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Internet-based cognitive behaviour therapy for perfectionism: More is better but no need to be prescriptive

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Key Points

1. The current study suggests that the impact of an 8-module unguided internet CBT for perfectionism (ICBT-P) has a greater impact than 3-module ICBT-P for a variety of outcomes, including perfectionism, negative affect and body image flexibility.
2. Direct comparison of fixed (proceed through each module in order) versus flexible (after completing the first psychoeducational module, participants decided how many/in what order they completed the modules) ICBT showed no difference in amount of material completed or outcomes.
3. While we need to let clients know that completion of more modules confers more benefit, we do no need to be prescriptive about how the modules are completed.

Abstract

Background: The current study explored whether higher- (up to 8 modules) versus lower-dose (3 or less modules) unguided internet CBT for perfectionism (ICBT-P) was more effective, and the best method to promote higher dosage.

Methods: Two sequential randomized ICBT-P studies were conducted with participants who self-identified as having difficulties with perfectionism; in the first participants (*N*=51) received 3-module ICBT-P or wait-list, and in the second participants (*N*=55) received fixed (asked to complete all 8 modules two per week over 4-weeks) or flexible format (after completing the first psychoeducational module, participants decided how many/in what order they completed the modules). We examined impact on our primary variables, perfectionistic concerns and standards, and secondary outcomes of negative affect, body image flexibility, and self-efficacy.

Results: More modules were completed in the higher- (*M* modules=4.36, *SD*=3.29) versus lower-dose (*M*=1.96, *SD*=1.23) ICBT-P, *d* = 0.86 (95% CI: 0.39, 1.34). The latter impacted perfectionism but not secondary outcomes; the former impacted all outcomes (except for self-efficacy), and within-group effect size improvements were double in the high- compared to low-dose ICBT-P. There was no difference between the fixed and flexible formats in terms of the number of modules completed or impact.

Conclusion: We can offer a patient-centred approach to ICBT-P that is effective, while suggesting completion of more modules can result in larger, more pervasive improvements.

Key Words: Perfectionism; internet cognitive-behavioral therapy; fixed or flexible format; negative affect, body image flexibility.

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Perfectionism is considered a transdiagnostic risk factor, postulated to be a mechanism for the development and maintenance of a variety of psychopathologies (Egan, Wade, & Shafran, 2011), including depression, anxiety and eating disorders. Cognitive Behaviour Therapy for perfectionism (CBT-P) is considered to the treatment of choice as it has been found to not only produce large effect size reductions in perfectionism, but also produce moderate effect size decreases in depression and anxiety (Lloyd, Schmidt, Khondoker, & Tchanturia, 2014), compared to control conditions. Apart from CBT-P, one non-randomised examination of a group psychodynamic therapy exists (Hewitt et al., 2015), as does one randomised trial comparing Mindfulness-Based Cognitive Therapy to a 50-page self-help booklet informed by CBT (James & Rimes, 2018). This latter study is hard to interpret given the confounding factors of contact with therapist and other participants in the former compared to the latter condition.

It is now widely accepted that both dimensions of perfectionism previously identified in factor analysis (e.g., Bieling, Israeli, & Antony, 2004), perfectionistic strivings and perfectionistic concerns, are risk factors for psychopathology (Shafran, Cooper, & Fairburn, 2002; Flett & Hewitt, 2014; Gaudreau, 2018; Blasburg, Hewitt, Flett, Sherry, & Chen, 2016; Limburg, Watson, Hagger, & Egan, 2017). Perfectionistic strivings involve seeking to attain relentlessly demanding, extremely high, and often unrealistic standards for the self (Sirois & Molnar, 2016). Perfectionistic concerns involve being excessively preoccupied with others' expectations and evaluations, excessively self-critical, and unable to be satisfied with one's successes (Sirois & Molnar, 2016). Perfectionistic strivings are less associated with psychopathology than perfectionistic concerns, particularly in nonclinical populations (Limburg et al., 2017).

