

1 ***A protocol for a critical realist systematic synthesis of interventions to promote***
2 ***pupils' wellbeing by improving the school climate in Low- and Middle-Income***
3 ***Countries***

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NOTE: This preprint reports new research that has not been certified by peer review and should not be used to guide clinical practice.

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50 *pupils' wellbeing by improving the school climate in Low- and Middle-Income*
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52 **Abstract**

53 **Introduction**

54 The review described in this protocol will be the first critical realist review of the literature
55 reporting on the impact of interventions to promote pupils' wellbeing by improving the school
56 climate in Low- and Middle-Income Countries. The review is being carried out to inform the
57 programme theory for a critical realist evaluation of a whole school mindfulness intervention
58 in Ethiopia and Rwanda to improve pupils' mental wellbeing. Our initial programme theory
59 hypothesises that pupils' (and teachers') responses to the mindfulness intervention as well
60 as changing the behaviour and attitudes of individual pupils and teachers, will change the
61 'school climate' in ways that have a positive impact on mental wellbeing. This literature
62 review will facilitate the identification of mechanisms for change working at the level of the
63 whole school climate, something which is only infrequently discussed in evaluations of
64 mindfulness interventions.

65
66 **Methods and analysis**

67 A critical realist review methodology will be used to provide a causal interdisciplinary
68 understanding of how school climate can promote the wellbeing of pupils. This will be done
69 through a systematic literature review and extrapolating context, agency, intervention,
70 mechanisms, and outcome configurations and synthesising these to provide a conceptual
71 understanding of the impact of interventions to improve school climate.

72
73 **Discussion**

74 The review findings will inform a critical realist evaluation of a mindfulness intervention in
75 schools that we will be carrying out. The findings from the review will enable us to focus
76 more precisely and transparently on what policymakers and other stakeholders need to
77 know about how school climate changes due to introducing mindfulness to the curriculum
78 and how this impacts pupils' wellbeing [and for which pupils]. We will publish the findings
79 from the review in academic and professional publications, policy briefs, workshops,
80 conferences, and social media.

81
82 **PROSPERO registration number: CRD42023417735**

83 Key Words

84 School climate; school environment; school culture; wellbeing; children and adolescents;
85 critical realism; complexity theory

86 Introduction

87 The review described in this protocol will be the first systematic critical realist review of the
88 literature reporting on the impact of the 'school climate' (defined here as schools' structural,
89 interpersonal relations and teaching practices, and cultural norms and values) on pupils'
90 wellbeing in Low- and Middle-Income Countries (LMICs). The review is being carried out to
91 inform the programme theory for a critical realist evaluation of a whole school-based
92 mindfulness intervention (SBMI) in Ethiopia and Rwanda on pupils' mental wellbeing (1,2).
93 Our initial programme theory hypothesises that pupils (and teachers) will be able to use the
94 psychological resources they gain through the mindfulness intervention to change the
95 'school climate' in ways that positively impact pupils' mental wellbeing.

96
97 Our review is novel. Existing literature on the impact of mindfulness interventions focuses on
98 individual psychological outcomes. It rarely considers the pathways to improved mental
99 wellbeing through changes in the social structural or cultural contexts due to changes in the
100 behaviour of pupils and teachers wrought by mindfulness interventions (3–5). This literature
101 review will yield a framework of existing theories as a guide to identifying and understanding
102 the underlying process (mechanisms) that shape the 'school climate' and identify those that
103 may be triggered by a whole school mindfulness intervention and promote pupils' mental
104 wellbeing.

105
106 Critical realists recognise that not every intervention will work for each person in the same
107 way or different contexts in the same way. While traditional reviews have been concerned
108 with descriptive outcomes and average effects, critical realists are more concerned with
109 exploring how interventions work, for whom and under what circumstances. The broad
110 purpose of the review is to move from empirical observation to develop a theorised

111 understanding of the impact of school climate on pupils' wellbeing in LMICs and identify
112 aspects of school climate that can be linked to mechanisms triggered by mindfulness
113 interventions. This will produce knowledge that enables us to make recommendations to
114 improve practice, that is, improve the school climate and deliver mindfulness interventions in
115 schools (6). The main purpose is to build a middle-range theory (7) that models the
116 underlying mechanisms influencing the school climate. We will use the critical realist
117 RRRIREI© (resolution, redescription, retroduction, retrodiction, elimination, identification,
118 correction) framework for explanatory interdisciplinary research (8,9). The findings will
119 enable us to refine the programme theory for research we are carrying out examining the
120 potential for school-based mindfulness interventions to promote the mental wellbeing of
121 children and adolescents in Rwanda and Ethiopia. The findings will also support
122 policymakers and others to implement policies to improve the school climate and promote
123 the wellbeing of children and adolescents in LMICs more generally by providing an
124 understanding of under what conditions and for which pupils' interventions make the school
125 climate more positive.

126 The quality of school life (the school climate) is determined by a combination of the
127 structural, interpersonal relations and teaching practices, and the cultural norms and values
128 of the school as influenced by the wider social ('laminated') system (Table 1) in which it is
129 embedded (10). It is crucial for promoting safer, more supportive and more civil schools (11).
130 School climate improvement measures make schools friendlier, pupils (and teachers) more
131 connected to the school and prevent dropout (11–14). Four sub-constructs of the school
132 climate have been identified in the literature that impacts pupils' wellbeing: safety (feeling
133 safe in school), relationships (e.g. school connectedness/engagement, social support,
134 leadership and pupils' perception of the school climate), teaching and learning (academic
135 environment) and the institutional environment (school connectedness) (11–14). The authors
136 argue that these four sub-constructs are interconnected, influencing each other and being
137 influenced by the broader context (laminated system) in which schools are located.

138
139 Schools contain both risk and protective factors for pupils' wellbeing. An extensive body of
140 evidence, mainly from research carried out in the global North, shows that the school climate
141 impacts pupils' and their teachers' wellbeing and that there is an association between a
142 positive school climate and wellbeing (11,12,14–29). A positive school climate influences

143 academic outcomes (11,22–24), reduces the rates of violence in schools (11,21,22,25,26),
144 supports skills development (21,27), promotes wellbeing and reduces the risk of mental
145 health disorders (11,12,21,28,29). Systematic reviews have found the strongest association
146 between pupils' psychological wellbeing, mental health and risk behaviours on the one hand
147 and the quality of their relationships with their fellow pupils and teachers on the other
148 (12,14,17,19,22). Bullying and harassment, particularly, are associated with poor wellbeing
149 and low educational achievement. A positive school climate also promotes teachers' well-
150 being and improves their relationship with pupils, which positively impacts pupils' wellbeing
151 (16).

152
153 While much of the research is non-experimental and cross-sectional, experimental and
154 longitudinal research has found that the school-level socio-educational environments at
155 baseline predict students' wellbeing at three years follow-ups. Student perceptions of the
156 socio-educational environment also predict their wellbeing (15,29). However, it should be
157 noted that there is possibly a publication bias as the findings from research on interventions
158 that have not led to improvements in the school climate are less likely to be published.
159 Nevertheless, the evidence is sufficient to indicate an established 'demi-regularity' that there
160 is, at least in some contexts and for some pupils, an association between an intervention
161 designed to make the school climate more positive and improving pupils' wellbeing. It is this
162 that needs to be explained (30).

