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Title: Closing the needs-access gap for young people with depression: Digital single session interventions as a promising innovation to extend existing provision

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Conflicts of Interest

None

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The Problem

Psychological distress, including depression, becomes more common during adolescence (Lu, 2019; Rapee et al., 2019). Around one in ten adolescents will have had major depressive disorder by age 18 (Solmi et al., 2021), characterised by sadness and/or irritability and/or lack of enjoyment/motivation (A.P.A., 2013). And approximately one in three adolescents has elevated depression symptoms currently (Shorey et al., 2021).

Adolescent depression has a substantial short- and long-term cost for individuals, communities, and society. Globally, it is the leading cause of disability in 10- to 19-year-olds (WHO, 2013) and is associated with educational difficulties including absenteeism (Finning et al., 2019) and lower attainment (Wickersham et al., 2021) and inter-personal problems (Naicker et al., 2013; Schwartz-Mette et al., 2020). Into adulthood, adolescent depression is associated with several unfavourable outcomes including subsequent depression and anxiety (Johnson et al., 2018), and unemployment (Clayborne et al., 2019). Prompt treatment can decrease these impacts (Goodyer et al., 2017). However, treating adolescent depression is expensive, with one CAMHS psychological therapy session for adolescent depression costing £58-£191 (Goodyer et al., 2016).

Needs-Provision Gap

Adolescents themselves want to be able to access help when they start to experience difficulties and when they struggle to cope, rather than once they are diagnosed with depression (ADVANCE, 2021). However, as < 1% of the NHS commissioning budget is spent on child and adolescent mental health services (CAMHS), need far outweighs provision; approximately one quarter of CAMHS referrals in 2021 were rejected (Children's Commissioner, 2022; NHS, 2021) and adolescents must wait to access help, particularly when they are less acutely unwell, with an average 9 week wait for a first appointment with CAMHS and a further 4 weeks to start treatment (NHS, 2021). So, the first problem to overcome is that *we simply do not have the clinic-based resources to treat all the adolescents who need help and to upscale existing provision would be prohibitively expensive.*

The current generation of adolescents are digital natives; technology is endemic in their lives. In the UK in 2020, 96% of households had internet access (ONS, 2020), and 83% of 12- to 15-year-olds owned a smartphone, with 71% having a social media profile (OFCOM, 2021). Harnessing digital technology can provide an effective way to deliver evidence-based interventions at scale (Taylor et al., 2020), including through mobile phone apps and internet based treatments. Providing help

digitally could be a way to reach adolescents where they are, whilst also being scalable and cost-effective.

Engagement Problem

Of those adolescents who do access NHS mental health services, many disengage before completing all the sessions available to them (Goodyer et al., 2017; Wright et al., 2020). A study of over 23,000 children and adolescents referred to CAMHS found that 46% attended only one session (Edbrooke-Childs et al., 2021). In 2021, 3 in 10 CAMHS referrals were seen only once (NHS, 2021). Those from minoritised and stigmatised groups who are more vulnerable to mental health problems (Deighton et al., 2019; Lavner et al., 2021) are disproportionately more likely to attend only once (Edbrooke-Childs et al., 2021) and to drop out from treatment (de Haan et al., 2018). This means many who attend CAMHS do not access the full dose of treatment.

Despite the effectiveness of digital interventions, uptake is similarly problematic. The mobile phone apps with good evidence of effectiveness are not necessarily those that are most often downloaded (Neary & Schueller, 2018). Furthermore, treatments like internet based cognitive behaviour therapy (iCBT) suffer from significant attrition before the key active ingredients of change have been (fully) delivered (Linardon & Fuller-Tyszkiewicz, 2020) and most frequently, are only used once or twice (Michelle M. Ng et al., 2019). For example, one third of anxious children and adolescents (N = 4425) who enrolled in an open access self-help iCBT programme only used one session of the ten sessions available to them (March et al., 2018). Therefore, *we need a solution which does not presume ongoing use.*

