The psychological consequences of mental health awareness efforts

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Abstract

Public health campaigns that raise awareness about mental health problems are designed to decrease stigma, increase help seeking and improve mental health literacy. However, there is some theoretical concern that, alongside benefits, such campaigns might negatively impact how some individuals interpret, label and respond to mental health problems. In this Review, we summarise extant evidence for the positive and negative psychological impacts of mental health awareness efforts. We integrate theoretical literature with studies using experimental designs in which mental health awareness content is manipulated in a controlled environment that might provide preliminary insights into potential causal relationships. We find that awareness materials can change cognitions and beliefs relating to one's own mental health and to mental health more generally (such as self-diagnosis and beliefs about recovery). These effects can vary depending on individual characteristics (such as existing symptoms, stability of self-concept, and suggestibility), the message being presented, identification with the messenger, and if there is personalised information about one's own symptoms. We discuss the implications of this work for adolescent populations and directions for future research.

38 **[H1] Introduction**

39 Over the past twenty years there has been an increase in public awareness about mental
40 health problems in the Western world. Many initiatives underlie this shift. First, there have
41 been public health campaigns (such as Time to Change in England) designed to decrease
42 mental health stigma and increase help seeking by improving mental health literacy[1,2].
43 Second, there has been a growing focus on mental health support in education, with schools
44 and universities increasingly considered to be sites of psychoeducation and the prevention
45 or treatment of mental health problems[3–5]. Finally, there has been mass dissemination of
46 mental health information online, with many public health bodies and charities sharing
47 mental health awareness content via social media[6]. Ultimately, the goal of all these
48 initiatives—collectively described as mental health awareness efforts[7]—has been to improve
49 individuals' thoughts, feelings and behaviours in relation to their own and other people's
50 mental health problems based on the premise that public dissemination of information can
51 drive meaningful change.

52

53 There is some evidence that mental health awareness efforts are associated with positive
54 outcomes such as mental health literacy, help-seeking and stigma reduction[8,9]. However, a
55 growing number of voices suggest that mental health awareness efforts might lead to some
56 unintended negative consequences. First, there is concern about universal mental health
57 interventions in educational settings in which young people are taught about
58 psychoeducation, mental health literacy, and/or coping strategies borrowed from
59 therapeutic approaches (such as mindfulness or cognitive behavioural therapy) in whole
60 classroom settings[10,11]. Academics critiquing this approach have argued that, despite good
61 intentions, programmes that encourage young people to focus on their mental health might

62 inadvertently promote a sense of vulnerability, fragility and victimhood[12,13]. Several high-
63 quality trials have now found that school mental health interventions can have negative
64 effects on mental health outcomes, which offers some empirical support for these
65 theoretical concerns[14–17]. However, the mechanism driving negative effects are unclear and
66 other aspects of whole school approaches to mental health (for example staff training,
67 access to one-to-one support or creating a positive school climate) can be very valuable[4].
68
69 Outside of the school context, academics and commentators have expressed concern that
70 mental health awareness efforts might lead to excessive and inaccurate use of psychiatric
71 language, which has been referred to as the 'psychiatrisation of society'[18]. Some people with
72 lived experience of a disorder feel angry that this terminology is being trivialised or used
73 flippantly[19], which has led to a sense of so-called 'diagnostic possessiveness' over certain
74 diagnostic terms such as 'bipolar disorder'[20]. These concerns are not unfounded: there is
75 experimental evidence that concept creep (the societal semantic expansion of harm-related
76 concepts such as trauma and bullying) leads individuals to perceive those terms less
77 seriously[21,22].
78
79 In this Review, we examine the literature on the psychological impacts of mental health
80 awareness efforts. First, we summarise the evidence (primarily from cohort and survey
81 studies) that supports the use of mental health awareness campaigns. Then, we summarize
82 potential disadvantages and negative consequences of mental health awareness efforts.
83 Next, we review experimental evidence from studies in which mental health awareness
84 content was manipulated in a controlled environment; such studies might provide
85 preliminary insights into potential causal relationships between mental health awareness

86 content and specific mental health outcomes. We report both positive and negative
87 outcomes but acknowledge the ambiguity in this categorisation (some outcomes can have
88 both positive and negative aspects). Finally, we discuss the potential implications of these
89 findings for adolescent populations and directions for future research.
90
91 **[H1] Evidence in support of awareness campaigns**
92 Mental health awareness efforts have multiple aims: to improve mental health literacy (for
93 example, by providing clear and accessible information about symptoms, treatment options
94 and impact of diagnosis), reduce stigma towards those with mental health problems, and
95 increase help-seeking behaviour, with the overall goal of reducing suffering and improving
96 quality of life across the population[23,24]. There is evidence, primarily from cohort and survey
97 studies, that awareness campaigns (Table 1) successfully achieve some of these positive
98 outcomes. For example, a systematic review of 15 awareness campaigns in eight primarily
99 Western countries (Canada, United States, Ireland, Germany, Sweden, Australia, Hong Kong,
100 and Austria) found that awareness campaigns reduced stigma. That is, individuals showed
101 positive changes in attitudes, beliefs and intentions towards those with lived experience
102 after the intervention (vs. before the intervention or compared to a control group who did
103 not see campaign materials)[23]. However, some studies testing these effects had markers of
104 low quality or lacked sufficient detail to support reproducibility (for example they were
105 underpowered, did not clearly describe how the campaign was disseminated and/or did not
106 report a clear hypothesis or proposed mechanism of change)[6,23]; this issue of low quality is
107 pervasive in the experimental literature reviewed in this paper.
108