Guided internet CBT (ICBT) has also been shown to be effective in reducing perfectionism using an 8-module intervention based on a treatment protocol for clinical perfectionism (ICBT-P) developed by Egan, Wade, Shafran, and Antony (2014). A slightly modified intervention (the order of the modules was changed slightly, more explanation was provided along with more behavioural interventions) produced significant decreases in perfectionistic strivings and concerns, Cohen's d = 0.68 and 1.00, respectively (Rozental et al., 2017). Shafran et al. (2017) similarly found significant improvements in perfectionistic strivings, perfectionistic concerns and clinical perfectionism (d =

0.67, 0.98, and 1.04, respectively) for the unmodified intervention with lower completion rates, where 39% of randomized participants did not complete post-treatment assessment measures, a drop-out more consistent with some investigations of unguided ICBT (Karyotaki et al., 2015). This latter study found that participants who only completed up to three modules still reported significant reductions in clinical perfectionism (d = 0.96). A further study of ICBT-P (Zetterberg et al., 2019) has shown no difference in drop-out and equally beneficial changes in outcomes between a regular therapist support group (feedback on homework once a week) and a support on request group, where a greater proportion of the former (76%) received guidance from the therapist than the latter (27%).

Completion of just three modules may well reflect real-world usage, as engagement with content is a well-recognized challenge of delivering CBT on the internet. Across different studies of online CBT for mental health, only between 4% and 84% of participants engage with content, an estimated median of 38% (Waller & Gilbody, 2009). A study of online CBT for bulimia nervosa indicated that participants who engaged in treatment achieved an average dose of 60% of the sessions (Watson et al., 2017). A meta-analysis of self-guided web-based interventions for depression across 10 randomized controlled trials (RCTs) found that 40% of participants dropped out before completing a quarter of the treatment modules, 59% dropped out before completing half of the treatment modules, and only 17% completed all treatment modules (Karyotaki et al., 2015).

One possible way to prevent dropout and thus improve outcome is to give patients flexibility over which modules they wish to complete, that is self-personalising treatment (Andersson, Estling, Jakobsson, Cuijpers, & Carlbring, 2011). On the one hand, it could be expected that a flexible format may produce better results, given research showing that when patients had at least one treatment preference met (i.e., time, venue, type of treatment, therapist gender) they experience greater improvements in outcome variables (Williams et al., 2016). On the other hand, previous research of fixed versus flexible bibliotherapy for panic disorder showed no significant differences between the formats over a 2-year period (Carlbring et al., 2011), with both associated with large within-group effect size decreases in panic. The current research seeks to investigate whether: (1) completion of a 3- versus 8-module version of unguided ICBT-P produced similar effect size changes in our outcome variables (i.e., is shorter just as effective as longer?), and (2) whether a fixed (i.e., participants are

requested to work through all modules starting with the first through to the last) versus flexible (i.e., participants choose which modules, and in what order, to complete) format produced superior results (i.e., do we need to be prescriptive about it?). Given the exploratory nature of these questions, no hypotheses were posed.

To answer these questions, we conducted two randomized studies with participants who identified as having problems with perfectionism. The first study compared a 3-module ICBT-P to a wait-list condition where participants knew they would gain access to a self-help book (*Overcoming Perfectionism;* Shafran, Egan, & Wade, 2010) after a 3-week wait. The second study compared fixed versus flexible 8-module ICBT-P conditions. As well as our primary outcome measures of perfectionistic strivings and perfectionistic concerns, we measured three secondary outcome variables: negative affect (depression and anxiety), body image flexibility, a strong predictor of disordered eating with higher flexibility predicting lower levels of eating disorder psychopathology (Pellizzer, Waller, & Wade, 2018), and self-efficacy, an individual's cognitive appraisal of their capacity to achieve their goals, where research indicates that higher scores on measures of perfectionism are associated with lower self-efficacy (LoCicero & Ashby, 2000).