163
164 The evidence base for a relationship between school climate and student wellbeing
165 outcomes in LMICs is more limited. A recent (end date of search January 2019) systematic
166 review of the association between school climate and socio-cultural, behavioural, and
167 academic outcomes in LMICs found 35 peer-reviewed articles that met their inclusion
168 criteria (20). All but two of the included studies reported a positive association between an
169 intervention to improve the school climate and positive outcomes, with similar associations
170 found as in research in high-income countries (HICs). More specifically, the findings from the
171 review suggest a relationship between a negative school climate and bullying and violence
172 and a positive school climate and academic achievement and wellbeing. Only seven studies
173 included a low-income country.

174
175 However, few studies address the question of how school-based climate interventions work.
176 Systematic reviews (and the studies included in the reviews) examine the empirical evidence
177 on the health, behavioural and attainment effects of school environments. Still, they do not
178 usually consider what theories might explain those changes or how they came about. One
179 systematic review of theories of how school-based climate interventions (SBCIs) work built a

180 comprehensive interdisciplinary theory of school effects drawing on 24 theories that partially
181 explain the pathway from SBCIs to impact. This enabled the authors to integrate upstream,
182 medical and downstream aspects of causal pathways (31) and test the interdisciplinary
183 theory they built in a randomised control trial (32). The integrated theoretical model takes
184 account of complexity and feedback loops and theorises that school climate influences
185 pupils at multiple interacting levels: student-school commitment, student peer-commitment,
186 student cognition and student behaviours. Imperfect measures constrained the trial. A low
187 teacher response rate, the positive impact on pupils' health outcomes and positive views on
188 the changes in the school climate only became evident at the end of the trial. Nevertheless,
189 the findings suggest that observed positive changes in pupils' health, including mental health
190 were the outcome of modifying the school climate.

191 Aim and Objectives

192 This review will build on previous research on the relationship between school climate and
193 pupil wellbeing by:

- 194
195 1. Including all documents from LMICs that can help with answering our research
196 questions, including the grey literature, reports of reviews of research and
197 discussions of theories relevant to the impact of school climate on pupil's wellbeing;
- 198 2. Using a critical realist methodology to build a theory of what makes SBCIs work,
199 how, where, with whom, and to what extent, focusing on LMICs.
- 200 3. Identifying context and intervention mechanisms to inform the programme theory of
201 change for SBMI designed to promote the mental wellbeing of children and
202 adolescents in Rwanda and Ethiopia.

203

204 The aims of the review are to:

- 205 (a) describe plausible explanations for the effectiveness of SBCIs designed to promote
206 pupils' wellbeing in LMICs;
- 207 (b) create transferable theories that can inform programme design and implementation in
208 different settings;
- 209 (c) use the findings together with our findings from systematic reviews of mindfulness
210 interventions and theories explaining how SBMIs impact pupils' mental wellbeing to
211 refine our initial programme theory of how mindfulness interventions work to promote
212 pupils' mental wellbeing.

213

214 To achieve the aims, the objectives are to identify:

- 215 • theories about how SBCIs work in schools;
- 216 • the contexts and mechanisms that may facilitate or hinder implementation;

- 217 • how pupils and teachers respond to SBCIs (agency);
- 218 • how school contexts (social, structural, and cultural) influence the agency of pupils in
- 219 responding to SBCIs and trigger mechanisms that change the context and lead to
- 220 positive outcomes;
- 221 • how the school system changes (roles and relationships), including pupil-teacher
- 222 relations and pupil-pupil-relations;
- 223 • how school attitudes and values change (culture), and;
- 224 • the outcomes resulting from the interventions.

225 Methodology

226

227 Introduction

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229 To achieve our aims and objectives, we will conduct a systematic critical realist synthesis
230 review to identify how SBCIs promote pupils' wellbeing. A critical realist review is
231 explanatory; it seeks to explain how interventions work and generate different outcomes in
232 different contexts (33,34). We will explore how SBCIs are supported or inhibited by
233 contextual mechanisms in schools, how pupils and teachers respond to them and the
234 outcomes that result from the interaction between the intervention and contextual
235 mechanisms and the response of pupils and teachers. In doing so, we will identify the 'demi-
236 regularities', the contexts over time and space in which SBCIs enable pupils' agency to
237 trigger mechanisms that promote their wellbeing and improve their attainment (30). Because
238 critical realism affirms the reality of objects, agents, and mechanisms, which cannot be
239 viewed directly but only deduced from their effects, it seeks to identify, by retrodiction and
240 retrodiction, and judgemental rationalism, the middle-range interdisciplinary theory(s) (Table
241 1) that most comprehensively explain how SBCIs work. Such theories are always open to
242 refinement in the light of new evidence.

243

244 There is no agreed standard or guide for critical realist reviews. However, a critical realist
245 meta-theory underpins them, and they draw on some elements of the realist review
246 methodology of Roy Pawson (6). We have adapted the standard for realist reviews (35,36)
247 and taken into account recommendations for traditional systematic reviews (37–39).
248 PRISMA offers transparency, validity, replicability, and updateability (Additional Material 1).

249

250 Table 1 Critical Realist Terminology

Depth Ontology	The surface-level events and experiences we perceive (the empirical) are manifestations of underlying causal powers,
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	structures, and mechanisms. These deeper aspects are not directly observable but have a causal influence on the observable phenomena.
Complexity	The social world is dynamic, non-linear, and has emergent properties giving rise to the diverse and multifaceted phenomena we observe.
Demi-regularities	Demi-regularities capture the idea that there are patterns in the world that tend to occur under certain conditions or contexts, but these regularities are not fixed or invariant and are sensitive to contextual factors.
Judgemental Rationalism	Making claims to knowledge and truth by determining the theory with the greatest explanatory power.
Laminated System	The social world comprises distinct layers or dimensions from the physical, chemical and biological to the global system. These layers are interconnected and mutually constitutive, meaning that changes or processes at one level can have consequences for other levels. Laminated systems have emergent properties; that is, the complex interactions and relationships between the layers of a laminated system give rise to new mechanisms that cannot be reduced to their component parts.
Mechanisms	The underlying causal powers or processes that generate and shape observable phenomena in the social and natural world. They are not directly observable but are inferred from the patterns and regularities observed in the empirical data. Contextual mechanisms are inherent to the system and arise from the complex interactions and relationships within the system. Intervention mechanisms are interventions that can disrupt or modify a system.
Middle Range Theories	A middle-range theory bridges the gap between abstract, general theories and specific, concrete empirical observations. Middle-range theories typically propose causal relationships or mechanisms that explain how certain variables or factors interact to produce specific outcomes or behaviours.
Retrodiction	Using theoretical concepts and causal mechanisms to develop explanatory frameworks.
Retroduction	A form of inference that aims to uncover the underlying causal mechanisms or structures that give rise to observed phenomena. It goes beyond observing regular patterns or correlations and seeks to identify the generative mechanisms that produce those patterns.

251

252 [A critical realist research paradigm](#)

253 Our methodology is informed by critical realist meta-theory. It has informed the development
 254 of methods for systematic reviews and impact evaluations that are designed to explain how
 255 and why interventions work in the ways they do (40–43). It also provides guidelines for
 256 inter/transdisciplinary research (9,44–46), including research on promoting wellbeing (9,47).