109 One study not included in the above meta-analysis used cohort data and found that the
110 Time to Change campaign in England reduced stigma. Specifically, public attitudes towards
111 those with mental illness were more positive after (vs. before) the campaign, and there was
112 a dose-response effect between campaign awareness within a geographic region and the
113 magnitude of attitude improvement in that region[25]. More recent evidence indicates that
114 although public attitudes towards those with mental health problems has improved in
115 England since 2008, positive attitudes peaked in 2019 and declined between 2019 and
116 2023[26], possibly at least partially because of the end of the Time to Change campaign in
117 2021.
118
119 Another study in Australia found that mental health literacy—specifically the ability to
120 recognize particular disorders from vignettes and the accuracy of beliefs about treatments—
121 improved between 1995 and 2011, and the Beyond Blue national depression public health
122 campaign began running in 2000[27]. These improvements in mental health literacy were
123 larger in states where people reported more awareness of the campaign[28]. Moreover, more
124 positive attitudes about the benefits of help seeking were reported in states that funded the
125 Beyond Blue campaign (leading to higher exposure for residents) relative to the states that
126 did not (leading to lower exposure for residents)[28].
127
128 A second Australian campaign, Act-Belong-Commit, has been running since 2008, and
129 telephone surveys about its impact were conducted in 2018-2019 (ref[29]). This research
130 found a positive association between the belief that the campaign increased openness
131 around mental health problems and help-seeking for mental health problems[29]. This result is
132 based on cross-sectional data, so the direction of the relationship is unclear and there might

133 be relevant common covariates. However, this result could indicate that positive attitudes

134 towards the campaign led individuals to seek help for their own difficulties[29].

135

136 There is also evidence that mental health awareness campaigns increase actual or intended

137 help-seeking, which is a key goal of such campaigns[23,24]. For example, one study examined

138 whether an annual large-scale mental health advocacy campaign in Canada (Bell Let's Talk)

139 was associated with an increase in mental health service utilisation[30]. Analysis of monthly

140 outpatient mental health visits for 10- to 24-year-olds in Ontario from 2006 to 2015 showed

141 that primary health care and outpatient psychiatric visits increased in the two months after

142 the Bell Let's Talk annual campaign was disseminated on Twitter in February 2012 (ref[30]).

143

144 Overall, mental health awareness campaigns might reduce stigma, improve mental health

145 literacy and increase help-seeking or intention to seek help. However, not all campaigns

146 produce (or are intended to produce) all of these outcomes, and not all outcomes have

147 been tested for all campaigns.

148

149 **[H1] Possible harms of awareness efforts**

150 Although mental health awareness efforts have documented benefits, there has been

151 concern that they might also have unintended harms. Academics across a number of

152 disciplines have suggested that using campaigns to encourage individuals to focus on their

153 own mental health, or learn about mental health in general, might increase distress or lead

154 to other problematic outcomes[7,12,13,18,31–39]. Most of this literature does not focus on mental

155 health awareness campaigns specifically, but on related phenomena, such as negative

156 effects of mental health lessons in schools and increases in symptom reporting and self-

diagnosis after (vs. before) exposure to mental health awareness materials. We provide a brief overview of these theoretical and empirical literatures here to contextualise the experimental evidence that focuses on mental health awareness efforts.

[H2] Negative effects of school mental health lessons

There are many benefits to taking a 'whole school approach' to mental health, in which all school staff receive mental health training, the environment and curriculum is designed to support mental health, and effective one-to-one support is available to young people who need it[3–5]. In parallel, however, there are concerns that teaching mental health information to whole classes might have unintended consequences for young people, including misunderstanding the difference between mental disorders and difficult emotions, feeling pressured to disclose private thoughts, or being hypervigilant toward any experience of negative feelings[12,13,40–42]. Similar arguments have been made about the focus on mental health in university settings: the narrative of a mental health crisis in undergraduate students might undermine their resilience and medicalise typical life stress[33,43].

Concerns about educational settings have been validated by evidence that universal school-based mental health interventions, which typically involve mental health literacy and/or awareness components, can sometimes have negative effects[16]. Meta-analyses have indicated that, on average, universal school mental health interventions do improve mental health problems, albeit with small effect sizes (Cohens $d < .2$; ref[44]) and only over the short term (for example, the effect is present immediately post-intervention but not at the 12-month follow up)[11,45,46]. However, the majority of evaluation studies included in these meta-analyses are of low quality, potentially biasing overall estimates[16,45,46]. Moreover, several

181 high-quality trials have shown that universal mental health interventions based on
182 mindfulness, cognitive behavioural therapy (CBT), dialectical behavioural therapy and
183 general mental health awareness[47] can all have negative outcomes, including an increase in
184 internalising symptoms[15,48–50]. For example, a scoping review of mindfulness and CBT-based
185 school interventions found that 9% of all trials and 33% of high-quality trials (that is, those
186 with low risk of bias) found at least one negative effect[16]. One large trial (153 schools, n =
187 12,166 student participants) found that a universal school intervention that focused
188 specifically on mental health awareness led to long-term negative effects on internalising
189 symptoms (that is, internalizing symptoms were higher at the follow up 9-12 months after
190 the intervention compared to before the intervention)[47]. These findings have prompted
191 concerns about the potential risks versus benefits of universal school-based mental health
192 interventions[14,15,17].
193
194 The mechanisms underlying these negative effects are unclear[16,51]. One possibility is that the
195 mechanism is akin to the nocebo effect, in which telling individuals about negative side
196 effects of a treatment triggers an expectancy effect that then causes individuals to
197 experience those symptoms (Box 1). This possibility is supported by a meta-analysis which
198 found that trigger warnings for negative content led to more anticipatory anxiety ahead of
199 viewing the content than when trigger warnings were not present[52].
200
201 In the school intervention literature specifically, qualitative evidence indicates that school
202 mental health lessons can be distressing or unpleasant in several ways[42]. In one study,
203 participants described how mindfulness lessons at school made them focus on negative
204 thoughts more, made them cry, or made them frustrated because they felt they could not

205 do the exercises[53]. Interview studies have found that the focus on negative thoughts in CBT-

206 based universal interventions made some young people feel low, even when they had

207 initially felt positive[54,55]. In two interventions focused on improving mental health awareness

208 and literacy, approximately half of participants said in qualitative interviews that the lessons

209 had made them feel negative[56]. Specifically, they said that the content of the lessons made

210 them feel uncomfortable or upset, and that reflecting on their own possible symptoms

211 made them feel anxious[56].