Methods

Participants

Participants for both studies were volunteers recruited through various forms of advertising at Flinders University, including advertisements on the online first-year psychology student participant pool website (both credit-based and paid), the 'Participate in Research Studies' website (accessible to the general public), and flyers placed around campus. Inclusion criteria required participants be at least 17 years of age, fluent in English, not currently receiving treatment for perfectionism, and to have current concerns about perfectionism ("do you currently feel that you experience perfectionism?"). There were no differences in demographics between the two samples. Study 1 participants recruited over 2017 were aged 17 to 60 years, with a mean age of 25.18 (SD=8.74) and Study 2 participants recruited over 2018 were aged 17 to 54 years, mean age 26.74 (SD=9.61); between-group Cohen's d= 0.17 (95% CI: -0.21, 0.55). Females constituted 78.4% and 85.5% of the

respective samples, odds ratio (OR) = 0.62 (95% CI: 0.23, 1.69). Neither did the samples differ in baseline levels of perfectionistic concerns (respective means of 3.52 [SD=.91] and 3.70 [SD=0.65], *d*= 0.23 (95% CI: -0.15, 0.61) or perfectionistic strivings (respective means of 3.98 [SD=.79] and 4.06 [SD=0.59], *d*= 0.12 (95% CI: -0.27, 0.50). ***Figure 1*** shows the participant flow in both studies. Previous *a priori* power analyses (Shafran et al., 2017) suggested that a sample size of 40 enrolled participants per group, with 20 participants completing per group, would provide 80% power at two-sided $p < 0.05$ to detect a large effect size difference between the control and intervention groups, hence our two studies are slightly underpowered. The Flinders University Social and Behavioural Research Ethics Committee approved these studies (project number 7630).

Design

A within-subjects design compared baseline and post-treatment outcomes for all randomized participants, to examine the influence of the intervention on outcome variables. A between-subjects design was used to compare the difference in the magnitude of change on outcome variables between groups.

Procedure

After having registered interest via email, participants completed the baseline questionnaire via the online Qualtrics Survey platform. Respondents then answered questions regarding demographics and eligibility, followed by the primary and secondary outcome questionnaires. Finally, participants indicated whether they wished to continue to be randomized and commence the intervention phase. Participants who confirmed their desire to participate were randomly allocated to either the treatment or control group using the function provided by Qualtrics and advised which group they had been allocated. Participants in the treatment groups were sent an email introducing the intervention modules. In the first study participants were given a 3-week period to complete the modules, after which they were sent an email containing a web link to a second Qualtrics survey containing the post-treatment measures of outcome. They were asked to complete one module per week with weekly pro-forma reminder emails. In the second study participants were given a 4-week period to complete the modules, and the fixed-intervention group progressively received access to modules, with one module released twice a week over the course of their participation, associated

with a reminder email. The flexible-intervention group were given access to the first module, and once this was completed were given open access to all remaining modules, with the instructions to choose which and how many modules, and in what order, to complete ("choose the modules you wish to complete over the next 4-week period").

Materials

Intervention. ICBT-P comprises eight online modules for the treatment of clinical perfectionism (Shafran et al., 2017), which were delivered via a secure online platform. Each module, outlined in ***Table 1***, took approximately 30 minutes to complete and primarily involved psychoeducation and exercises aimed at challenging cognitions (a total of 4 hours if all modules were completed). The three modules selected for inclusion in Study 1 are indicated in Table 1 and were chosen as being representative of the overall approach but did not build on any exercises from, or pre-suppose knowledge of, previous modules. 'Understanding perfectionism' was included because it is the first module and includes necessary psychoeducation and because previous research found that it produced a larger effect size than subsequent modules (Shafran et al., 2017). The other two modules were included because they contained the most content (psychoeducation and exercises) of the remaining seven modules, thus maximising the effects of the abridged intervention, and did not involve behavioural experiments, with evidence suggesting that participants found these especially challenging in an online format and that this may lead to increased attrition (Shafran et al., 2017).

The intervention was unguided. It was text based but did involve numerous exercises, such as, cost-benefit analyses, value clarification, behavioural experiments, identifying maladaptive beliefs, overcoming procrastination, implementing problem-solving techniques, relapse prevention, and generating statements consistent with self-compassion. Reminder emails were sent weekly as required.

Primary outcome measures. Perfectionistic concerns and perfectionistic strivings were measured, respectively, using the Concern over Mistakes (CM) and Personal Standards (PS) subscales of the Frost Multidimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990). CM provides nine items (e.g. "If I fail at work/study, I am a failure as a person") on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree) and PS contains seven items (e.g. "I have extremely high

goals"). In both cases, mean response scores were calculated, with higher scores indicating greater perfectionistic concerns or perfectionistic strivings, relative to the subscale. The full scale has shown concurrent validity, correlating with other self-report measures for perfectionism, and both subscales have demonstrated high internal consistency; the scale has also been found to be both valid and reliable for clinical and non-clinical samples (Frost et al., 1990). Internal consistency for both studies was moderate to high at baseline (.90/.93 and .85/.81 respectively). Furthermore, both subscales have demonstrated test-retest reliability with scores remaining relatively stable across a six-week, no treatment, period (Steele & Wade, 2008).