257 Wellbeing is a bio-psycho-social phenomenon, and the outcomes of SBCIs are likely due to
258 the complex interaction of biological, psychological, social-structural and cultural
259 mechanisms and require the development of middle-range theories that integrate theories
260 from these disciplines (47–50).

261

262 The main elements of critical realism are: a depth ontology, that society is real but is only
263 knowable through its effects; a relativist epistemology, that our understanding of the real is
264 always partial and open to refinement or refutation; rational judgment is used to determine
265 what explanations (social theories) are most plausible; that structure and agency are both
266 important; that people are shaped by the context in which they live but that they can change
267 it through their agency; that the social world is an open system and complex; and a
268 commitment to social justice, to improve the lives of people.

269

270 Critical realism has influenced a number of approaches to carrying out social and health
271 research, and our approach draws on Margaret Archer's practical morphogenic approach
272 (51,52). This methodology complements critical realism's social ontology (53). She argues
273 that every theory about the social involves understanding the relationship between structure,
274 agency, and culture. The context in which agents live shapes their beliefs, desires, and
275 opportunities and limits their agency – contextual conditioning. However, the interaction
276 between context and agency shapes and reshapes the context; agency can change the
277 context (morphogenesis) or reproduce it (morphostasis). An intervention designed to
278 improve the school climate gives pupils and teachers the resources to trigger mechanisms
279 that can lead to material and cultural change. Their responses to the intervention are
280 shaped, but not determined, by the context, and individuals generate outcomes through
281 actions and interactions. When actors trigger new mechanisms (material and/or cultural), the
282 context changes. However, pupils and teachers can resist, redefine, repudiate, suspend, or
283 circumvent engagement with the intervention.

284 **Figure 1: The Morphogenetic Cycle, CAIMO Configuration**

285

286 **Methods/Design**

287

288 **Step 1: establishing the scope of the work.**

289

290 The review will focus on SBCIs designed to promote the wellbeing of pupils in LMICs. We
291 will document differences between SBCIs underpinned by different theories, aims,
292 approaches and techniques and delivered differently for various lengths of time (54,55). The

293 review will also capture other individual differences and programme characteristics that can
294 affect programme reception by pupils and teachers and impact (56). We will only include
295 documents relevant to the relationship between pupils' academic achievement, behavioural,
296 cognitive, and mental wellbeing and outcomes. Nevertheless, outcomes will likely vary by
297 the precise nature of the SBCIs.

298

299 **Step 2: search for evidence**

300

301 **Search techniques**

302 A rigorous systematic Preferred Reporting Items for Systematic Reviews and Meta-Analysis
303 (PRISMA) approach will be used to search for literature (57). A PRISMA diagram will show
304 the steps of the inclusion and exclusion of documents (Additional Material 2). The literature
305 search will be in three phases: searching electronic databases, searching other sources
306 such as relevant journals and core publishers, and citation tracking to ensure all relevant
307 studies are included. The aim is to include as wide a range as possible of academic and
308 grey literature without restrictions on study type or publication date. Literature from all LMICs
309 will be included. Databases that index health, psychology, sociology and/or education
310 literature will be searched. The search will be restricted to publications in the English
311 language. The search terms and the databases used are based on the advice of an
312 academic librarian.

313

314 The Search terms will be:

315 'school' or 'educational context' and 'ethos' or 'environment' or 'culture' or 'governance' or
316 'context' or 'climate' or 'structure' or 'relations' or 'relationships' and 'children' or 'adolescents'
317 or 'youth' or 'young people' or 'juvenile' or 'teen' or 'young adult' or 'teenager' or 'pupils' and
318 'wellbeing' or 'mental health' or 'resilience' or 'attainment' or 'school grades' or 'motivation' or
319 'connectedness' or 'engagement' or 'suicidal behaviour' or 'depression' or 'suicidal ideation'
320 or 'prosocial behaviour' or 'risk' or 'risk behaviour' or 'burnout' or 'school adjustment' or
321 'attitudes' or 'psychosomatic complaints' or 'Post-traumatic stress disorder' or 'life
322 satisfaction' or 'quality of life' or 'emotional' or 'communication' or 'supportive' or 'support' or
323 'caring' or 'respect' or 'belonging' or 'quality of education' or 'anxiety' or 'conflict' or 'conduct'
324 or 'bullying' or 'harassment' or 'violence' or 'aggression' or 'corporal punishment' or
325 'discipline' or 'disruptive behaviour' or 'rules' or 'safety' or 'inclusive' or 'teaching practices' or
326 'involvement' and 'mechanisms' or 'theory' or 'theorisation' or 'conceptual' or
327 conceptualisation' or 'concept' or 'mediators' or 'moderators' or 'process' or 'effects' or
328 'scholarship' or 'drivers' or 'correlation' or 'causation' or 'association' or 'impact' or 'causal

329 pathway' and 'low income' or 'middle income' or 'low and middle income' or [list of low- and
 330 middle-income countries in 2023].