212

213 This literature on universal school mental health interventions is complicated by the fact

214 that many of these interventions combine general awareness content (for example,

215 psychoeducation and mental health literacy) with practical exercises based on therapeutic

216 modalities (for example, CBT or mindfulness), and it is unclear which component or

217 components are associated with negative effects. However, there is now enough

218 quantitative and qualitative evidence to support the concern that some aspects of these

219 mental health lessons have negative effects; that is, universal school mental health

220 interventions are a real-world setting in which mental health awareness efforts might lead

221 young people to have negative thoughts and feelings[16,51].

222

223 *[H2] Increased symptom reporting and self-diagnosis*

224 Other work has suggested that mental health awareness efforts might be contributing to the

225 increase in reported rates of mental health problems over the past 10 years[7]. This

226 prevalence inflation could arise via two mechanisms. First, mental health awareness efforts

227 might lead some individuals to more accurately report previously under-recognised

228 symptoms, which would be a beneficial outcome. Second, and more problematically,

229 awareness efforts might lead some individuals to interpret and report milder forms of
230 distress as mental health problems [7]. In other words, mental health awareness materials
231 might be shaping viewers' understanding of mental health, including their own symptoms,
232 in a way that might ultimately be unhelpful for them[31,33,36]. For example, framing symptoms
233 as evidence of a mental health problem might subsequently maintain or exacerbate
234 symptoms, creating a self-fulfilling prophecy[7,57,58].
235
236 Relatedly, mental health awareness efforts might be responsible for more self-diagnosis
237 (people diagnosing themselves with a mental disorder in the absence of input from a
238 professional)[59–61]. Self-diagnosis is not inherently problematic—a key purpose of mental
239 health awareness efforts is to encourage individuals to recognise mental health problems in
240 themselves[1,62], and many people who self-diagnose do so accurately[63]. However, the
241 concern is that individuals might self-diagnose with a disorder they do not have if they
242 misunderstand typical stress as a sign of a disorder[7,35,58,64–66]. This inaccurate self-diagnosis is
243 theorised to cause additional distress, lead to unnecessary treatment, or trigger a self-
244 fulfilling prophecy where existing symptoms are exacerbated[7,58,65,66]. In addition, inaccurate
245 self-diagnosis can have consequences beyond the individual if it happens at scale, because it
246 might shift the focus of resources and support towards the milder end of the mental health
247 spectrum and away from the individuals most in need[61,65], and lead to scepticism towards
248 anyone using diagnostic language[19].
249
250 Taken together, this literature highlights several concerns regarding how—alongside their
251 benefits—mental health awareness efforts might be partly responsible for the increasing
252 psychiatrisation of society, overpathologisation and inaccurate self-diagnosis.

253

254 **[H1] Experimental studies**

255 A small but growing body of experimental evidence suggests that there are causal
256 associations between materials used in awareness efforts and the psychological effects of
257 these interventions. In this section we review 11 studies from 2010 to 2025 that used
258 experimental methodology to assess the positive and negative impacts of mental health
259 awareness content on individuals' self-diagnosis and symptom reporting and beliefs about
260 mental health more generally. We specifically focus on studies in which the outcomes were
261 self-reported mental health symptoms and/or cognitions related to mental health, including
262 beliefs, attitudes and knowledge about one's own and other's mental health. We excluded
263 studies with major methodological flaws (for example, no control condition).

264

265 *[H2] Diagnostic labelling and symptom reporting*

266 There is experimental evidence that mental health awareness materials can impact self-
267 diagnosis and the use of other diagnostic language without changing self-reported
268 symptoms. In one study[67], participants were exposed to an artificial social media post of a
269 user's selfie with a caption disclosing the user's anxiety in a way that either normalised
270 anxiety (that is, described anxiety as normal, appropriate to discuss and common) or did not
271 normalise anxiety (that is, described anxiety as uncommon and severe). Participants
272 exposed to the normalising post considered anxiety to be more common in general and
273 were more likely to report that they might have an anxiety disorder now or in the future
274 than participants exposed to the non-normalising post[67]. However, there were no
275 differences on self-reported measures of anxiety or stress based on which post was seen.
276 These results suggest that viewing certain mental health messages on social media can lead

277 individuals to update their beliefs about the prevalence of mental health problems; this
278 result is unsurprising and is akin to demonstrating that the experimental manipulation
279 worked. Importantly, however, self-reported symptoms did not change, suggesting that
280 mental health information can make individuals more inclined to frame the same level of
281 symptoms as a potential anxiety disorder[68].
282
283 Similarly, participants who read psychoeducational material that described trauma as a
284 broad concept (any event that might cause emotional distress) were more likely to rate
285 watching a distressing, violent film clip as a trauma at follow-up (a minimum of 48 hours
286 later) compared to participants who read psychoeducational material that described trauma
287 as a narrow concept (reserved for exceptionally severe events). However, the groups did not
288 differ in their experience of PTSD-like symptoms (based on self-report measures of distress
289 related to watching the film) either immediately after the film or at follow-up[68]. As with the
290 study described above, this finding is akin to a successful manipulation check; the
291 psychoeducational materials caused participants to update their belief about the meaning
292 of the word 'trauma'. More importantly, the materials did not lead to an increase in
293 symptom reporting after watching the film, suggesting that psychoeducation information
294 about trauma can change symptom conceptualisation without increasing symptoms
295 themselves.
296
297 Finally, participants who read a newspaper article claiming that food addiction was real and
298 scientifically proven were more likely to self-diagnose as having food addiction than those
299 who read a newspaper article claiming that food addiction was a myth[69]. Importantly, there
300 were no differences in the groups' mean intake of indulgent foods, food dependence

301 symptoms or mood ratings[69], suggesting that mental health information shaped
302 participants' beliefs about mental health without changing their symptom reporting.
303 However, given the small sample size (N = 60) compared to the studies described above
304 (ref[67] N = 654; ref[68] N = 293) and lack of baseline self-diagnosis measures, interpretation of
305 these findings is limited.

