



A pilot study of the perceptions and acceptability of guidance using artificial intelligence in internet cognitive behaviour therapy for perfectionism in young people

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ABSTRACT

Perfectionism is a transdiagnostic process associated with a range of psychological disorders. Cognitive Behaviour Therapy for Perfectionism (CBT-P) has been demonstrated as efficacious across guided and unguided internet delivered interventions in reducing perfectionism and psychopathology. The aim of this pilot study was to understand perceptions and acceptability of an artificial intelligence supplemented CBT-P intervention (AI-CBT-P) in young people with lived experience of anxiety and depression ($n = 8$; age range 19–29 years, $M = 24$ years, $SD = 3.77$; 50 % female, 38 % male, 12 % non-binary). Young people reported that they were frequent users of artificial intelligence for study, work and general information, were positive about the intervention and using artificial intelligence for guidance in a self-help intervention, but also noted several concerns. Young people perceived numerous benefits to AI-CBT-P, including ease of access, low cost, lack of stigma and benefits for individuals with social anxiety. Overall, young people appear to be interested in, and have a positive view of, AI-CBT-P. Further research is now required to examine the feasibility and acceptability of the intervention.

1. Introduction

Perfectionism is a transdiagnostic process (Egan et al., 2011), demonstrating a consistent association with symptoms of anxiety, depression and eating disorders (Bills et al., 2023; Callaghan et al., 2023; Limburg et al., 2017; Lunn et al., 2023; Stackpole et al., 2023). Perfectionism has been defined as a multidimensional construct, as measured with the Multidimensional Perfectionism Scales (FMPS; Frost et al., 1990; HMPS; Hewitt and Flett, 1991). The multidimensional approach has reported two predominant factors of perfectionistic strivings, i.e., setting high standards, and perfectionistic concerns, i.e., concerns over mistakes and believing others expect perfection (Stoeber and Otto, 2006). Some authors have argued for a distinction between adaptive and maladaptive perfectionism (Bieling et al., 2004; Hill et al., 2023; Stoeber

et al., 2020) and that perfectionistic strivings represent adaptive aspects of perfectionism (Stoeber et al., 2020; Stoeber and Otto, 2006). However, recent meta-analyses of the relationship between perfectionistic strivings and concerns with psychopathology have found significant associations between strivings and symptoms of anxiety, depression and eating disorders in young people and adults (Bills et al., 2023; Callaghan et al., 2023; Lunn et al., 2023; Stackpole et al., 2023). Nevertheless, the association between psychopathology is stronger with perfectionistic concerns, and in general smaller correlations are observed between psychopathology and perfectionistic strivings (Callaghan et al., 2023; Lunn et al., 2023). Perfectionism has also been defined as ‘clinical perfectionism’ with self-worth based on trying to meet high standards despite adverse consequences (Shafran et al., 2002). Cognitive-Behaviour Therapy for perfectionism (CBT-P) is based on Shafran

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et al.'s (2002) model of clinical perfectionism (Egan et al., 2014b; Shafran et al., 2018). CBT-P has been described as the treatment with the greatest evidence-base for perfectionism (Egan et al., 2022a). Meta-analyses have demonstrated CBT-P is efficacious in the reduction of perfectionism and symptoms of anxiety, depression and eating disorders (Galloway et al., 2022; Robinson and Wade, 2021), with no difference in efficacy between face-to-face or internet delivered formats (Suh et al., 2019).