Secondary outcome measures. Negative affect was the only measure that differed between the two studies; in both cases scales assessing depression and anxiety were available and were combined. In the first study the 9-item Depression module of the Patient Health Questionnaire (PHQ; Spitzer, Kroenke, & Williams, 1999) was used measuring the extent to which respondents have experienced depressive symptoms over the preceding two weeks on a 4-point scale between 0 (*Not at all*) and 3 (*Nearly every day*), with higher scores indicating more severe depressive symptoms. The module has demonstrated high internal consistency and convergent validity as a measure of depression in the general population (Kocalevent, Hinz, & Brahler, 2013). Internal consistency was good at baseline (Cronbach's $\alpha = .89$). Anxiety was measured using the Generalized Anxiety Disorder Assessment (GAD-7; Spitzer, Kroenke, Williams, & Lowe, 2006); using the same format as the PHQ. The measure has demonstrated convergent validity in the general population (Lowe et al., 2008). At baseline and post-treatment, internal consistency for this scale was high in our study (Cronbach's $\alpha = .93$).

The second study used 14 items from the 21-item Depression Anxiety and Stress Scale (Lovibond & Lovibond, 1994). Participants were asked to rate their agreement with each item over the past week. They responded on a four-point scale, ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Higher scores indicated greater levels of negative affect. This measure showed high internal consistency in the current study (Cronbach's $\alpha = .94$) and has been found to have adequate construct validity and high reliability for both clinical and non-clinical samples (Henry & Crawford, 2005).

Body image flexibility was measured using the 12-item Body Image-Acceptance and Action Questionnaire (Sandoz, Wilson, Merwin, & Kellum, 2013). Participants rated their agreement with each item (e.g. "worrying about my weight makes it difficult for me to lead a life that I value") on a 7-point scale from 1 (Never true) to 7 (Always true). Mean response scores were calculated with higher scores indicating higher levels of body image flexibility. Scores on this measure have been found to positively relate to psychological flexibility and negatively to body shape dissatisfaction and disordered eating, with adequate convergent and divergent validity, test-retest reliability, and high internal consistency (Sandoz et al., 2013). The Cronbach's α at baseline for the two studies was .98 and .94 respectively.

Self-efficacy was measured using the General Self-Efficacy subscale of the Self-Efficacy Scale (Sherer et al., 1982). Participants rated their agreement to 17 items (e.g. "When I make plans, I am certain I can make them work"), on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). Mean response scores were calculated, with higher scores indicative of stronger levels of self-efficacy. This subscale had good internal consistency in our two studies: .90 and .88 respectively. For all measures, mean-item scores were used, rather than total item scores, for ease of interpretation.

Statistical analyses

Linear mixed modelling (LMM) was used to analyse changes over time between groups for all participants randomized to a condition (Hesser, 2015), thus including all randomized participants regardless of completion of the end of treatment assessment. Fixed effects included time and group, and a two-way interaction term between group and time. In order to examine the degree of change over time within each group, we used Cohen's *d* effect sizes and 95% confidence intervals (CI). An effect size of 0.2-0.5 is considered small, 0.5-0.8 moderate, and >0.8 large. We do not expect to see the 95% CI cross zero if the effect is substantial.

Results

Completion of modules

As depicted in ***Figure 1***, Study 1 participants completed between 0 and 3 modules, a mean of 1.96 (*SD*=1.23); 54% completed all three modules and 18% failed to engage (i.e., completed 0

modules). Study 2 participants completed between 0 and 8 modules; all 8 modules were completed by *N*=11 (39%) and *N*=9 (33%) of participants in the fixed and flexible groups respectively, with 50% of the fixed and 56% of the flexible group completing > 3 modules. The mean number of modules completed did not differ between the fixed and flexible conditions (OR=1.00, 95% CI: 0.85-1.18); 4.36 (*SD*=3.49) and 4.37 (*SD*=3.13) respectively (combined *M*=4.36, *SD*=3.29, around 2 hours of therapy). Failure to engage was similar in both conditions, 14% and 19% respectively, and there was no difference in terms of specific modules completed, with respective completion rates for modules 1 to 8 as follows: 86/82%, 64/70%, 50/56%, 50/51%, 50/59%, 50/41%, 46/37%, 39/41%. Significantly more modules were completed in Study 2 compared to Study 1, d = 0.86 (95% CI: 0.39, 1.34).