306

307 The studies described above suggest that mental health information can shape participants'
308 beliefs about mental health without changing their reported symptoms. One study suggests
309 that this effect might be partially mitigated by informing people about the nocebo effect[70].
310 Participants assigned to an attention-deficit/hyperactivity disorder (ADHD) awareness
311 workshop in which they learned about signs of undiagnosed ADHD in adults were more
312 likely to self-diagnose with ADHD immediately after the workshop compared to participants
313 who attended a control workshop on sleep hygiene, despite no differences in self-reported
314 symptoms between groups; this difference persisted a week later[70]. Importantly, a third
315 group of participants received information about the nocebo effect in addition to the ADHD-
316 related awareness content (that is, they were told that negative expectations cause
317 symptom misattribution and worsening). The rate of false self-diagnosis in this group was
318 half that in the ADHD awareness group immediately after the workshop, and there were no
319 differences in self-diagnosis between groups one week later[70]. Thus, being exposed to ADHD
320 awareness information might make individuals more likely to frame their experiences as
321 evidence of potential ADHD despite no changes in actual symptoms, but education can
322 buffer against this effect.

323

324 It is somewhat ambiguous whether an increase in self-diagnosis or diagnostic language is a
325 positive or negative outcome. In a real-world context, whether this labelling is helpful or
326 unhelpful will depend on whether it is accurate (that is, the individual has correctly
327 identified a disorder that was otherwise unacknowledged) and whether that labelling leads
328 to effective help-seeking and support that reduces the problem. In one study reviewed
329 here[70] participants were pre-screened and were only included if they were below the
330 threshold for probable ADHD. Thus, the results showed that awareness materials promoted
331 self-diagnosis in individuals who do not meet criteria for diagnosis, suggesting a problematic
332 outcome. However, in other studies the accuracy of the increase in self-diagnosis is unclear.
333 This is a key avenue for future research. In addition, a broader ethical point is that any
334 studies assessing potential increases in self-diagnosis must consider the risk-benefit trade-
335 offs of such studies regarding possible false diagnosis, and ensure effective debriefing and
336 follow-up checks to minimise harm or any long-term inaccurate beliefs. Debriefing and/or
337 follow-up checks have been reported in some of the reviewed studies[69,70] but not in
338 others[67,68].
339
340 Although the studies described above found no effect of general mental health information
341 on self-reported symptoms, three studies indicate that receiving misleading information
342 about one's own symptoms can increase subsequent reporting of those symptoms. In one
343 study, participants completed a self-report questionnaire about a range of psychological
344 symptoms[71]. One week later, the researchers presented participants with specific
345 questionnaire items and their previous numerical responses and asked them to explain their
346 responses. For some items about emotional distress, the participants' answers were
347 artificially inflated. Participants accepted these inaccurate scores as correct, and were more

348 likely to endorse these emotional distress items one week later compared to items that
349 were not artificially inflated. A similar study asked participants to complete a questionnaire
350 about psychological and somatic symptoms, and then gave them immediate computerized
351 feedback that inflated some of those symptoms[72]. When subsequently given the same
352 questionnaire to complete (in the same testing session), participants' ratings for the
353 manipulated items increased, whereas ratings for the control items did not[72]. These findings
354 echo a similar body of literature demonstrating that receiving false personalised feedback
355 about one's heart rate increases reports of anxiety (Box 2).
356

357 In another study, undergraduate students were asked to imagine that they (or a friend) had
358 chronic fatigue syndrome and to write a story describing how it impacted their (or their
359 friend's) life; a control group of participants was asked to write about why they had chosen
360 their degree subject[73]. Participants who wrote about the fictitious effects of chronic fatigue
361 syndrome subsequently had higher self-reported somatisation symptoms than control
362 participants[73].
363

364 These studies that manipulated information about one's mental health are relevant to the
365 potential impacts of mental health awareness efforts because awareness materials often
366 encourage viewers to reflect on the possibility that they have mental health problems and
367 to identify symptoms in themselves. For example, a public health campaign advert might
368 highlight that mental health problems are common or describe a list of common symptoms.
369 Presenting mental health problems as common or socially normative could then lead to a
370 belief that the individual is experiencing the symptoms or disorder that were the focus of
371 the awareness materials, either immediately or at a later date. Whether this change in

372 beliefs is a beneficial or problematic outcome will depend on a number of factors, such as
373 whether the individual was previously under-acknowledging their symptoms, whether they
374 seek help for their symptoms, and whether that help is effective in reducing symptoms.
375
376 *[H2] Beliefs and attitudes*
377 There is also evidence that experimental manipulation of mental health awareness
378 materials can impact mental health-related beliefs about recovery. In one study,
379 participants saw a series of Twitter (now X) posts characterising recovery from a growth
380 mindset perspective (symptoms are changeable, treatable, and people have agency and/or
381 control over them), a fixed mindset perspective (symptoms are permanent, stable, and
382 people have little control over them) or control posts (unrelated to mental health).
383 Participants in the growth mindset group were more likely to endorse that individuals in
384 general have self-efficacy over mental health symptoms (that is, that they have control over
385 their mental health and recovery) and less likely to endorse that mental health problems
386 were permanent or stable compared to participants in the fixed mindset and control
387 groups[74]. There were no differences between groups in beliefs about length of prognosis
388 and treatment effectiveness, or self-reported mood either before or after the
389 manipulation[74]. Speculatively, these results might arise because awareness-related
390 messages relating to a growth mindset might help individuals feel more empowered to
391 improve or seek help for their mental health problems, whereas awareness-related
392 messages relating to a fixed mindset might lead to less optimism about recovery and
393 therefore less help-seeking. Thus, whether awareness-related messages have positive or
394 negative outcomes depends on message framing. However, more studies are needed to
395 assess this possibility.