331

332 Table 2: Search Terms for SciELO Citation Index and Scopus

SciELO Citation Index	<p>#1 = TS=(school OR “educational context”)</p> <p>#2 = TS=(children OR adolescents OR youth OR "young people" OR juvenile OR teen OR "young adult" OR teenager OR pupils)</p> <p>#3 = TS=(ethos OR environment OR culture OR governance OR context OR climate OR structure OR relations OR relationships)</p> <p>#4 = TS=(wellbeing OR "mental health" OR resilience OR attainment OR "school grades" OR motivation OR connectedness OR engagement OR "suicidal behaviour" OR depression OR "suicidal ideation" OR "prosocial behaviour" OR risk OR "risk behaviour" OR burnout OR "school adjustment" OR attitudes OR "psychosomatic complaints" OR "post-traumatic stress disorder" OR PTSD OR "life satisfaction" OR "quality of life" OR emotional OR communication OR supportive OR support OR caring OR respect OR belonging OR "quality of education" OR anxiety OR conflict OR conduct OR bullying OR harassment OR violence OR aggression OR "corporal punishment" OR discipline OR "disruptive behaviour" OR rules OR safety OR inclusive OR "teaching practices" OR involvement)</p> <p>#5 = TS=(mechanisms OR theory OR theorisation OR conceptual OR conceptualisation OR concept OR mediators OR moderators OR process OR effects OR scholarship OR drivers OR correlation OR causation OR association OR impact OR “causal pathway”)</p> <p>#6 = TS=(“low income” OR “middle income” OR “low and middle income” OR Afghanistan OR “Burkina Faso” OR Burundi OR “Central African Republic” OR Chad OR “Guinea-Bissau” OR “Democratic People’s Republic of Korea” OR Liberia OR Madagascar OR Malawi OR Somalia OR “South Sudan” OR Sudan OR Syria OR Togo OR “Democratic Republic of the Congo” OR Eritrea OR Ethiopia OR “The Gambia” OR Guinea OR Mali OR Mozambique OR Niger OR Rwanda OR “Sierra Leone” OR Uganda OR Yemen OR Zambia OR Angola OR Algeria OR Bangladesh OR Benin OR Bhutan OR Bolivia OR “Cabo Verde” OR Cambodia OR Cameroon OR India OR Indonesia OR Iran OR Kenya OR Kiribati OR “Kyrgyz Republic” OR “Lao People’s Democratic Republic” OR Laos OR Lebanon OR Lesotho OR Philippines OR Samoa OR “Sao Tome and</p>
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	<p>Principe OR Senegal” OR “Solomon Islands” OR “Sri Lanka” OR Tanzania OR Tajikistan OR “Timor-Leste” OR Comoros OR “Republic of the Congo” OR “Cote d’Ivoire” OR Djibouti OR Mauritania OR Micronesia OR Mongolia OR Morocco OR Tunisia OR Ukraine OR Uzbekistan OR Vanuatu OR Egypt OR “El Salvador” OR Eswatini OR Ghana OR Haiti OR Honduras OR Myanmar OR Nepal OR Nicaragua OR Nigeria OR Pakistan OR “Papua New Guinea” OR Vietnam OR “West Bank and Gaza” AND Zimbabwe OR Albania OR “American Samoa” OR Argentina OR Armenia OR Azerbaijan OR Belarus OR Belize OR “Bosnia and Herzegovina” OR Fiji OR Gabon OR Georgia OR Grenada OR Guatemala OR Guyana OR Iraq OR Jamaica OR Namibia OR “North Macedonia” OR Palau OR Paraguay OR Peru OR “Russian Federation” OR Russia OR Serbia OR “South Africa” OR Botswana OR Jordan OR “St Lucia” OR Brazil OR Bulgaria OR China OR Colombia OR “Costa Rica” OR Cuba OR Dominica OR “Dominican Republic” OR “Equatorial Guinea” OR Kazakhstan OR Kosovo OR Libya OR Malaysia OR Maldives OR “Marshall Islands” OR Mauritius OR Mexico OR Moldova OR “St Vincent and the Grenadines” OR Suriname OR Thailand OR Tonga OR Turkiye OR Turkey OR Turkmenistan OR Tuvalu OR Ecuador OR Montenegro)</p> <p>#7 (full search) = #1 AND #2 AND #3 AND #4 AND #5 AND #6</p> <p>Refine by: English</p>
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<p>S c o p u s</p>	<p>TITLE-ABS-KEY (<i>school</i> OR “<i>educational context</i>” AND <i>ethos</i> OR <i>environment</i> OR <i>culture</i> OR <i>governance</i> OR <i>context</i> OR <i>climate</i> OR <i>structure</i> OR <i>relations</i> OR <i>relationships</i> AND <i>children</i> OR <i>adolescents</i> OR <i>youth</i> OR “<i>young people</i>” OR <i>juvenile</i> OR <i>teen</i> OR “<i>young adult</i>” OR <i>teenager</i> OR <i>pupils</i> AND <i>wellbeing</i> OR “<i>mental health</i>” OR <i>resilience</i> OR <i>attainment</i> OR “<i>school grades</i>” OR <i>motivation</i> OR <i>connectedness</i> OR <i>engagement</i> OR “<i>suicidal behaviour</i>” OR <i>depression</i> OR “<i>suicidal ideation</i>” OR “<i>prosocial behaviour</i>” OR <i>risk</i> OR “<i>risk behaviour</i>” OR <i>burnout</i> OR “<i>school adjustment</i>” OR <i>attitudes</i> OR “<i>psychosomatic complaints</i>” OR “<i>post-traumatic stress disorder</i>” OR <i>ptsd</i> OR “<i>life satisfaction</i>” OR “<i>quality of life</i>” OR <i>emotional</i> OR <i>communication</i> OR <i>supportive</i> OR <i>support</i> OR <i>caring</i> OR <i>respect</i> OR <i>belonging</i> OR “<i>quality of education</i>” OR <i>anxiety</i> OR <i>conflict</i> OR <i>conduct</i> OR <i>bullying</i> OR <i>harassment</i> OR <i>violence</i> OR <i>aggression</i> OR “<i>corporal</i></p>
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punishment OR *discipline* OR *“disruptive behaviour”* OR *rules* OR *safety* OR *inclusive* OR *“teaching practises”* OR *involvement* AND *mechanisms* OR *theory* OR *theorisation* OR *conceptual* OR *conceptualisation* OR *concept* OR *mediators* OR *moderators* OR *process* OR *effects* OR *scholarship* OR *drivers* OR *correlation* OR *causation* OR *association* OR *impact* OR *“causal pathway”* AND *“low income”* OR *“middle income”* OR *“low and middle income”* OR *afghanistan* OR {*Burkina Faso*} OR *burundi* OR {*Central African Republic*} OR *chad* OR *“Democratic Republic of the Congo”* OR *eritrea* OR *ethiopia* OR {*The Gambia*} OR *guinea* OR {*Guinea-Bissau*} OR *“Democratic People’s Republic of Korea”* OR *liberia* OR *madagascar* OR *malawi* OR *mali* OR *mozambique* OR *niger* OR *rwanda* OR {*Sierra Leone*} OR *somalia* OR {*South Sudan*} OR *sudan* OR *syria* OR *togo* OR *uganda* OR *yemen* OR *zambia* OR *angola* OR *algeria* OR *bangladesh* OR *benin* OR *bhutan* OR *bolivia* OR {*Cabo Verde*} OR *india* OR *indonesia* OR *iran* OR *kenya* OR *kiribati* OR {*Kyrgyz Republic*} OR {*Lao People’s Democratic Republic*} OR *laos* OR *philippines* OR *samoa* OR {*Sao Tome and Principe*} OR *senegal* OR {*Solomon Islands*} OR {*Sri Lanka*} OR *tanzania* OR *cambodia* OR *cameroon* OR *comoros* OR *“Republic of the Congo”* OR {*Cote d’Ivoire*} OR *djibouti* OR *egypt* OR {*El Salvador*} OR *eswatini* OR *lebanon* OR *lesotho* OR *mauritania* OR *micronesia* OR *mongolia* OR *morocco* OR *myanmar* OR *nepal* OR *nicaragua* OR *tajikistan* OR {*Timor-Leste*} OR *tunisia* OR *ukraine* OR *uzbekistan* OR *vanuatu* OR *vietnam* OR *“West Bank and Gaza”* OR *zimbabwe* OR *ghana* OR *haiti* OR *honduras* OR *nigeria* OR *pakistan* OR {*Papua New Guinea*} OR *albania* OR {*American Samoa*} OR *argentina* OR *fiji* OR *gabon* OR *georgia* OR *namibia* OR {*North Macedonia*} OR *palau* OR *armenia* OR *azerbaijan* OR *belarus* OR *belize* OR {*Bosnia and Herzegovina*} OR *botswana* OR *brazil* OR *bulgaria* OR *china* OR *grenada* OR *guatemala* OR *guyana* OR *iraq* OR *jamaica* OR *jordan* OR *kazakhstan* OR *kosovo* OR *libya* OR *paraguay* OR *peru* OR *“Russian Federation”* OR *russia* OR *serbia* OR {*South Africa*} OR {*St Lucia*} OR {*St Vincent and the Grenadines*} OR *suriname* OR *thailand* OR *colombia* OR {*Costa Rica*} OR *cuba* OR *dominica* OR {*Dominican Republic*} OR {*Equatorial*

<p><i>Guinea</i>} OR <i>ecuador</i> OR <i>malaysia</i> OR <i>maldives</i> OR {<i>Marshall Islands</i>} OR <i>mauritius</i> OR <i>mexico</i> OR <i>moldova</i> OR <i>montenegro</i> OR <i>tonga</i> OR <i>turkiye</i> OR <i>turkey</i> OR <i>turkmenistan</i> OR <i>tuvalu</i>) AND (LIMIT-TO (LANGUAGE , "English"))</p>

