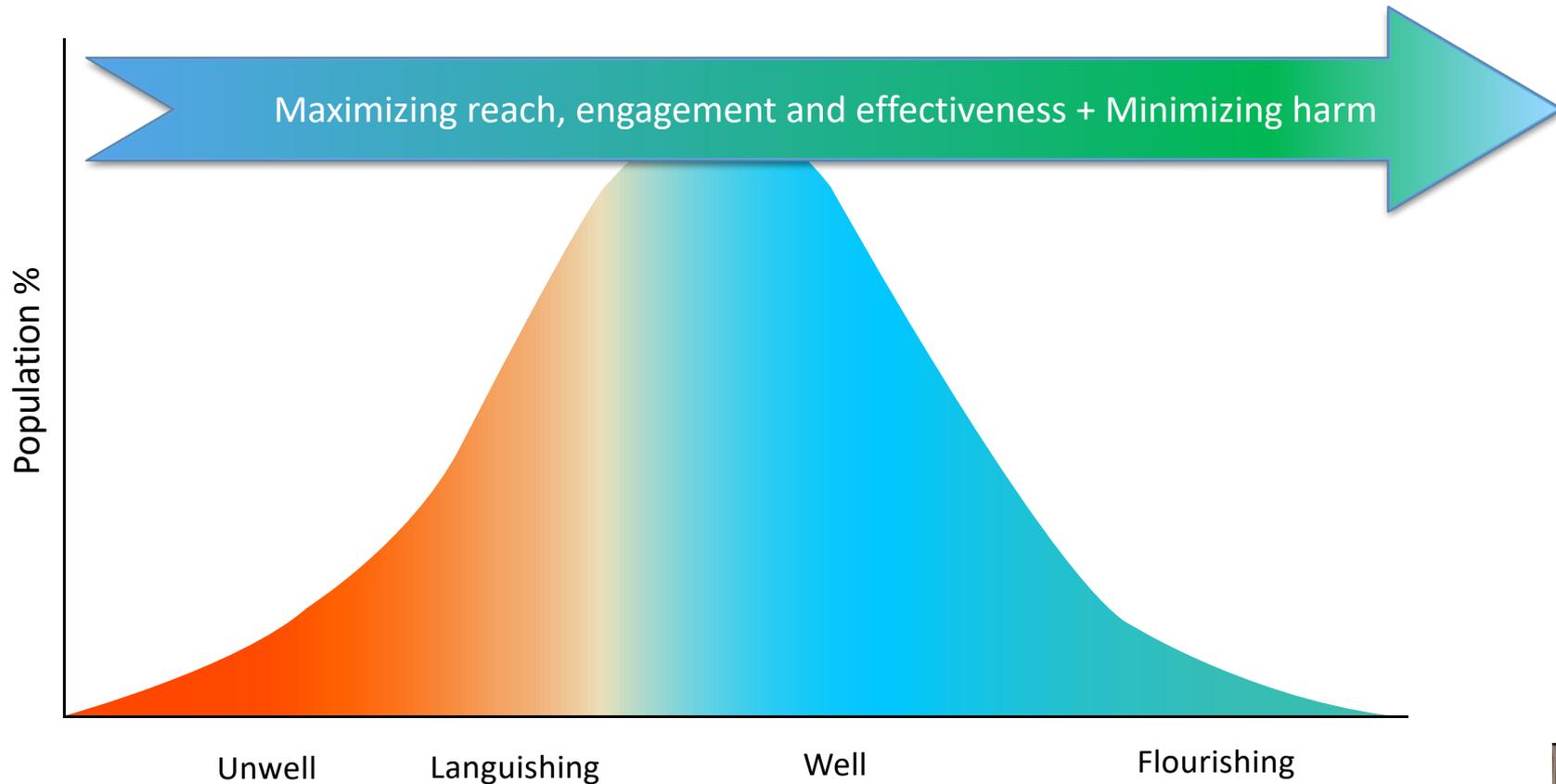


MYRIAD

My resilience in adolescence



To Mental Health Promotion in Adults



Rose, G. (1992) *Strategy of preventative medicine*.