Post-treatment assessment

While 91% of the control group in Study 1 completed the post-treatment assessment, given the inducement of receiving the intervention, only 64% of the intervention group completed the post-treatment assessment. Rates of completion of post-treatment questionnaires in Study 2 were 50% and 63% for the fixed and flexible groups respectively, perhaps indicating some greater degree of engagement in the latter group. Baseline comparisons of completers and non-completers on all variables showed no differences between the groups in either Study 1 or 2, suggesting data were missing at random. The mean of the combined perfectionism measures in the Study 1 (3.64, SD=0.73) and Study 2 participants (3.88, SD=0.52) was higher than the mean (3.06, SD=0.69) in a comparable university sample unselected for perfectionism (Pellizzer, Tiggemann, Waller, & Wade, 2018). The correlations between the variables at baseline are presented in ***Table 2***, with all correlations in the predicted directions, and similar between the studies.

Group comparisons

Study 1. The comparisons between groups within each study are shown in ***Table 3***. In Study 1 there were main effects of time for all variables except for self-efficacy, indicating some placebo impact of a wait-list condition. One significant interaction existed for perfectionistic concerns, indicating a superior impact of the intervention in decreasing concerns over time compared to the wait-list condition. Only the within-group effect sizes for our perfectionism measures were considered significant; both decreased.

Study 2. There was no difference in rate of change on any outcome variables between the fixed and flexible groups (i.e., no significant group by time interactions). Examination of within-group effect sizes (***Table 4***) shows that the fixed group achieved larger changes for perfectionistic concerns and negative affect than the flexible group, but smaller changes for perfectionistic strivings and body image flexibility. There were main effects of time for all variables, indicating changes in the expected directions, and thus the groups were collapsed to calculate the within-group effect size change. These indicated moderate to large improvements over time for all variables except for self-efficacy (d=0.17), where the 95% confidence intervals crossed zero indicating a negligible impact. When the LMM was rerun replacing group with *N* modules as a fixed effect, the interaction between time and module approached significance for perfectionistic concerns (p=.08) and negative affect (p=.06), consistent with completion of more modules resulting a greater decrease in scores for both variables.

Discussion

This investigation was an exploratory one, seeking to refine our knowledge of how best to use ICBT-P, where limited RCTs exist (Egan et al., 2014; Rozental et al., 2017; Shafran et al., 2017). Our first question was whether a shorter intervention was as effective as longer, or if completion of a 3- versus 8-module version of unguided ICBT-P produced similar effect size changes in our outcome variables. This question was driven by an earlier finding in the literature of equivalent within-group decreases in clinical perfectionism in the delivery of an 8-module ICBT-P comparing participants who did 3 or less modules to those who did more (Shafran et al., 2017). Comparison of effect sizes between our two studies shows, on average, a doubling of effect size when completing an average of 2 versus 4 modules. This is true of our primary perfectionism outcomes, which the intervention directly targeted, and our secondary variables, negative affect and body image flexibility. The large effect size increase in body image flexibility is an encouraging finding, as currently there is insufficient research to allow for a definitive conclusion on whether perfectionism interventions can decrease risk for disordered eating (Lloyd et al., 2014). This suggests that ICBT-P could have a

protective effect for disordered eating, and further replications of this finding would allow robust meta-analytic analysis of this impact. There was no support for an impact of ICBT-P on self-efficacy.