334

335 **Inclusion/exclusion criteria**

336

337 **Inclusion**

- 338
- Study design: Any that provides evidence to help with answering our research
- 339 questions.
- 340
- Documents: LMICs.
- 341
- Publication date: any.
- 342
- Document type: any document type that will inform the review.
- 343
- Population: includes pupils aged 7-16 years.
- 344
- Type of report: reporting primary research, a review of research or a theory relevant
- 345 to the impact of school climate on pupils' wellbeing in LMICs.
- 346
- Setting: conducted in statutory education settings in LMICs.
- 347
- Language: English.
- 348

349 **Exclusion**

- 350
- Studies reporting only on curricular-based interventions or designed to improve
- 351 individual knowledge.
- 352
- Studies report only on interventions designed to improve the physical infrastructure
- 353 of the school or classroom.
- 354
- Studies containing information on the school climate and wellbeing but not
- 355 examining the links between the two.
- 356
- Studies that do not provide sufficient detail to allow identification of specific aspects
- 357 of the school climate and wellbeing.
- 358
- Not a study of the effects of the school climate on pupils
- 359
- Only includes special needs schools.
- 360
- Only includes pupils outside the 7-16 years age range.
- 361
- In languages other than English.
- 362

363 **Article screening**

364 *Covidence* will be used to manage article screening and data extraction.

- 365
1. Remove duplicates and citations without abstracts or summaries;

- 366 2. Two reviewers (PA and RS) will review the titles and abstracts of all retrieved
367 documents captured by our search strategy and code them as 'potentially relevant'
368 and 'not relevant'. Any disagreements will be resolved by discussion or, if necessary,
369 bringing in a third reviewer (LD);
370 3. Download the full text of potentially relevant documents.

371

372 Step 3: document appraisal and data extraction

373 Extract information from the documents, as relevant, that potentially meet our inclusion
374 criteria into an Excel spreadsheet:

- 375 1. Document details – title, authors, year of publication, location of study;
376 2. Country, income group (low, lower-middle, upper-middle) (country income group
377 classified as at the time the research was done);
378 3. Journal discipline;
379 4. Aims and objectives of the study;
380 5. The description – details of the intervention, trainers, design, aim/purpose, length of
381 training;
382 6. Sample characteristics- age of pupils, sex/gender, socioeconomic status, ethnicity,
383 type of school;
384 7. The study design and if it is fit for purpose (quality/rigour);
385 8. The conceptualisation of school climate;
386 9. Rational for SBCCIs, including any social justice framing;
387 10. Inner contextual factors (mechanisms) (i.e. the structure, culture and resources of
388 schools that support or inhibit the effectiveness of measures taken to improve the
389 school climate before the intervention was introduced);
390 11. Outer contextual factors (i.e. the cultural, administrative and policy context within
391 which schools operate that support or inhibit the effectiveness of measures taken to
392 improve the school climate before the intervention was introduced);
393 12. Proximal outcomes measured;
394 13. How proximal outcomes were measured – instruments used to measure dimensions
395 of school climate and wellbeing;
396 14. Student outcomes, behaviour, and experience of interventions;
397 15. Teacher outcomes, behaviour, and experience of interventions;
398 16. Agency, stakeholders, including pupils', teachers' and parents' interactions and
399 responses to interventions designed to improve the school climate;
400 17. Generative mechanisms triggered by the intervention that could have supported
401 change (positive mechanisms), e.g. increased student engagement;

- 402 18. Generative mechanisms triggered by the intervention that could have
403 restricted/prevented change (negative mechanisms), e.g. resistance by pupils;
404 19. Contextual mechanisms that could have supported change (positive mechanisms)
405 commitment of school administration to positive change;
406 20. Contextual mechanisms that restricted/prevented change (negative mechanisms)
407 ingrained norms and values which support bullying and harassment;
408 21. Any theoretical explanations identified for explaining the outcomes and the level of
409 the explanation that is, psychological or social;
410 22. Changes in context following the introduction of SBCIs.

411
412 The extraction tool will be piloted. PA, RS, LD, and IS will independently read two
413 documents and complete the extraction table. They will then meet, compare their extraction
414 tables, and agree on necessary modifications.

415
416 PA will extract all information. PA will remove any documents containing insufficient relevant
417 data to inform how and why the intervention worked (or did not work) and/or not using
418 credible and trustworthy methods. Documents will be considered relevant if they can help to
419 answer the research questions; that is, they report findings from research on school climate.
420 They will be included as credible if the methods used are adequate for generating the
421 findings; documents will be excluded if they are not based on credible research or are purely
422 anecdotal. The reasons for the exclusion of any document will be noted. A critical realist
423 synthesis does not require that two independent reviewers complete screening for quality or
424 data relevance. However, RS will review any documents PA identifies as not contributing or
425 not using credible and trustworthy methods, with differences being resolved by discussion
426 and, if necessary, by bringing in a third reviewer, LD.

427
428 We will provide a descriptive narrative summary of the findings from this stage of the review.

429
430 Step 5: Analysis and Reporting
431 The analysis will aim to identify a middle-range interdisciplinary theory that explains how
432 school climate impacts pupils' wellbeing. It will 'open the black box' and identify the
433 mechanisms the interventions triggered that explain how the interventions caused the
434 reported outcomes using the critical realist framework for interdisciplinary research
435 resolution, redescription, retrodution, elimination, identification and refinement (RRREIR)
436 (Table 3) (8,9). An interdisciplinary middle-range theory will then be developed that explains
437 how SBCCIs work, recognising that outcomes will likely differ in different contexts.

438

439 **Table 3: RRREIc Stages for Interdisciplinary Research**

Planning Phase	Disciplinary Phase	Transdisciplinary Phase		Interdisciplinary Phase	
Resolution	Redescription	Retrodiction	Elimination	Identification	Refinement
Identification of the levels that are included. Biological/ Individual Social- Interaction Socioeconomic.	Identifying disciplines and using abduction to develop theoretical explanations for the impact of the intervention on children's mental wellbeing.	Identify how different mechanisms reinforce, moderate, and condition one another to affect the outcome.	Elimination of alternative theoretical explanations.	Identify the most comprehensive interdisciplinary explanation for how school climate promotes children's mental wellbeing.	
Identification of disciplines that research at different levels.	Develop disciplinary theories to explain the impact. Reductionist/ atomistic explanations.	Develop trans-factual theories integrating the disciplinary explanations.	Use judgemental rationality to eliminate theories that lack explanatory power.	Use judgemental rationality to identify the most comprehensive explanation.	Iterative refinement of theory.

440

441 To do this, we will mine the findings from the review to identify the changes that have
 442 occurred as a result of the intervention (outcomes), the mechanisms that were triggered by
 443 pupils' (and teachers') agency and how the context supported or restricted the impact of the
 444 interventions CAIMO configurations (40,58) and develop the hypothetical causal links
 445 between context, agency, mechanisms and outcomes. To do this, we will use Template
 446 Analysis to code the data and identify relevant context, agency, mechanisms and outcomes
 447 because it permits using predetermined codes as well as identifying new codes (59). Within
 448 each category, findings will be broken down thematically and reported narratively to
 449 distinguish between different contexts, agency responses, mechanisms triggered, and
 450 outcomes. The key themes that describe processes and causal mechanisms for explaining
 451 SBCI outcomes in schools will then be identified. Hypothetical links will then be made
 452 between the CAIMO themes, creating potential pathways that account for the impacts of
 453 SBCCIs on pupils and why, for whom and under what circumstances these impacts occur.