MYRIAD

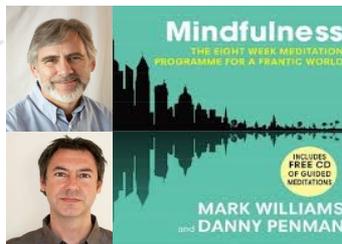
My resilience in adolescence

Maximizing Reach, Accessibility & Effectiveness

↑ Reach and accessibility



↑ Deepening and extending learning



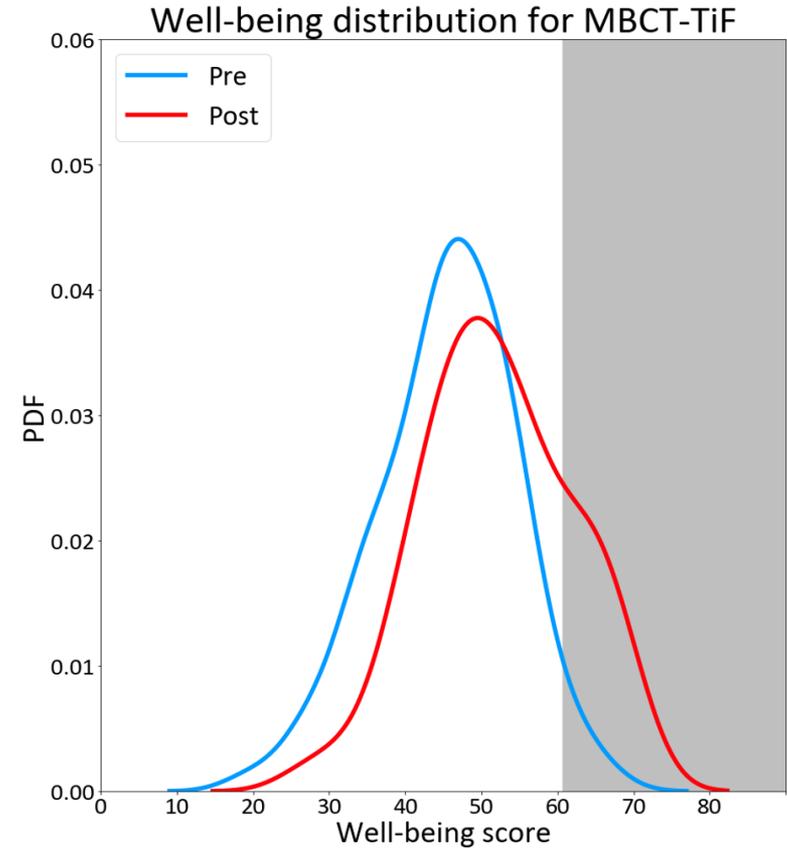
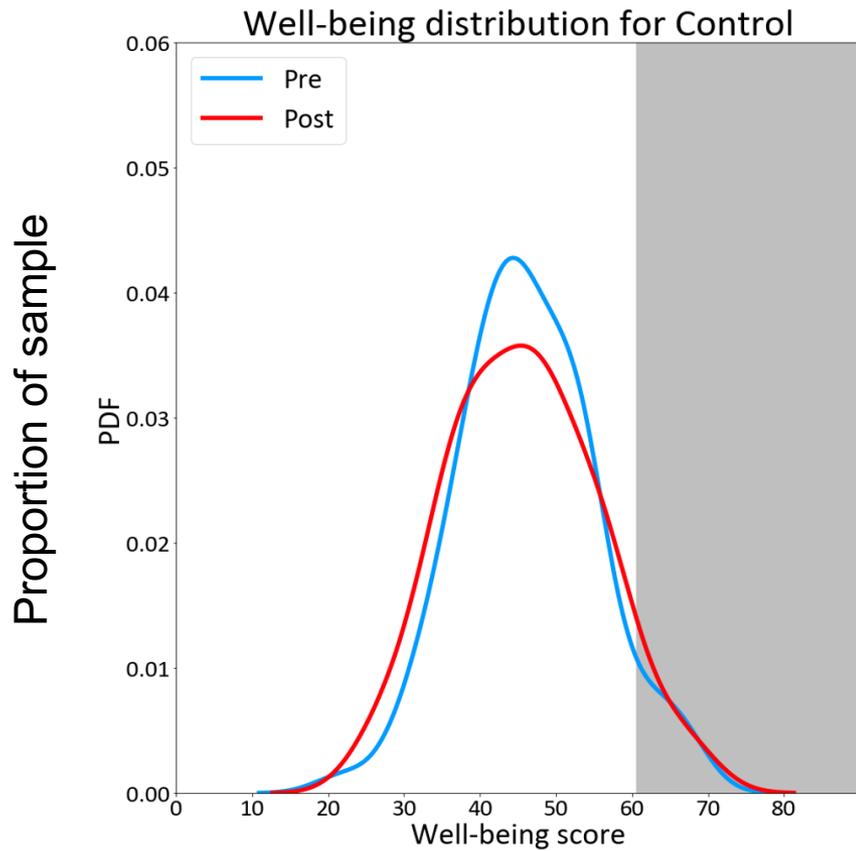
Mindfulness:
Taking it Further





RCT of MBCT-TiF vs Wait-list Control in the Promotion of Well-being (N=164)

MBCT-TiF > TAU $d=0.89$



MYRIAD Public Engagement



MYRIAD

My resilience in adolescence



The MYRIAD Project

What We Did

Who We Are

Publications

Open Access

Engagement Activities

Engagement Activities

The MYRIAD Public Engagement Programme

Educational Resources

The Do-Nothing Campaign



YOUNG PEOPLE'S VIEWS
ON MENTAL HEALTH



<https://youtu.be/0N7d7gREE8Y?list=PL0EzufqICKFVmc9oDaHQwBbu-eOZOpmu>

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