Two further studies have shown that diagnostic information about an individual's own mental health problems can influence their beliefs about the aetiology and treatment of that problem. One study found that participants who received a bogus but credible biological test demonstrating that their depressive symptoms were caused by a chemical imbalance in the brain had worse prognostic pessimism, less regulation of negative mood (potentially a proxy for worse depressive symptoms) and saw pharmacotherapy as more credible than psychotherapy, compared to control participants who were told that they did not have a chemical imbalance[75].

Another study found that similar false diagnostic information can also influence behaviour[76]. Female participants completed two computerised tasks that purportedly measured their addictive tendencies towards food. Participants who were given bogus feedback that they had high-addiction tendencies subsequently consumed fewer calories than participants who were told they had low-addiction tendencies. A follow-up study found that the effect of the high-addiction condition on food intake was mediated by increased dietary concern, which reduced the amount of time participants willingly spent exposed to the foods during the taste test[76]. This evidence suggests that diagnostic information—even if false—can shape individuals' beliefs and behaviours. Although in some cases providing feedback can be useful if it leads to better self-understanding and access to help, overinterpretation of these symptoms can be potentially harmful if it is inaccurate and does not lead to effective help.

[H2] Moderators and individual differences

419 Preliminary experimental evidence suggests that there are individual differences in the
420 psychological impact of mental health awareness efforts. In one study, participants
421 completed the Beck Depression Inventory II and were divided into high symptom (scores 14
422 and above) and low symptom (scores below 14) groups[77]. All participants then viewed real
423 public service announcements videos that focused on either the importance of being
424 supportive towards a friend with mental illness (friend public service announcement) or the
425 importance of avoiding negative labels associated with mental illness such as ‘psycho’,
426 ‘crazy’ and ‘lunatic’ (labelling public service announcement). Qualitative analysis of
427 responses to open-ended questions showed that participants responded favourably to both
428 public service announcements; however, those with high (vs. low) depressive symptoms
429 responded less favourably and more frequently indicated that the public service
430 announcements had caused them unintended harm. Specifically, participants in the high
431 symptom group said the friend public service announcement made them take stock of their
432 friends, reminded them of their lack of support network, and made them feel that people
433 with depression, such as themselves, should not expect others to be there for them[77]. Thus,
434 these results show that public service announcements can have positive effects but might
435 be perceived more negatively by individuals with depression compared to individuals
436 without depression.
437
438 Two previously described studies also found evidence of individual differences in responses
439 to awareness materials. First, in the study that assessed the effects of ADHD materials,
440 participants with lower self-understanding (that is, a less stable and consistent self-concept)
441 were more likely to self-diagnose with ADHD both immediately after attending the ADHD
442 awareness workshop and one week later[78]. These results highlight that young people whose

443 identity is still in flux might be more likely to self-diagnose after being exposed to mental
444 health awareness materials.
445

446 Second, the association between exposure to a social media post normalising anxiety and
447 classifying one's symptoms as an anxiety disorder was mediated by two variables: the extent
448 to which the participant liked the person in the posts and the extent to which they identified
449 with them[67]. Specifically, viewing normalising posts predicted higher identification with or
450 liking of the user, which in turn predicted greater anxiety symptoms and self-diagnosis[67].
451 These results align with a large body of research in marketing, public policy and behavioural
452 economics showing that the extent to which an individual is influenced by information
453 depends on who delivers the message and the individual's response to them (messenger
454 effects;[79–81] . Specifically, the messenger's perceived authority and likeability and their
455 similarity to the recipient increase a message's influence on a recipient's behaviour or
456 beliefs[80]. In the context of mental health awareness materials, knowledge of messenger
457 effects could be used to design materials that maximise the possibility of beneficial
458 outcomes (such as increased help-seeking) and minimise the risk of negative outcomes
459 (such as inaccurate self-diagnosis or beliefs about mental health).
460

461 The importance of individual differences in the context of mental health awareness is
462 echoed in the wider literature on nocebo effects. A systematic review and meta-analysis of
463 17 studies found that greater expectations about experiencing symptoms (typically pain or
464 itch) were associated with stronger nocebo effects, and that being anxious about
465 experiencing symptoms modestly moderated the magnitude of nocebo symptoms[82].
466 Another meta-analysis of 10 studies found that trait responsiveness to suggestions (that is,

suggestibility) had similar moderating effects[83]. Thus, lab studies have found that being more anxious, open to suggestion, and holding negative expectations can increase the risk of experiencing worse mental health symptoms as a result of learning about such symptoms; individuals with these traits and beliefs might also be more susceptible to negative effects of mental health awareness efforts. By extension, individuals who are less anxious, less open to suggestion, and hold more positive expectations might be less likely to experience negative effects of mental health awareness campaigns and more likely to experience their intended benefits.