454

455 To account for complexity, it will be necessary to develop non-linear pathways of change
456 showing how the complex interaction of mechanisms (context mechanisms that predate the
457 intervention and those triggered by the intervention) leads to the observed outcomes (43,60–
458 62). To do this, we will use feedback loop diagrams to model change, showing both
459 mechanisms triggered by the intervention that cause change, those already in the context
460 that supported change (+ve mechanism) and those already in the context and mechanisms
461 triggered by the intervention that restricted or prevented change (-ve mechanisms).
462 Outcomes will likely be more complex than a dichotomy between morphogenesis (structural
463 change) and morphostasis (structural reproduction) (Table 1; Figure1).

464

465

466 Ethics

467

468 Formal ethics approval is not required for a literature review. However, ethical approval has
469 been obtained from the University of Aberdeen (20th June 2022), Addis Ababa University Ref
470 111/22/Psy, 21st December 2022), and the University of Rwanda (Ref 03/DRI-
471 CE/012/EN/gi/2023, 25th January 2023) for the research programme, of which this critical
472 realist review forms an integral element.

473

474 Dissemination

475

476 We will publish at least one article in a peer review journal reporting the findings from the
477 literature review, conforming to RAMESES publication standards (36) and a policy brief
478 intended for policymakers with the target audience including WHO, UNESCO, UNICEF, the
479 Rwandan and Ethiopian Governments, and the UK and Scottish Governments. Findings
480 from the review will be disseminated via an article in The Conversation, seminar and
481 conference presentations, and podcasts posted on the project website and disseminated by
482 social media.

483 Discussion

484

485 Our review will be the first critical realist review of the literature on SBCCIs. In the review, we
486 aim to identify the generative mechanisms and social structures that explain how and why
487 SBCCIs promote the wellbeing of pupils. This will enable policymakers and school leaders to
488 understand under what circumstances SBCCIs promote pupils' wellbeing and improve their
489 attainment and for which pupils they work.

490

491 The main challenges are likely to be that: there will be little information in the documents on
492 the pre-existing context, and; the documents may not include details of the theoretical
493 reasoning underpinning interventions to enable us to develop middle-range theories.

494

495 **Ethics approval and consent to participate**

496 Not required for a literature review

497

498 **Consent for publication**

499 Not required

500

501 **Availability of data and materials**

502 No data was used in preparing this protocol. The data sets that the project generates will be
503 deposited with the UK National Data Archive within six months of the completion of the
504 project under a Creative Commons Attribution 4.0 Unported (CC BY 4.0) license. The
505 training materials produced by the project will be made available under a Creative Commons
506 Attribution 4.0 Unported (CC BY 4.0) license on the project website:

507 <https://www.abdn.ac.uk/education/research/cgd/nih-r-camw-subsaharan-africa/index.php>

508

509 **Competing interests**

510 The authors declare that they have no competing interests.

511 **Authors' contributions**

512 Authors' Contributions: PA, RS, and LD contributed to the NIHR grant application. PA led the
513 research design and the protocol's writing and produced the first draft. RS, IS and LD
514 revised drafts and agreed on the final text of this paper.

515

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519

520 **Disclaimer**

521 The views expressed in this protocol are the views of the authors alone. They do not
522 necessarily represent the views of the National Institute for Health and Care Research, the
523 UK Government, the Court of the University of Aberdeen, the Board of Directors of the
524 University of Rwanda, or the Board of Addis Ababa University.

525

526 **Open access**

527 This is an open-access article distributed in accordance with the Creative Commons
528 Attribution 4.0 Unported (CC BY 4.0) license, which permits others to copy, redistribute,
529 remix, transform and build upon this work for any purpose, provided the original work is
530 properly cited, a link to the licence is given, and an indication of whether changes were
531 made. See: <https://creativecommons.org/licenses/by/4.0/>.

532

533

- 534 1. Abbott P, D'Ambruoso L, Yared M, McNamee P, Hailu T, Nzabairwa W. A Critical
535 Realist informed pilot cluster control trial evaluating the effectiveness of a mindfulness
536 intervention for promoting child and adolescent mental wellbeing in Rwanda and
537 Ethiopia. Res Regist [Internet]. 2023;8799. Available from:
538 [https://www.researchregistry.com/browse-the-
539 registry/#home/?view_2_search=8799&view_2_page=1](https://www.researchregistry.com/browse-the-registry/#home/?view_2_search=8799&view_2_page=1)
- 540 2. Abbott P, D'Ambruoso L, Yared M, McNamee P, Nzabairwa W. Study protocol for a
541 Critical Realist pilot cluster-randomised controlled trial of a whole-school-based
542 mindfulness intervention (SBMI) promoting child and adolescent mental wellbeing in
543 Rwanda and Ethiopia. medRxiv. 2023; May.
- 544 3. Abbott P, Stanley I, Nixson G, D'Ambruoso L. A protocol for a systematic critical
545 realist synthesis of school mindfulness interventions designed to promote pupils'
546 mental wellbeing. CRD42023410484 [Internet]. PROSPERO. 2023 [cited 2023 Apr 5].
547 Available from: <https://www.crd.york.ac.uk/PROSPERO/#searchadvanced>
- 548 4. Brito R, Joseph S, Sellman E. From Instrumental to Integral Mindfulness: Toward a
549 More Holistic and Transformative Approach in Schools. Stud Philos Educ.
550 2022;41(1):91–109.
- 551 5. Callen-Davies RJ, Bristow J, Gazder T, Griffith GM, Noorani Y, Crane RS.
552 Mindfulness-based programmes and 'bigger than self' issues: protocol for a scoping
553 review. BMJ Open. 2023;13(3):e067819.
- 554 6. Edgley A, Stickley T, Timmons S, Meal A. Critical realist review: exploring the real,
555 beyond the empirical. J Furth High Educ [Internet]. 2016;40(3):316–30. Available
556 from: <http://dx.doi.org/10.1080/0309877X.2014.953458>
- 557 7. Merton RK. On Sociological Theories of the Middle Range. In: Social Theory and
558 Social Structure [Internet]. New York, NY: Simon & Schuster, The Free Press; 1949.
559 Available from: [http://www.csun.edu/~snk1966/Robert K Merton - On Sociological
560 Theories of the Middle Range.pdf](http://www.csun.edu/~snk1966/Robert%20K%20Merton%20-%20On%20Sociological%20Theories%20of%20the%20Middle%20Range.pdf)
- 561 8. Bhaskar R. Enlightened Common Sense: The Philosophy of Critical Realism
562 [Internet]. Abingdon: Routledge; 2016. Available from:
563 <https://www.amazon.co.uk/Enlightened-Common-Sense-Ontological->