Barriers to Help-seeking

Even when services are available, many adolescents who struggle with depression do not feel able to ask for help, due to lack of knowledge and understanding of depression and of what can help (Thapar et al., 2012; Thapar et al., 2016), as well as stigma and negative beliefs about healthcare professionals (Aguirre Velasco et al., 2020; Patil et al., 2018). And inconsistencies in care pathways which are fragmented make it difficult to identify where or how to seek (evidence-based) help (Radez et al., 2020). Again, those from disadvantaged backgrounds (e.g., ethnic minority) are also disproportionately affected by these help-seeking barriers. So, we need to find ways to *provide effective help anonymously, and in a way that reaches adolescents where they are.* Digital treatments potentially overcome some of the barriers to seeking and getting help for adolescents like stigma, as well as practicalities like travel and timings of appointments.

The Potential Solution: Single Session Interventions (SSIs)

An SSI is a one-off therapeutic intervention with no assumption of a return visit. This means that the active ingredient of the therapy is intentionally delivered within one session. A systematic review and meta-analysis (Schleider & Weisz, 2017) of SSIs in adolescents with mental health problems found a pooled mean pre-post intervention effect size of Hedges $g = 0.32$ and the probability that an adolescent receiving a SSI would fare better than one in the control group was 58%. Importantly, effects did not differ for self- versus therapist-administered SSIs or for those with diagnosable versus sub-clinical problems. Although these effects are relatively small, they are worthwhile because of the scalability and brevity of SSIs. By comparison, more extensive psychological therapy targeting subthreshold adolescent depression symptoms has an effect size $g = 0.38$ (Cuijpers et al., 2021). SSIs can be delivered by a therapist in various formats (Dryden, 2020) or offered as unguided, self-help approaches without therapist input.

Unguided, online SSIs are a potential scalable public health solution as an addition to current provision for adolescent mental health. These are better established in the USA but have yet to be used in the UK. The Lab for Scalable Mental Health at Stony Brook University has developed several brief free, anonymous, unguided SSIs for adolescents dealing with anxiety, depression, and stress. Each SSI takes about 20 to 30 minutes to complete and is internet-based. Therefore, adolescents can access the SSIs privately, on their own terms at a time of their choosing and anonymously. These SSIs were developed based on four primary B.E.S.T. elements, **B: Brain science** to normalise concepts in the programme, **E: Empower adolescents** to a “helper” or “expert” role, **S: Saying-is-believing** exercises to consolidate learning, and **T: Testimonials** and evidence from valued others. The SSIs are embedded within the Qualtrics survey platform, and include psychoeducational materials in written and visual form, brief videos, vignettes, and self-reflexive exercises.

Several randomised controlled trials (RCTs) have found that these SSIs **reduce the risk of anxiety and depression in American adolescents** including at up to 9-month follow-up as compared to a supportive control (Schleider & Weisz, 2018; Schleider, Burnette, et al., 2020; Schleider et al., 2021; Schleider & Weisz, 2016, 2017). The most extensively trialled of these online SSIs for adolescents are Project Personality, which is a growth mindset intervention (key message: ‘you can learn to think differently’), and the A.B.C. project, based on behaviour activation (key message: ‘do more of what matters’).

A particular appeal of SSIs is that they could better engage minoritised and stigmatised populations who may never otherwise access help. Most recently, in the pandemic context, almost 2500 adolescents (ages 13 to 16 and diverse, from all 50 states in the USA, including a population-congruent representation of ethnic minorities and an over-representation of sexual minorities), were recruited via social media, predominantly Instagram, to an RCT (Schleider et al., 2021). The trial compared the growth mindset SSI to the behaviour activation SSI and to a supportive control SSI. Those adolescents randomly allocated to the behaviour activation SSI and the growth mindset SSI had reduced depressive symptoms 3 months later (Cohen's $d = 0.18$) as well as decreased hopelessness ($d = 0.16-0.28$) and increased agency ($d = 0.15-0.31$), confirming the effectiveness of these SSIs, even in the high stress context of a global pandemic.