Both the shorter and longer interventions were associated with a significant decrease in perfectionistic concerns and standards, with the shorter intervention having no impact on secondary variables. This is in accordance with Shafran and colleagues (2017), who found a significant impact on perfectionism but not secondary outcomes in contrast to a parallel study (Rozental et al., 2017) where there was greater completion of modules. The model of clinical perfectionism (Shafran et al., 2002) would suggest that perfectionism mediates the relationship between interventions that target perfectionism and variables such as negative impact and body image, and thus perhaps a greater intensity of intervention is required to impact the variables that are "downstream" from perfectionism. In summary, then, the answer to our first question is no, shorter interventions are not as effective as longer ones for perfectionism, though both will significantly decrease perfectionism. It is important to remember that when referring to a "longer" intervention, this still means on average 4 modules were completed, around 2 hours of therapeutic engagement, which represents a very efficient therapy. It is also worth noting that there was no difference in engagement (i.e., doing any modules) between the longer and shorter interventions, suggesting that longer interventions are not prohibitive *per se*.

Also, of note, our first study showed a placebo impact, with not much difference indicated between the intervention and control (expect for perfectionistic concerns). This finding is consistent with other findings that an expectancy effect relating to treatment can result in significant changes (e.g., Pleva & Wade, 2006). This would suggest the need to continue including wait-list controls in RCTs of this type, in order to ensure that our treatment is more powerful than expectancy effects, where the inclusion of longer-term follow-up may be expected to weaken this placebo impact.

Given an average of 2 hours of therapeutic engagement produced superior results compared to 1 hour, our second question addressed the issue of whether we need to be prescriptive about this, and attempt to get people to do as many modules as possible? Our comparison of fixed format (an expectation that all modules be completed) and a flexible format, where the participant could choose how many and in what order to complete the modules after the initial psychoeducation module, showed no difference in the number of modules completed, and no difference in impact on our

outcome variables. This finding suggests that we can offer a patient-centred approach to ICBT-P that is effective, while providing information that completion of more modules does result in larger and more pervasive improvements.

Given the exploratory nature of the research, there are limitations that impact interpretation of these results. First, a greater power is required to more definitely rule out the existence of significant interactions (differences in change over time between our groups). Second, as mentioned above, wait-list groups should be included routinely in RCTs of ICBT-P to eliminate the competing explanation of an expectancy effect. Third, our negative affect measures differed between the two studies, and while this does not impact on interpretation of relative effect sizes, it may be that one measure was more sensitive to detecting change than another. Fourth, longer-term follow-up in RCTs of ICBT-P are required to confirm the robustness of impact, given that large effect size decreases in perfectionism and moderate decreases in negative affect have been found in an uncontrolled 12-month follow-up (Rozental et al, 2018). Fifth, only 2 subscales of perfectionism were utilised of the many different measures of perfectionism that exist (Leone & Wade, 2018), and future research should consider other measures and the differential impact of ICBT-P on these measures.

Further attention needs to be paid to the question "what makes internet therapy work?" (Andersson, Carlbring, Berger, Almlöv, & Cuijpers, 2009). The current study addresses these issues, allowing a more sophisticated understanding of how best to tailor ICBT-P for participants in way that is both helpful and respectful. While there is growing evidence supporting the effectiveness of ICBT especially for depression and anxiety (O'Dea, Calear, & Perry, 2015), important gaps in our knowledge remain which can be addressed with larger studies, longer follow-up, direct comparison of different approaches, and examination of outcomes outside of depression and anxiety.