A particular strength of CBT-P is that most studies have involved self-help treatment, which offers a clear benefit in dissemination of the intervention (Shafran et al., 2023). CBT-P has efficacy in reduction of perfectionism and associated psychopathology when delivered as a guided, guidance-on-demand and unguided internet intervention (Egan et al., 2014a; Grieve et al., 2022; Rozental et al., 2017; Shafran et al., 2017; Shu et al., 2019; Valentine et al., 2018; Wade et al., 2019; Zetterberg et al., 2019). CBT-P has also been evaluated in guided traditional book self-help treatment formats (Hoiles et al., 2022; Lowndes et al., 2018; Steele and Wade, 2008). For example, Lowndes et al. (2018) evaluated a brief self-help booklet version of CBT-P in women in their third trimester of pregnancy compared to a waitlist control, with limited guidance provided through a 5-minute weekly phone call by a therapist. Significant moderate to large effect size reductions in perfectionism and depression were demonstrated at post-treatment and maintained at 3-month follow-up (Lowndes et al., 2018). Decreases in perfectionism accounted for the reduction in symptoms, through a significant indirect effect of the intervention on post-treatment anxiety and depression via changes in perfectionism (Lowndes et al., 2018).

It has been suggested that interventions for perfectionism should be co-designed with young people (Egan et al., 2022c). Unguided internet CBT-P (ICBT-P) has been co-designed with adolescents (O'Brien et al., 2022), and co-designed with parents of adolescents with eating disorders (Egan et al., 2023). However, no studies to our knowledge have examined the perceptions of young people about the acceptability of a co-designed CBT-P intervention with guidance provided through an Artificial Intelligence (AI) tool, such as ChatGPT. In general, guidance has been found to improve adherence (e.g., Musiat et al., 2022) and outcomes (Andersson et al., 2019; Baumeister et al., 2014) in internet delivered CBT (ICBT). Shafran et al. (2023) argued that guidance-on-demand has great potential to improve scalability given equivalent efficacy to weekly scheduled guidance, but requires significantly less therapist time (e.g., Dahlin et al., 2022). However, guidance on demand still requires some therapist time. In practice, even guidance-on-demand limits scalability, as after trial completion it is difficult to provide guidance. An important question is whether AI tools may be a practical way for individuals to access guidance for internet interventions without the need for a healthcare professional. There are numerous studies of AI chatbots for addressing mental health challenges, some co-designed with young people (e.g., Wrightson-Hester et al., 2023), but none have targeted perfectionism, or reported on AI as a tool for guidance in CBT-P.

Carlbring et al. (2023) summarised emerging trends in the use of ChatGPT as a tool for guidance in ICBT, noting both potential benefits i.e., ease of access and generalisability, and limitations, including a potential perceived lack of empathy and human connection. These points highlight the importance of research examining the perceptions of users of AI assisted interventions. Another potential benefit of AI guided ICBT is that it may be consistent with the preferences of some individuals, for example, Carlbring et al. (2023) highlighted that for some people not seeing a therapist is preferable to face-to-face contact. This is consistent with research examining brief, low intensity ICBT for anxiety and depression, where individuals stated they preferred unguided rather than guided ICBT (e.g., Egan et al., 2021; Egan et al., 2022b). An important benefit of using AI tools for guidance in ICBT, is the potential to close the demand-capacity gap by no need for a therapist to provide guidance. Although guidance is associated with better outcomes in ICBT, a disadvantage of guidance is that it limits scalability, due to requiring a person to be available and receive training in how to provide

guidance. AI tools may be a way around this requirement for a human to be involved, and therefore help bridge the scalability gap by providing guidance without the need for a trained professional. This is particularly relevant for ICBT-P, given that research has demonstrated the quality of information on websites for perfectionism is poor (Wade et al., 2021). Another potential benefit of AI tools is that they may be preferable to human guidance given that humans are subject to bias, and potentially due to bias may not adhere to protocols on how to deliver guidance, whereas AI guidance may be data driven and not as subject to human bias. Finally, another clear benefit of AI tools for guidance in ICBT is the immediacy of the support available, where an individual can receive immediate guidance without waiting for a trained professional to respond to their request, for example, in guidance on demand.