Beyond these trials, US evidence supports the acceptability and utility of the SSIs for adolescents experiencing psychological distress when provided as openly accessible resources. Importantly, like in the trials, those accessing this platform were diverse on several dimensions including > 50% non-White and > 40% sexual minorities (Schleider, Dobias, et al., 2020). Even briefer versions (5-to-8-minute) of the SSIs, embedded into the social media platform, Tumblr have yielded high star ratings (>4 out of 5), and had high completion rates (around 25-57%) relative to real-world completion rates of other unguided self-help interventions (Dobias et al., 2022). Adolescents who completed these ultra-brief SSIs reported significant pre-post improvements in hopelessness, self-hate, and desire to stop self-harm.

The utility of SSIs has also been demonstrated in other cultural contexts, including low- and middle-income countries. An RCT in Kenya compared a digital SSI based on growth mindset, gratitude, and value affirmation principles (Shamiri-Digital) to a study-skills control (Osborn et al., 2020). Adolescents in the SSI group had significantly greater reduction in depressive symptoms at 2-week follow-up ($d = 0.50$). Similarly, a feasibility study in India found that a digital SSI was acceptable, feasible, appropriate, engaging, and most importantly, meaningful for adolescents with depression (Wasil et al., 2020). Its key strength was that the SSI was developed with stakeholder input, including Indian adolescents and school officials. This is further evidence that self-help digital SSIs may be a promising and cost-effective avenue to extend mental health care options for these adolescents, improve timely access without a wait, and to expand the reach of existing provision, particularly into vulnerable and under-served communities.

Using SSIs in the UK

The advantage of SSIs is that this expansion of provision would not require more trained therapists to deliver them or require the adolescent to ask for help from the limited capacity systems available and wait for help to be provided. To date, there are two published UK pilot trials of an SSI. The first of these was school based (Perkins et al., 2021), and recruited 80 adolescents (aged 16-18), irrespective of depressive symptom status, and randomly allocated them to either an enhanced mindset SSI or usual curriculum as a waiting list control. Participants engaged well with the intervention content indicating acceptability, with small to large intervention effects for mindset and psychological flexibility, and promising results for self-compassion, self-esteem, low mood, and anxiety, and no harm was reported. Whilst this feasibility study demonstrated that online SSIs could work in the UK, analyses were underpowered and further work is needed to establish how and where to embed these in practice. The other UK-based feasibility study (Ching et al., 2022) took place in a paediatric hospital and included children and adolescents aged 8 to 18 with physical health problems. Participants reported that an adapted version of the American growth mindset SSI was enjoyable and accessible when offered whilst waiting for mental health help. There was also evidence of small to large effects on outcomes. Again, this is promising but the sample was small (N = 25) and there was no control group.

There are several uncertainties that we need to address in order to capitalise on SSIs as a potentially universally available, non-stigmatising, and empowering intervention that could increase accessibility, scalability, and choice of early help for adolescents with depression symptoms. The key questions are:

- Are these SSIs effective when adapted for the UK context and offered anonymously? This will require us to establish an ethically acceptable process for assessing Gillick competence to allow under 16s to consent to take part in studies without requiring parental consent. It will also require us to establish better ways to retain participants at follow-up points to ensure that we are able to track outcomes.
- How do we best 'market' these to adolescents, i.e. how do we get messages out to adolescents in ways that are relevant, credible and reach them where they are, including those in under-served communities who may be disproportionately vulnerable and less likely to access traditional clinic based services.
- What works best for whom, acknowledging both that SSIs should only be one part of a much broader offering, but also offering choices of different SSIs with different content, prioritised and co-designed by potential end-users.

Answering these questions and implementing SSIs in the UK could broaden the range of approaches available and extend the provision of evidence-based help without needing to increase NHS workforce capacity and training.

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