[H1] Implications for adolescence

Together, the evidence reviewed here suggests that the mental health awareness materials currently being disseminated can have a meaningful impact on how people understand, label and respond to mental health problems, including their own. These effects could be positive or negative depending on the accuracy of the updated belief and whether resulting help-seeking or treatment leads to a reduction in symptoms[84] (Figure 1). For example, consider an individual who has depression but has not yet identified it as such. If she is exposed to a mental health awareness campaign that leads her to recognise her symptoms as depression, and as a result she seeks help and receives treatment that resolves her symptoms, then this is clearly a positive result from an awareness campaign. However, a second individual might identify herself as having depression because of the awareness campaign but find that the help is either not available or not effective (which is plausible, given current treatment wait times and variable treatment effectiveness[85,86]). In this instance, the effect of the awareness campaign is ambiguous. A third individual who is

491 experiencing low mood but does not have depression might be exposed to the same
492 campaign and conclude inaccurately that she has depression. This inaccurate self-diagnosis
493 could lead to a number negative outcomes for the individual, such as an exacerbation of
494 symptoms or a reduced sense of agency in improving her mood[37,58,65].
495
496 There is particular theoretical interest regarding the psychological impact of mental health
497 awareness efforts on adolescents (10-24 years old)[87] because of the unique features of this
498 developmental period. Specifically, adolescence is a time of identity development,
499 heightened risk for developing mental health problems, and heightened susceptibility to
500 social influence. We consider each of these features in turn.
501
502 First, adolescence is a formative period of identity development, during which individuals
503 navigate the complex process of understanding and defining who they are and
504 communicating that to others[88,89]. Although identity development begins in childhood and
505 continues throughout adulthood, it is in adolescence that this process takes on a greater
506 importance: it is a period of many first independent experiences, which are particularly
507 likely to affect self-understanding[90] and guide future beliefs and behaviour. Relatedly,
508 adolescence is also the first time during which individuals have the cognitive capacity to
509 reflect in detail on what has happened to them and how it might affect who they are[91].
510 Furthermore, much of adolescent identity development now happens online, where
511 adolescents explore and discover multiple aspects of their self-concept and present that
512 emerging identity to their peers for feedback[92].
513

514 Mental health awareness materials disseminated online often encourage adolescents to
515 identify symptoms of mental disorders in themselves[93]. A psychiatric diagnosis from a
516 professional can have substantial positive (increasing self-understanding and self-
517 legitimisation) and negative (increasing self-stigma and a sense of isolation from others)
518 impacts on adolescents' identity and self-concept[94]. When adolescents view online content
519 about mental health problems, they are likely to take on this language to describe
520 themselves, and it might be meaningfully absorbed into their developing identity[35]. This
521 process of taking on language to describe themselves and absorbing it into their identity
522 might have positive effects, such as improved self-understanding, access to resources and
523 help-seeking[58,95]. However, academic, clinical and educational psychologists have theorised
524 that the availability of mental health content online can also promote the identity of an
525 'unwell persona' for young people in distress, in which young people rely on diagnostic
526 frameworks to understand themselves and their difficulties, and to communicate these with
527 others[59,93,96].

528

529 Second, adolescence is a period of particular interest for mental health awareness efforts
530 because this period is one of heightened risk for mental health problems[97]. Even adolescents
531 who do not have a disorder experience frequent fluctuations in mood, have difficulty
532 regulating their emotions and regularly experience stressful events, particularly academic
533 stress and social stress relating to their family and peers[98–100]. In the context of mental
534 health awareness efforts, adolescents might interpret and label these negative experiences
535 as symptomatic of a mental health problem or disorder. In many cases, they do so
536 accurately[63], but there are concerns that some adolescents might be mislabelling typical
537 developmental stress as a mental disorder[37,65].

538

539 Finally, the impact of mental health awareness efforts should be considered in the context
540 of adolescents' susceptibility to social influence. Adolescents are more susceptible to being
541 influenced by their peers than children and adults[101,102]. There is also some evidence for
542 social contagion of mental disorder diagnoses among adolescents: a study of over 700,000
543 young people found that having a classmate diagnosed with a mental disorder in the ninth
544 grade was associated with a higher risk of others within that class receiving a diagnosis later
545 in life, relative to young people who do not have a classmate diagnosed with a mental
546 disorder in ninth grade[103]. These effects held even when controlling for a number of
547 parental, school-level, and geographical factors. The mechanisms behind this finding are
548 unclear, but they raise the possibility that mental disorder symptoms might be transmissible
549 among adolescent peer networks, or that exposure to diagnostic labels might make people
550 more willing to identify with and seek out diagnoses than individuals who were not exposed
551 to these labels.

552

553 Any impact of mental health awareness efforts—whether positive or negative—should be
554 considered in the context of all these developmental vulnerabilities, which suggest that
555 adolescents might be especially likely to be impacted by mental health awareness efforts.
556 Moreover, this age group is the target of mental health awareness efforts in schools; there
557 is therefore an ethical impetus to understand the impact of mental health awareness efforts
558 on adolescents because they are exposed to mental health awareness in various contexts
559 and often cannot easily opt out of receiving these interventions[51]. However, to date, there is
560 a surprising paucity of empirical evidence assessing the impact of mental health awareness
561 efforts on outcomes in adolescents specifically.

562

563 ## [H1] Summary and future directions

564 The reviewed studies demonstrate that mental health awareness materials can have a range

565 of psychological effects on individuals, including how they interpret their own symptoms[67–

566 69,75,76] and their beliefs about mental health and illness more generally[74]. Furthermore,

567 specific effects vary depending on the individual's traits, the materials or messages being

568 presented, and the social affiliation the individual feels with the person or account sharing

569 the message [67,77,104,105]. Finally, there is evidence that receiving bogus personalised

570 information about one's own symptoms—which is similar to some mental health awareness

571 messages—can increase anxiety[106–109] and other symptom reporting[110,111]. Overall, these

572 studies offer some tentative support for theoretical concerns that information about mental

573 health can affect how individuals interpret, label and respond to their negative psychological

574 experiences in a problematic way[7,13,22,57,112–115].