To date there have been no reports in the literature of the views and perceptions of young people about the acceptability of AI guided ICBT, which would be useful in informing the feasibility of such interventions. Further, CBT-P studies have largely been co-designed and conducted with individuals in high-income countries (e.g., Australia, United Kingdom). It is estimated that 80 % of people who have mental health problems reside in Low- and Middle-Income Countries (LMICs) (Raghavan et al., 2023). A recent study provided encouraging evidence for the efficacy of ICBT-P in the reduction of perfectionism and symptoms of eating disorders, when delivered as an unguided intervention to a global sample of individuals with elevated eating disorder symptoms, including LMICs (Robinson et al., 2024). However, this study did not involve co-design of the intervention with young people from LMICs. A unique contribution would be to understand the perceptions of young people in co-designed ICBT-P with a more diverse range of young people from LMICs. This would inform understanding of a broader range of perceptions across countries and the future refinement of ICBT-P. Further, co-design of treatments may increase the uptake of interventions (Sunkel and Sartor, 2022), particularly in young people (Norton, 2021). Interventions that are co-designed have been suggested to optimise support for diverse communities (Schleider, 2023).

The aims of this study were to (1) understand views and perceptions about the acceptability of AI as a tool for guidance and (2) co-design with young people an ICBT-P intervention supplemented with guidance using AI. Given the exploratory nature of the study, there were no specific hypotheses.

2. Method

2.1. Participants

The intervention was co-designed with a Youth Advisory Group with lived experience of anxiety and depression ($n = 8$; age range 19–29 years, $M = 24$ years, $SD = 3.77$; 50 % female, 38 % male, 12 % non-binary), from India ($n = 3$), Kenya ($n = 2$), Australia ($n = 2$), and the United Kingdom ($n = 1$). Young people were required to have lived experience of either anxiety and/or depression and were recruited from their engagement in other research projects with the first author examining transdiagnostic processes in youth mental health. Specifically, young people from Kenya and India were included who had been involved in a previous youth advisory committee advising on the development of a grant application on co-designed interventions for anxiety and depression in young people and were identified in this previous work by a lived experience lead at Amazing Minds Africa, Nairobi, Kenya. Young people from Australia were recruited both from previous lived experience advisory groups on anxiety and depression (Breen et al., 2023), and an advertisement distributed via email to a database of lived experience experts. This email was distributed through Curtin Involve, at the enAble Institute, Curtin University, which assists in the recruitment of individuals with lived experience for research projects. Young people from the UK were recruited through word of mouth by contacts of the lead author from a previous grant application.

2.2. Measures

The Youth Advisory Group were asked to respond to a range of questions about their use of AI tools, view of the intervention booklet, and suggestions for additions and changes to content (Table 1). The questions were derived by the research team based on our discussions of what information may be helpful to ask young people to help understand their perceptions of AI and to inform the development of the intervention.

2.3. Procedure

The participation of young people in the co-design process was approved by the Curtin University Human Research Ethics Committee (HRE2023-0154). Feedback was provided by eight young people in a Youth Advisory Group on a draft of the intervention booklet written by SE and RS, which was adapted from the brief intervention evaluated in Lowndes et al. (2018). Young people's views were discussed in a one-hour online workshop, led by SR, a lived experience lead, and co-facilitated by SE. The online workshop was also supplemented by email feedback from two people who could not attend the workshop. Young people who engaged in the process received payment of AUD \$100 each for completion of either an online focus group or email advice responding the draft intervention and questions. No young people withdrew during the study. The Youth Advisory Group were asked questions about their current use of AI, their suggestions for how to use AI, feedback on the draft intervention booklet, language and terminology, and ideas for changes to the content of the intervention. The focus was on asking young people for their tips and suggestions about how to use AI tools, and their recommendations were included in a final version of the booklet. The final booklet that resulted from the co-design process consisted of a 42-page interactive PDF, consisting of text, worksheets, and graphics.

2.4. Data analysis

The content of material was synthesised by SE, with consensus provided by SR. Data analysis followed methods of conventional content analysis (Hsieh and Shannon, 2005). Specifically, inductive thematic analysis was conducted following the recommendations of Braun and Clarke (2022). Inductive thematic analysis was chosen to analyse the qualitative findings as it allows for researchers to consider themes in the data without imposing a pre-determined theoretical approach (Braun and Clarke, 2022; Clarke and Braun, 2017). Steps for the analysis were based on Braun and Clarke (2022) including generating initial codes, deciding potential themes, reviewing potential themes, naming and defining themes and writing the synthesis of themes. Coding was performed manually by SE with consensus on codes provided by SR through discussion. Braun and Clarke's (2019) recommendations for review of themes were followed, with SE discussing themes with SR until consensus was reached that the themes reflected the content young

Table 1

Questions asked of the youth advisory group.