- 564 Explorations/dp/0415583799/ref=sr_1_1?keywords=Enlightened+Common+Sense%3
565 A+The+Philosophy+of+Critical+Realism&qid=1646410466&sr=8-1
- 566 9. Bhaskar R, Danermark B, Price L. Interdisciplinarity and Wellbeing: A Critical Realist
567 General Theory of Interdisciplinarity [Internet]. London and New York, NY: Routledge;
568 2018. Available from: [https://www.amazon.co.uk/Interdisciplinarity-Wellbeing-Critical-
569 Realist-
570 Routledge/dp/0415403715/ref=sr_1_1?crd=4O3D8WANEIEM&keywords=critical+rea
571 lism+wellbeing&qid=1662303252&s=books&sprefix=critical+realism+wellbeing+%2Cs
572 tripbooks%2C70&sr=1-1](https://www.amazon.co.uk/Interdisciplinarity-Wellbeing-Critical-Realist-Routledge/dp/0415403715/ref=sr_1_1?crd=4O3D8WANEIEM&keywords=critical+realism+wellbeing&qid=1662303252&s=books&sprefix=critical+realism+wellbeing+%2Cs-tripbooks%2C70&sr=1-1)
- 573 10. Tikly L. What works, for whom, and in what circumstances? Towards a critical realist
574 understanding of learning in international and comparative education [Internet]. Vol.
575 40, International Journal of Educational Development. 2015. p. 237–49. Available
576 from: <https://www.sciencedirect.com/science/article/pii/S0738059314001163>
- 577 11. Thapa A, Cohen J, Guffey S, Higgins-D'Alessandro A. A Review of School Climate
578 Research. *Rev Educ Res*. 2013;83(3):357–85.
- 579 12. Aldridge JM, McChesney K. The relationships between school climate and adolescent
580 mental health and wellbeing: A systematic literature review. *Int J Educ Res [Internet]*.
581 2018;88(February):121–45. Available from: <https://doi.org/10.1016/j.ijer.2018.01.012>
- 582 13. Wang M Te, Degol JL. School Climate: a Review of the Construct, Measurement, and
583 Impact on Student Outcomes [Internet]. Vol. 28, Educational Psychology Review.
584 Educational Psychology Review; 2016. 315–352 p. Available from:
585 <http://dx.doi.org/10.1007/s10648-015-9319-1>
- 586 14. Kutsyuruba B, Klinger DA, Hussain A. Relationships among school climate, school
587 safety, and student achievement and well-being: a review of the literature. *Rev Educ*.
588 2015;3(2):103–35.
- 589 15. Leurent B, Dodd M, Allen E, Viner R, Scott S, Bonell C. Is positive school climate
590 associated with better adolescent mental health? Longitudinal study of young people
591 in England. *SSM - Ment Heal [Internet]*. 2021;1(October):100033. Available from:
592 <https://doi.org/10.1016/j.ssmmh.2021.100033>
- 593 16. Gray C, Wilcox G, Nordstokke D. Teacher Mental Health, School Climate, Inclusive
594 Education and Student Learning: A Review. Vol. 58, *Canadian Psychology*. 2017. p.
595 203–10.
- 596 17. Troy D, Anderson J, Jessiman PE, Albers PN, Williams JG, Sheard S, et al. What is
597 the impact of structural and cultural factors and interventions within educational
598 settings on promoting positive mental health and preventing poor mental health: a
599 systematic review. *BMC Public Health [Internet]*. 2022;22(1):1–16. Available from:
600 <https://doi.org/10.1186/s12889-022-12894-7>

- 601 18. Voight A, Nation M. Systematic and evaluative review of school climate instruments
602 for students, teachers, and parents Practices for Improving Secondary School Climate:
603 A Systematic Review of the Research Literature. *Am J Community Psychol*.
604 2016;58(1–2):174–91.
- 605 19. Jamal F, Fletcher A, Harden A, Wells H, Thomas J, Bonell C. The school environment
606 and student health: A systematic review and meta-ethnography of qualitative
607 research. *BMC Public Health*. 2013;13(1):1–11.
- 608 20. Larson KE, Nguyen AJ, Orozco Solis MG, Humphreys A, Bradshaw CP, Lindstrom
609 Johnson S. A systematic literature review of school climate in low and middle income
610 countries. *Int J Educ Res*. 2020;102(June).
- 611 21. Theron LC. The everyday ways that school ecologies facilitate resilience: Implications
612 for school psychologists. *Sch Psychol Int*. 2016;37(2):87–103.
- 613 22. Bonell C, Jamal F, Harden A, Wells H, Parry W, Fletcher A, et al. Systematic review
614 of the effects of schools and school environment interventions on health: evidence
615 mapping and synthesis. *Public Heal Res*. 2013;1(1):1–320.
- 616 23. Lombardi E, Traficante D, Bettoni R, Offredi I, Giorgetti M, Vernice M. The impact of
617 school climate on well-being experience and school engagement: A study with high-
618 school students. *Front Psychol*. 2019;10(OCT):1–11.
- 619 24. Wang M-T, Holcombe R. Adolescents' perceptions of school environment,
620 engagement, and academic achievement in middle school. *Am Educ Res J*.
621 2010;47(3):633–62.
- 622 25. Wilson D. The interface of school climate and school connectedness and relationships
623 with aggression and victimisation. *J Sch Health*. 2004;74(7):293–9.
- 624 26. Cook CR, Williams KR, Guerra NG, Kim TE, Sadek S. Predictors of bullying and
625 victimisation in childhood and adolescence: A meta-analytic investigation. *Sch*
626 *Psychol Q*. 2010;25(2):65–83.
- 627 27. Wong MD, Dosanjh KK, Jackson NJ, Runger D, Dudovitz RN. The longitudinal
628 relationship of school climate with adolescent social and emotional health. *BMC*
629 *Public Health*. 2021;21(1):1–8.
- 630 28. Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The Impact of
631 Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-
632 Based Universal Interventions. *Child Dev*. 2011;82(1):405–32.
- 633 29. Briere FN, Pascal S, Dupere V, Janosz M. School environment and adolescent
634 depressive symptoms: A multilevel longitudinal study. *Pediatrics*. 2013;131(3).
- 635 30. Lawson T. *Economics and Reality*. London: Routledge; 1997.
- 636 31. Bonell C, Fletcher A, Jamal F, Wells H, Harden A, Murphy S, et al. Theories of how
637 the school environment impacts on student health: Systematic review and synthesis.