575

576 However, there are a number of methodological issues across these studies, and so the

577 findings should be interpreted with caution. In particular, some of the evidence to date is

578 essentially evidence of a manipulation check: participants repeated back the information

579 presented to them (for example, that mental health disorders are common), possibly due to

580 transient demand characteristics and the desire to be a 'good participant'[116–119]. To assess

581 whether this is the case or whether awareness materials lead to genuine belief change,

582 study protocols should be designed to minimise demand characteristics (for example,

583 emphasise anonymity and use filler tasks to mask the focus of the study) and follow-up data

584 should be collected to examine whether belief change is transient or sustained.

585

586 Admittedly this Review is based on a limited body of research and more work is needed,
587 especially given the range of different messages that are delivered in mental health
588 awareness campaigns, of contexts in which they are delivered, and of disorders and
589 symptoms that are covered[120,121]. Once more studies are conducted, the field would benefit
590 from a systematic review and meta-analysis. In the meantime, research using experimental
591 methodology should use a systematic approach to manipulate different variables (for
592 example, the message shared and the disorder described), examine their impact on
593 different psychological outcomes, and test the role of various individual differences as
594 moderators. Similarly, messenger effects should be examined systematically in experiments
595 that manipulate variables that have been found to moderate social influence in other
596 contexts, such as the perceived authority and likeability of the social media account posting
597 the awareness content, as well as the similarity between the poster and the viewer[80].
598
599 It will also be important for future research to adopt longitudinal and ecologically valid
600 designs. Experimental paradigms are helpful for testing specific hypotheses in a controlled
601 manner, but they do not reflect the reality of how people are exposed to mental health
602 awareness efforts in their daily lives[122]. These materials are widespread and are
603 disseminated to people repeatedly across multiple contexts, including in schools,
604 universities, workplaces and on social media. If psychological effects arise even after short-
605 term exposure in lab settings, it is plausible that repeated exposure in daily life will have a
606 greater impact on how individuals understand and report on their mental health. Future
607 studies that can capture this repeated exposure (for example, using experience sampling
608 methods) can address this hypothesis. Such approaches will be particularly important for
609 testing whether exposure to mental health awareness materials can lead to a genuine

610 increase in symptoms over time via a self-fulfilling mechanism, as suggested by the
611 prevalence inflation hypothesis[7,57].
612
613 It will be critical for future research to use large enough sample sizes to examine individual
614 differences. Sample sizes in the reviewed studies ranged from 60 to over 600 participants;
615 not all studies were sufficiently powered. Critically, sample sizes were typically too small to
616 consider individual differences. The goal of many mental health awareness efforts is to
617 target people en masse, but the experimental evidence presented here indicates that not
618 everyone will respond to the same message in the same way. For example, research on
619 school-based mental health interventions suggests that young people with more mental
620 health symptoms might be more negatively affected by the intervention[123,124]. However, the
621 possibility and nature of individual differences needs to be investigated in the context of
622 mental health awareness efforts. It is also possible that age influences responses to
623 awareness materials; although most theoretical concern is targeted towards young people,
624 there has been no attempt to compare whether different age groups are differentially
625 affected by mental health information.
626
627 Moreover, the majority of empirical research about mental health awareness has been
628 conducted in high-income Western countries, with no evaluation of possible cultural
629 differences within those populations. Testing the impact of awareness materials in low- and
630 middle-income countries (LMICs) and cultural differences within high-income countries is a
631 key avenue for future research (Box 3).
632

633 Once a better evidence base has been established, crucial questions must be asked on a
634 societal level about the trade-off between the potential benefits of mental health
635 awareness efforts (such as reduced stigma, increased help-seeking, and improved ability to
636 accurately recognize symptoms) and their potential drawbacks and harms (such as
637 overpathologising and inaccurate self-diagnosis). To some degree, all public health efforts
638 run the risk of some unintended harms; the question is whether there are sufficient benefits
639 to tolerate the amount of risk[125–127]. It will be important to explore which specific methods
640 can deliver useful mental health information while minimising unintended harms. Providing
641 nocebo education is one potential option to minimise unintended harms[78], but this
642 approach needs to be further tested in different contexts.
643
644 In sum, the evidence presented in this Review indicates that mental health awareness
645 materials affect the way individuals understand their mental health, sometimes in a
646 problematic way; more research is urgently needed to better understand how to optimise
647 the effectiveness of these materials while minimising potential harm.
648

649 **Table 1.** Example public awareness campaigns discussed in this article.
650

Campaign	Aim	Timeframe	Location	Empirical evidence for campaign effectiveness
Time to Change	To improve public attitudes and reduce discrimination faced by people with mental health challenges	2007-2021	England	Improvement in mental health knowledge and attitudes towards people with mental health problems[2,25]
Beyond Blue	To increase the capacity of the Australian community to prevent depression and respond effectively to it	2000-present	Australia	Improvement in mental health literacy[27,28]
Bell Let's Talk	To reduce stigma, improve access to treatment, and improve corporate responsibility for mental health	2010-present	Canada	Increase in mental health service utilisation[30]
Act-Belong-Commit	To encourage individuals to adopt habits that protect and improve their mental health	2002-present	Australia	A positive association between the belief that the campaign increased openness around mental health problems and help-seeking for mental health problems[29]

651

652 **Figure captions**
653
654 **Figure 1: Possible impacts of mental health awareness campaigns.** Mental health
655 awareness campaigns might have different impacts for different individuals. For example,
656 one person might recognize her symptoms in the campaign, realize she has depression, and
657 seek help that resolves her symptoms (positive outcome). A second person might recognize
658 her symptoms in the campaign, realize she has depression, but be unable to access an
659 appointment with a doctor (ambiguous outcome). A third person experiencing low mood
660 but who does not have depression might inaccurately conclude that she has depression; this
661 inaccurate self-diagnosis could exacerbate symptoms or reduce her sense of agency in
662 improving her mood (negative outcome).
663

664 **Box 1: The nocebo effect as a potential mechanism**

665 Mental health awareness efforts could potentially lead to worse symptoms and higher rates
666 of self-diagnosis because they change people's expectations about their mental health. Over
667 the past 40 years, health researchers have studied the role of expectations on treatment
668 outcomes in the context of placebo effects, where symptoms improve due to the person's
669 belief that an inert treatment is effective. In other words, how a person expects to respond
670 internally to an experience can impact mental and physical symptoms[128–130].