1. Do you use ChatGPT?
2. What did you think of the questions that we suggest asking ChatGPT?
3. Would you recommend different questions?
4. What are your tips or strategies to get good information from ChatGPT?
5. Is there a YouTube instructional video on ChatGPT you would recommend?
6. What do you think about using Chat GPT to help guide someone doing this self-help book for perfectionism instead of it being guided by a professional?
7. Would you be interested in a treatment like this of self-help supplemented with guidance by ChatGPT?
8. Do you think the intervention would be acceptable to people across countries like India and Kenya? Is there any material that you think is inappropriate or culturally insensitive that should be removed?
9. Any other suggestions for changes?

people's views in the workshop. The concept of information power was followed rather than the outdated concept of data saturation (Braun and Clarke, 2021) where SE and SR determined there was sufficient detail in young people's views to answer our research question: 'what are young people's views and perceptions of an AI guided intervention for perfectionism?'. To engage in reflexivity (Berger, 2015) as the data analysis could be influenced by the prior knowledge and experiences of researchers (Denzin and Lincoln, 2008), during the analysis we reflected on our positionality in the research. SE identifies as a cisgender woman from Australia who is a mental health researcher with expertise in perfectionism interventions and SR as a cisgender man from India who has a degree in Psychology and experience in mental health support of young people.

3. Results

The co-design process resulted in feedback from the Youth Advisory Group that was summarised into 7 themes (Table 2). The themes represented both positive and negative views about AI, positive feedback on the intervention and suggestions for changes, interest in using an intervention supplemented with AI guidance, tips to use AI more effectively, and cultural appropriateness of the intervention.

3.1. Specific tips for using artificial intelligence

Young people were frequent users of artificial intelligence, with 6 out of 8 participants using AI tools daily to gain information on a range of topics, particularly for their study, through various tools including ChatGPT and other platforms (e.g., Bing). We asked the Youth Advisory Group for their ideas on how to use AI tools effectively, which we then included at the start of the intervention in a section on 'tips for using AI tools'. Young people suggested a range of *specific tips for using artificial intelligence*, including ensuring that prompts are specific and clear. They emphasised "the more accurate and specific your inputs are, the better information you receive" (Young person 3, India). The Youth Advisory Group suggested that responses are improved when feedback is provided to the AI tool about whether the responses are helpful or unhelpful. Young people also suggested using prompts to either elaborate or reduce the length of responses and using prompts such as "explain the information like I am a child" (Young person 8, India). The Youth Advisory Group underlined that it is important to use keywords that are relevant in prompts. Young people suggested providing feedback to the AI tool like "I don't understand this, it is too complex" or "Please re-generate this response" (Young person 4, India) if a response is not satisfactory. Young people also provided specific websites to learn prompting to improve AI responses.

3.2. Positive views about artificial intelligence

Young people predominately expressed *positive views of artificial intelligence*, with 7 out of 8 participants reporting positive statements about AI for example, "I like AI because its reassuring to have one output, it appears accurate, professional and informative...I really like the interactive nature, it gives me a nice starting point, I use it every day" (Young person 5,

Table 2

Themes from the youth advisory group on perceptions of artificial intelligence guided intervention.

1. Specific tips for using artificial intelligence.
2. Positive views about artificial intelligence.
3. Interest in using self-help interventions supplemented with guidance by artificial intelligence.
4. Concerns about artificial intelligence.
5. Positive feedback on the intervention.
6. Suggestions for changes to the intervention.
7. Cultural appropriateness of the intervention.