- 638 Heal Place [Internet]. 2013;24:242–9. Available from:
639 <http://dx.doi.org/10.1016/j.healthplace.2013.09.014>
- 640 32. Bonell C, Allen E, Opondo C, Warren E, Elbourne DR, Sturgess J, et al. Examining
641 intervention mechanisms of action using mediation analysis within a randomised trial
642 of a whole-school health intervention. *J Epidemiol Community Health*.
643 2019;73(5):455–64.
- 644 33. Clegg S. Evidence-based practice in educational research: A critical realist critique of
645 systematic review. *Br J Sociol Educ*. 2005;26(3):415–28.
- 646 34. Mingers J, Standing C. Why things happen – Developing the critical realist view of
647 causal mechanisms. *Inf Organ*. 2017;27(3):171–89.
- 648 35. Greenhalgh T, Pawson R, Wong G, Westhorp G, Greenhalgh J, Manzano A, et al.
649 Protocols and realist evaluation. 2017;1–4. Available from:
650 https://www.ramesesproject.org/Standards_and_Training_materials.php
- 651 36. Wong G, Westhorp G, Manzano A, Greenhalgh J, Jagosh J, Greenhalgh T.
652 RAMESES II reporting standards for realist evaluations. *BMC Med* [Internet].
653 2016;14(1):1–18. Available from: <http://dx.doi.org/10.1186/s12916-016-0643-1>
- 654 37. Gough D, Oliver S, Thomas J. Learning From Research : Systematic Reviews for
655 Informing Policy Decisions [Internet]. London: EPPI-Centre, Social Science Research
656 Unit, Institute of Education, University of London; 2013. Available from:
657 <https://apo.org.au/sites/default/files/resource-files/2013-12/apo-nid71119.pdf>
- 658 38. Moher D, Liberati A, Tetzlaff J, Altman DGG. Preferred Reporting Items for
659 Systematic Reviews and Meta-Analyses: The PRISMA statement. *Ann Intern Med*
660 [Internet]. 2009;151(4):264–9. Available from: [https://doi.org/10.7326/0003-4819-151-](https://doi.org/10.7326/0003-4819-151-4-200908180-00135)
661 [4-200908180-00135](https://doi.org/10.7326/0003-4819-151-4-200908180-00135)
- 662 39. Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: Methodological
663 guidance for systematic reviewers utilising meta-aggregation. *Int J Evid Based*
664 *Healthc*. 2015;13(3):179–87.
- 665 40. Danermark B, Ekström M, Karlsson JC. Explaining Society: Critical Realism in the
666 Social Sciences. London and New York, NY: Routledge; 2019.
- 667 41. Porter S. The uncritical realism of realist evaluation. *Evaluation*. 2015;21(1):65–82.
- 668 42. Porter S, McConnell T, Reid J. The Possibility of Critical Realist Randomised
669 Controlled Trials. *Trials*. 2017;18:133.
- 670 43. Hinds K, Dickson K. Realist synthesis: a critique and an alternative. *J Crit Realis*
671 [Internet]. 2021;20(1):1–17. Available from:
672 <https://doi.org/10.1080/14767430.2020.1860425>
- 673 44. Price L. Critical realist versus mainstream interdisciplinarity. *J Crit Realis*.
674 2014;13(1):52–76.

- 675 45. Stigendal M, Novy A. Founding transdisciplinary knowledge production in critical
676 realism: implications and benefits. *J Crit Realis* [Internet]. 2018;17(3):203–20.
677 Available from: <https://doi.org/10.1080/14767430.2018.1514561>
- 678 46. Danermark B. Applied interdisciplinary research: a critical realist perspective. *J Crit*
679 *Realis*. 2019;18(4):368–82.
- 680 47. Pilgrim D. Preventing mental disorder and promoting mental health: some implications
681 for understanding wellbeing. *J Crit Realis*. 2021;20(5):557–73.
- 682 48. Pilgrim D. Some implications of critical realism for mental health research. *Soc Theory*
683 *Heal*. 2014;12(1):1–21.
- 684 49. Powers P. The Philosophical Foundations of Foucaultian Discourse Analysis. *Crit*
685 *Approaches to Discourse Anal across Discip*. 2012;1(2):18–34.
- 686 50. Malhotra S, Sahoo S. Antecedents of depression in children and adolescents. *Ind*
687 *Psychiatry J*. 2018;27(11).
- 688 51. Archer M. Culture and Agency: The Place of Culture in Social Theory [Internet]. 2nd
689 ed. Cambridge: Cambridge University Press; 1998. Available from:
690 [https://www.cambridge.org/core/books/culture-and-](https://www.cambridge.org/core/books/culture-and-agency/D73435BFB89EF16E49E0BFB6BC9F6ACF)
691 [agency/D73435BFB89EF16E49E0BFB6BC9F6ACF](https://www.cambridge.org/core/books/culture-and-agency/D73435BFB89EF16E49E0BFB6BC9F6ACF)
- 692 52. Archer M. *Realist Social Theory: The Morphogenetic Approach*. Cambridge:
693 Cambridge University Press; 2008.
- 694 53. Archer M. The Morphogenetic Approach: Critical Realism's explanatory framework
695 approach. In: Róna P, Zsolnai L, editors. *Agency and Causal Explanation in*
696 *Economics* [Internet]. Cham: Springer; 2020. Available from:
697 <https://link.springer.com/book/10.1007/978-3-030-26114-6>
- 698 54. Semple RJJ, Droutman V, Reid BAA. Mindfulness Goes To School: Things Learned
699 (So Far) From Research and Real-World Experiences. *Psychol Sch*. 2017;54(1):29–
700 52.
- 701 55. Hart R, Ivtzan I, Hart D. Mind the gap in mindfulness research: A comparative account
702 of the leading schools of thought. *Rev Gen Psychol*. 2013;17(4):453–66.
- 703 56. Carsley D, Khoury B, Heath NL. Effectiveness of Mindfulness Interventions for Mental
704 Health in Schools: A Comprehensive Meta-analysis. *Mindfulness (N Y)* [Internet].
705 2018;9(3):693–707. Available from: <https://doi.org/10.1177/0020764020973684>
- 706 57. Page MJ, Moher D, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. PRISMA
707 2020 explanation and elaboration: Updated guidance and exemplars for reporting
708 systematic reviews. *BMJ*. 2021;372.
- 709 58. Blom B, Morén S. Explaining social work practice - the CAIMeR theory. *J Soc Work*
710 [Internet]. 2010;10(1):98–119. Available from:
711 <https://journals.sagepub.com/doi/abs/10.1177/1468017309350661?journalCode=jswa>

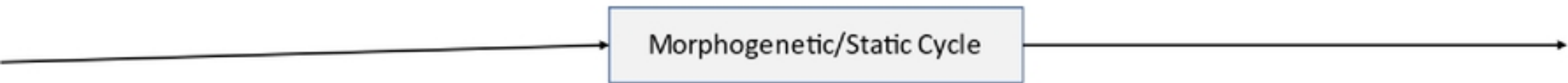
- 712 59. Brooks J, McCluskey S, Turley E, King N. The Utility of Template Analysis in
713 Qualitative Psychology Research. *Qual Res Psychol.* 2015;12(2):202–22.
- 714 60. Hatt K. View of Considering Complexity_ Toward A Strategy for Non-linear Analysis.
715 *Can J Sociol.* 2009;34(2):313–47.
- 716 61. Bellazzecca E, Teasdale S, Biosca O, Skelton DA. The health impacts of place-based
717 creative programmes on older adults' health: A critical realist review. *Heal Place*
718 [Internet]. 2022;76(January):102839. Available from:
719 <https://doi.org/10.1016/j.healthplace.2022.102839>
- 720 62. Mukumbang F, De Souza D, Liu H, Uribe G, Moore C, Fotheringham P, et al.
721 Unpacking the design, implementation and uptake of community-integrated health
722 care services: A critical realist synthesis. *BMJ Glob Heal* [Internet]. 2022;7(8):1–14.
723 Available from: <https://gh.bmj.com/content/bmjgh/7/8/e009129.full.pdf>
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Structural Conditioning
Socio-Cultural Conditioning
(Context)

Social Interaction
Socio-cultural Interaction
(Programme Mechanisms Introduced)

Social Elaboration
Socio-cultural Elaboration
(Contextual Mechanisms + Programme
Mechanisms)

Social Interaction
Socio-cultural Integration
(Interpretation and Behavioural
Outcomes)
Morphogenesis/Morphostasis



Based on Archer, M. (2008). *Realist Social Theory: The Morphogenetic Approach*. Cambridge: Cambridge University Press

Figure