671

672 A growing body of research is now also exploring the nocebo effect, where expecting
673 negative outcomes from a treatment makes those negative outcomes more likely to occur.
674 Indeed, believing that a treatment will cause unpleasant physical or psychological symptoms
675 (such as anxiety and hypersensitivity) leads to more of these symptoms over time[104]. A
676 meta-analysis of 73 studies across various conditions and treatments showed that
677 participants who were induced to expect side effects (for example via verbal instruction)
678 experienced moderately worse side effects, as well as worse pain, fatigue, itch and other
679 physical symptoms compared to participants who were not induced to expect negative
680 effects. The overall magnitude of the nocebo effect found in this meta-analysis was
681 moderate ($g = 0.522$)[104]. Other studies have found nocebo effects for mental health
682 symptoms such as mood, stress, and anxiety. For example, informing participants about
683 'wind turbine syndrome'—a condition ostensibly caused by wind farm sounds and
684 characterised by physical and affective symptoms—led to worse mood and anxiety in
685 participants exposed to wind farm sounds, compared to a control group exposed to the
686 same sounds but given biological explanations for auditory and visual symptoms[131–133].

687

688 Although there is limited research on the nocebo effect in the context of mental health
689 awareness, there is indirect support for nocebo effects in the context of physical health
690 awareness efforts. For instance, consuming health content on social media has been linked
691 with the rise of functional tics among adolescent girls[134]. These symptoms are distinct from
692 Tourette's characteristic tics[135] and instead are suggested to arise due to social learning and
693 negative expectations[136,137]. Furthermore, there is literature on the negative consequences
694 of being labelled with a diagnosis. For example, a meta-analysis found that participants who
695 were falsely labelled as having sustained a traumatic brain injury experienced a modest
696 worsening in their objective cognitive performance on various neuropsychological tests
697 compared to participants who were not falsely labelled as having sustained a traumatic
698 brain injury (d = 0.19, CI = -.04, 0.41)[138].

699

700 Although mental health awareness efforts are not in themselves a treatment, they might
701 still induce a nocebo effect by negatively shaping people's expectations about their
702 psychological state, consequently leading them to misinterpret normal distress as
703 pathological. Over time, this might, paradoxically, cause more distress. Indeed, many mental
704 health efforts encourage individuals to pay attention to their distress and to acknowledge
705 that they might be at risk of mental health symptoms. For example, many charity and public
706 health campaigns promote the message that mental health problems are very common in
707 the general population, and that people are likely to experience many of them in their
708 lifetime (similar to the messaging about medication side effects in nocebo studies).
709 Receiving such messages might lead to symptom worsening because of increased attention
710 and anxiety about symptoms. Future studies should explore how negative expectations
711 shape people's perception of their mental health and subsequent levels of distress.

Box 2: Effects of bogus physiological feedback

Providing individuals with false physiological feedback about their bodies leads to an increase in self-reported anxiety. Specifically, monitoring participants' heart rate and providing false feedback about that heart rate has a greater impact on self-reported symptoms of anxiety in individuals with a history of panic attacks or current panic disorder[106,139,140], in individuals with social anxiety disorder[111,141], and in individuals with high levels of obsessive-compulsive disorder symptoms[110] compared to individuals without these disorders or symptoms.

Mental health awareness efforts do not provide physiological feedback in this way, but these efforts likely involve some degree of personalised feedback. For example, they might encourage individuals to complete an online questionnaire to assess their symptoms, ask a chatbot to infer symptoms, or use a smart device that provides physiological feedback about stress levels. Such information might affect individual's self-reported anxiety and distress, particularly in individuals who already have mental health problems.

Box 3. Ethnic and cultural differences

Mental health literacy in LMICs is low, as demonstrated by limited recognition and knowledge about mental health problems and illnesses, high levels of stigma and low confidence in seeking professional help, which often is not available[142,143]. It is therefore possible that awareness materials will have a different impact in these settings. Specifically, awareness materials might have more beneficial psychological impacts (for example, increased help-seeking) in countries where public stigma is high compared to countries where public stigma is comparatively low because they provide a much-needed correction to dominant negative attitudes. There might be an optimal level of mental health literacy or stigma at which mental health awareness interventions are likely to lead to the most benefit and the least harm; this needs to be investigated systematically in future research in a wide range of settings[144].

There is also reason to expect ethnic and cultural differences within high-income countries such as the UK and the US that could moderate the psychological impact of mental health awareness materials. An individual's ethnicity and cultural background affects their beliefs about the cause and treatments of mental health problem, the level of stigma and self-stigma they face, and their perception of and experience with accessing healthcare[145]. Specifically, individuals from minoritised ethnic groups experience higher levels of stigma[146], which likely combines with structural racism and stigma within healthcare to exacerbate poor mental health outcomes[147]. Future research on the impact of mental health awareness materials should examine the potential moderating role of ethnicity, and the underlying mechanisms including stigma and structural racism in healthcare.

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