Australia). Similarly, other members of the Youth Advisory Group said “Initially I was sceptical, but now every question I have, I ask ChatGPT. It’s very detailed, I like it, it’s interesting. I like its honesty and accuracy” (Young person 2, Kenya). Others reported “It is easy to use, I view it as a source of resources. ChatGPT seems authentic, I think it could be used for sensitive topics” (Young person 3, India).

3.3. Interest in using self-help interventions supplemented with guidance by artificial intelligence

The majority of young people had an **interest in using self-help interventions supplemented with guidance by artificial intelligence**, with 7 out of 8 participants saying they would like to complete an AI supplemented intervention. One Youth Advisory Group member said “I have never seen AI used for psychological intervention, so it is quite an interesting idea for me” (Young person 6, Australia). Another young person stated they would feel more comfortable asking questions about their mental health to an AI tool like ChatGPT, rather than seeing a person, explaining that it is anonymous and they like that it is an instant way to get information. They explained that an AI tool was preferable to seeing a person face-to-face when experiencing social anxiety. Another young person commented;

“I often struggle to follow self-help books or activities unless I’m being guided by someone, but if there is nobody available, AI seems like the next best thing. I would personally prefer a real person helping me but I definitely would see the benefit to people in remote areas, who have social anxiety or do not have access to someone to guide them for financial reasons. (Young person 6, Australia)”.

Others agreed, saying that “In my country there is a lot of stigma about going to see someone for mental health, so it would be better to use something online where no-one knows. I would not want to ask a person as they might think I have a mental health problem. (Young person 1, Kenya).” Others said they liked the idea of AI because “It will be there instantly, it is non-judgemental, whereas people can be judgemental” (Young person 5, Australia). The Youth Advisory Group also discussed a benefit of AI tools is free access without having to pay to see a mental health professional. Young people from LMICs noted there are often no professionals available to access for help regarding their mental health issues, hence AI guided self-help would be beneficial.

3.4. Concerns about artificial intelligence

In addition to the positive views reported, 5 out of 8 participants also raised **concerns about artificial intelligence**. For example, one young person said, “I am concerned about ChatGPT, more often than not, it’s not aware of certain things” (Young person 4, India). Others commented, “I am not sure I would want to rely on it [AI tool] for mental health support, I would rather read a self-help book or see a professional, a self-help book will have more examples, it concerns me that it’s not specific” (Young person 3, India). Similarly, another young person stated “For me ChatGPT is a supplement, but not the sole guide. For example, it says I don’t have that information. I would still recommend a person” (Young person 8, India). Another Youth Advisory Group member said, “It should not be the only thing, it is not a mental health professional, people still want a human connection, but it could be a supplement” (Young person 6, Australia). Similarly, another young person commented “ChatGPT cannot diagnose things and doesn’t have the insight into the individual in the same way a professional working with someone might. Having the example questions focus on advice, lists, experiments, and tasks instead of offering emotional advice or ‘therapy’ is important” (Young person 7, UK). Based on this feedback, we incorporated information in the intervention about not viewing AI as the sole tool for mental health support. We also included instructions in the intervention to ask AI tools for information on specific topics included in the intervention, rather than personalised advice based on their own situation.

3.5. Positive feedback on the intervention

The Youth Advisory Group provided **positive feedback on the intervention** overall, with all 8 participants saying they liked the intervention, for example “I liked the format of the booklet” (Young person 2, Kenya). Another young person summarised benefits of the intervention stating;

“I see a lot of benefit in using AI to guide someone through a self-help book. Especially since it is focusing on perfectionism and could potentially take that person a long time to complete. Using ChatGPT means they could complete it in their own time and at a pace suitable for them. It also means they could work on the book at any time, before school, during work, at midnight when they can’t sleep, for example. Someone struggling with social anxiety who is unwilling to meet with a professional could also benefit from this as a more relaxed experience. A downside could be that lack of personal guidance. I prefer real people to AI, but as someone with financial difficulties I understand the struggle of having to find suitable psychologists or therapists. This is a lower stress and possibly lower cost solution.” (Young person 6, Australia).

Similarly, another Youth Advisory Group member said “I think it is a useful and reliable method which is accessible at all times” (Young person 5, Australia).

3.6. Suggestions for changes to the intervention

Young people provided numerous **suggestions for changes to the intervention**, including reducing the content and length. Suggestions included removing material on time management and preparing to change perfectionism, increasing graphics, and breaking up long sections of text. Young people also recommended to change the order of topics where identifying perfectionism should be presented before a section on understanding the maintaining processes of perfectionism. We implemented these suggestions, in addition to removing other topics to reduce the length that were recently suggested in other co-design workshops, including removing material on surveys and drawing an individualised formulation (Egan et al., 2023) (see Table 3 for a summary of the intervention, the booklet can be accessed at <https://www.overcomingperfectionism.com>).

3.7. Cultural appropriateness of the intervention

Finally, five young people from LMICs commented on the **cultural appropriateness of the intervention**, saying they did not feel there was any inappropriate or culturally insensitive material. However, they did note the intervention is only appropriate for those with internet access. They said that particularly in rural areas of LMICs, people often do not have reliable internet access and therefore this intervention would be limited as to who could benefit from it in LMICs.

4. Discussion

The aim of this study was to co-design with young people an AI supplemented version of ICBT-P and understand views about the acceptability of AI guidance. Young people described that they were frequent users of AI and held positive views about the use of AI tools, but also noted several concerns. These concerns were consistent with recent suggestions that the perceived lack of human connection may be a potential downside to acceptability of AI (Carlbring et al., 2023). However, young people also underscored benefits they perceived of AI, including ease of access, low cost, lack of stigma, not being judgemental, and acceptability, particularly when experiencing social anxiety, consistent with previous research (Lindqvist et al., 2022).

The mixed views of young people expressed in our study, with both positive and negative perceptions about AI guided and internet interventions is in line with the literature. Consistent with a qualitative study on individuals’ perceptions of ICBT for perfectionism (Rozenal

Table 3
Intervention content with brief example of written content from each module.

1. Aims and tips for using artificial intelligence tools. Example content: "The aim of this booklet is to learn practical strategies to overcome the unhelpful aspects of perfectionism. Previously, the booklet has been used as self-help resource and while you are seeing a professional. We know from lots of research it can help to have some support as you work your way through. The development of AI tools, such as ChatGPT, make it possible to have guidance to help you if you get stuck on some topics, or need some assistance as you work your way through the booklet."
2. What is perfectionism? Example content: "The type of perfectionism we are referring to is self-esteem based on striving to achieve goals, despite negative effects (e.g., anxiety, poor sleep, stomach aches). There is nothing wrong with striving to achieve standards. The strategies are not aimed at reducing your goals, but instead changing the unhelpful aspects of perfectionism like self-criticism e.g., 'I am not good enough'."
3. Why do people develop perfectionism? Example content: "We can't be sure exactly what causes perfectionism. The good news is though it does not really matter what causes perfectionism, it is what keeps it going that is the important part, and that can be changed."
4. Identifying perfectionism. Example content: "AI question: Try asking an AI tool like ChatGPT to help you with monitoring your perfectionism. An example question is 'I am meant to be monitoring my perfectionism thoughts, feelings and behaviours but it is really hard. Sometimes I forget, at other times I feel I am not doing it right. Can you suggest solutions to help me monitor my perfectionism in real time?'"
5. What keeps perfectionism going? Example content: "There are various factors that can result in people getting locked into a pattern of perfectionism. The exact factors that are keeping perfectionism going will be different for each person."
6. Pros and cons of perfectionism. Example content: "AI question: An AI tool like ChatGPT may be able to give help you. An example question is 'I need to work out the pros and cons of having perfectionism. I am not sure what they are for me personally. I am successful but also lack self-confidence. Are these my pros and cons?'"
7. Challenging perfectionism myths. Example content: "The harder you work, the better you will do – Most of us have been told this message. But it's not as straight forward as we might think. Sometimes working too hard can backfire and cause poorer performance."
8. Experiments to challenge perfectionism. Example content: "AI question: Try asking an AI tool like ChatGPT to help you with designing an experiment. An example question is "I need to design a behavioural experiment to help me overcome perfectionism. What I want to try out is what happens if I go out with less make-up. I am afraid people might notice and comment negatively. Can you help me devise a behavioural experiment to test this please?"
9. Changing self-criticism. Example content: "In addition to changing thinking through experiments, another way is to write them down and look at the evidence for and against the thought. The aim is to view your thoughts in a more objective and balanced way."
10. Procrastination and pleasant events. Example content: "The problem with procrastination is it may cause the very problem that is feared. For example, leaving a report to the last minute so that there is an excuse if the result is poor, but then making errors due to time pressure."
11. Self-evaluation. Example content: "AI question: Try asking an AI tool for ideas for help. An example question is "I need to decrease my self-worth being dependent on striving and achievement. I have been trying to use a pie chart, but I am not sure I am doing it right. Can you help?"
12. Planning for the future. Example content: "It can also be helpful to think about what you need to keep working on. For example, maybe experiments aimed at doing things less than perfectly, or thought records to reduce self-criticism and increase self-compassion."
13. Resources. Example content: "There are some websites with helpful free resources like an Australian website, Centre for Clinical Interventions: https://www.cci.health.wa.gov.au with worksheets on perfectionism, procrastination, and a range of mental health issues."

et al., 2020), some individuals in our study said they would prefer a face-to-face component over AI or internet therapy if it was available. However, others noted they preferred AI and internet therapy over face-to-face mental health support, noting their positive views about AI, its accuracy and anonymity. Interestingly, recent research has found comparing AI chats to peer support workers that AI chats were rated as having a higher degree of empathy than face-to-face discussion (Sharma et al., 2023). Further, another recent study found that people preferred to discuss embarrassing medical issues or ones that may involve a feeling of stigma with a chatbot rather than a person face-to-face (Branley-Bell et al., 2023).

Young people were predominately positive about their willingness to engage in AI guided interventions. An interesting point that several young people noted was that AI guided interventions may be preferable over face-to-face treatment when experiencing social anxiety. It would be useful for future research to compare face-to-face and AI supplemented ICBT for social anxiety to compare acceptability and attrition, to determine if AI guided interventions may increase acceptability. Carlbring et al. (2023) argued that adolescents' positive feedback about internet delivered treatments, for example, the advantage that "I didn't have to look her in the eyes" (Lindqvist et al., 2022), may indicate that guidance through AI is more acceptable for particular individuals than seeing a therapist face-to-face, due to stigma and social desirability. Lindqvist et al. (2022) found in a qualitative study of adolescents who had engaged in internet treatment, that they liked not being observed and needing to interact with someone, and therefore not worrying about how a therapist may judge what they were saying. The views expressed by young people in our study are in line with previous research (Branley-Bell et al., 2023; Lindqvist et al., 2022), with young people citing stigma as a reason that they would prefer AI over face-to-face treatment, in addition to social anxiety, saying AI is preferable as "it is non-judgemental, whereas people can be judgemental". These views highlight an important benefit of AI that is worth exploring in future research, especially for young people.

Further, the lack of stigma as a potential benefit of AI guided interventions may be particularly relevant in LMICs. Cross-cultural perceptions of mental health challenges and AI may differ between young people across countries (Javed et al., 2021; Mascayano et al., 2020; Patel and Rahman, 2015; Tamburrino et al., 2020), which was reflected in our findings. In contrast to young people living in Australia and the UK, young people from Kenya and India commented that mental health conditions are not recognised or normalised, and therefore an internet treatment would be preferable so that individuals in their community did not know the young person had a mental health condition. These responses are consistent with literature on the barriers of recognition, stigma, and limited resources for mental health in LMICs (Patel and Rahman, 2015; Tamburrino et al., 2020). Our findings indicate that internet interventions may be beneficial for young people in LMICs given research demonstrating that stigma is a barrier to seeking help for mental health in LMICs (Javed et al., 2021; Patel and Rahman, 2015; Tamburrino et al., 2020). An important point however in LMICs is whether even despite barriers such as stigma, there are mental health services available. A point of difference in views of young people across countries in our study is that while young people from Australia and the UK discussed difficulty in access to mental health services as a reason for the appeal of AI, young people in Kenya and India agreed with this reason, not because it was hard to access services, but because there were no services to access. Hence, a difference was apparent across countries in the contrast between difficulty in accessing mental health services and the existence of services to access. These results are consistent with previous research demonstrating that over 75 % of people in LMICs do not receive any mental health intervention compared with 35–50 % in developed countries (Mascayano et al., 2020). Whether AI could bridge gaps between both treatment access and no available services across high and LMIC contexts is an important area for future research.

4.1. Strengths and limitations

A strength of the study is that young people's views about artificial intelligence and their willingness to engage in AI guided interventions were explored, which is a novel contribution to the literature. There are several limitations of our study. We only engaged with young people in one focus group rather than multiple sessions, which is typical in co-produced interventions (e.g., Egan et al., 2023; Norton, 2021; Schleider, 2023; Schouten et al., 2022; Sunkel and Sartor, 2022). Hence, our study was a pilot and first step in co-design rather than a more extensive engagement process consistent with co-production, over several sessions with multiple points of feedback and ongoing consultation. Furthermore, although young people from LMICs in the Youth Advisory Group did not state that there was culturally inappropriate or insensitive material, the intervention was not modified specifically to be a culturally sensitive intervention. Given we did not test the intervention across countries, we do not know how acceptable the intervention is in a global context. However, a novel aspect of this study was that it was the first to co-design ICBT-P with a global lived experience advisory group, and initial feedback was positive. Another limitation was the questions were structured and designed by the research team to seek specific feedback on the intervention and views about artificial intelligence, rather than being open-ended, unstructured questions. Further limitations are that we did not specifically seek young people who identified with perfectionism, our criteria for the group were that young people had lived experience of anxiety and depression. It is possible not all people in the Youth Advisory Group identified perfectionism as a problem. A further limitation is that because the Youth Advisory Group were self-selected, it is likely they were not representative of youth more generally, particularly in LMICs, for example many people were either currently studying or held undergraduate tertiary education degrees. Hence, our sample may not represent young people affected by poverty in LMICs. We also recruited people from only two LMICs, Kenya and India, therefore we cannot generalise beyond these LMICs. Nevertheless, despite these limitations, the Youth Advisory Group offered very helpful insights into the intervention and their views on the acceptability of self-help supplemented with guidance using AI.

4.2. Future research directions

Future research should consider a more extensive engagement process with young people to co-produce further iterations of the intervention with multiple feedback sessions. Future qualitative research could consider more open, unstructured questions and prompts that are co-designed with young people to gain a wider understanding about their views of artificial intelligence. It would also be helpful to examine in survey studies young people's views about artificial intelligence supplemented online interventions. Further research is also required on the degree and nature of cultural adaptation of internet interventions (Shehadeh et al., 2016; Spanhel et al., 2021), including AI-ICBT-P. Future studies co-designing CBT-P should consider specifically recruiting people for whom perfectionism is a primary issue. Another research direction is to widen the range of countries represented in the co-design of the intervention, with a broader range of young people represented, including those who are representative of young people in the particular country.

5. Conclusion

In conclusion, this study demonstrated that young people shared positive views about engaging in artificial intelligence guided interventions and were frequent users of artificial intelligence. However, further research is required to holistically understand a broader range of young people's views and their concerns about artificial intelligence. A pilot trial of this new co-designed AI-CBT-P intervention is also required to examine the feasibility and acceptability of the intervention.

Declaration of competing interest

Sarah Egan, Tracey Wade and Roz Shafran receive royalties for the books *Cognitive-behavioral treatment of perfectionism* and *Overcoming perfectionism: A self-help guide using cognitive behavioural techniques*.

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