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Figure 1

Participant flow over the two studies

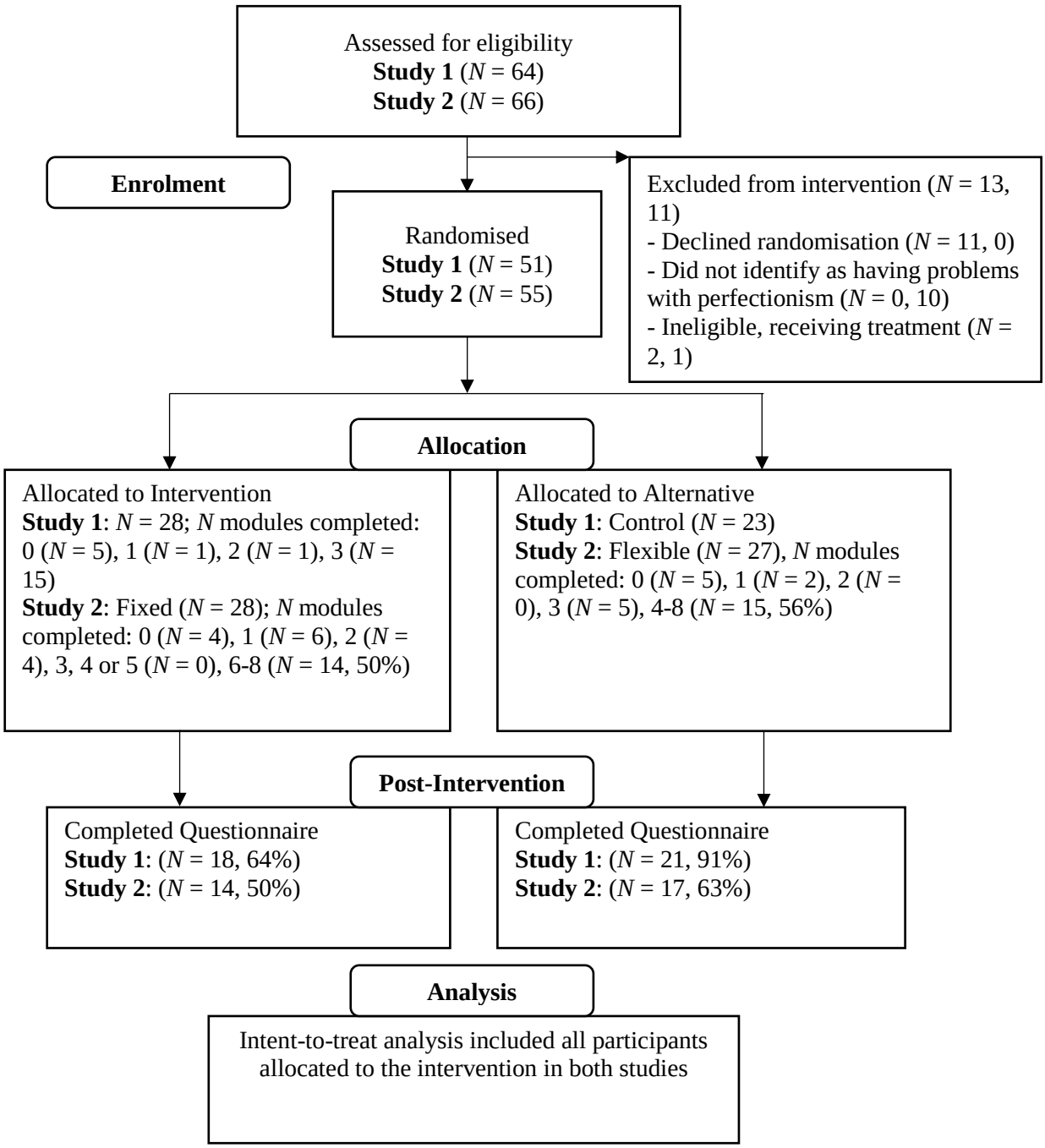

Table 1

List of Intervention Modules and their Descriptions

	Module Title	Module Description
1 *	Understanding Perfectionism	Defining 'unhelpful perfectionism' and examining the impact it can have on your life.
2	Your perfectionism cycle	Identifying persistent perfectionistic behaviours and beginning to combat them.
3	Surveys and experiments	'Reality check': adjusting standards and re-examining beliefs according to others' experiences with behaviours linked to your perfectionism
4 *	New ways of thinking	Challenging and changing perfectionism related cognitions; a move towards a flexible thinking style.
5	Useful skills for managing unhelpful perfectionism	Overcoming procrastination and improving problem solving skills. Learning to engage without feeling guilty over 'wasted time'.
6	Self-criticism or self-compassion	How to deal with 'failure'; decreasing self-criticism and increasing self-compassion.
7 *	Re-examining ways we define our self-worth	How to define your self-worth; self-worth is not defined by achievement.
8	Staying well: Managing unhelpful perfectionism in the long run	Brief review, and planning for the future –aspirations and preparing for possible setbacks.

Note: an Asterix indicates the modules included in the 3-module intervention

Table 2

Correlations between baseline variables: Study 1 in top diagonal, Study 2 in bottom diagonal

Variable	Concern over Mistakes	Perfectionistic Standards	Negative Affect	Body Image Flexibility	Self-efficacy
Concern over Mistakes	1.00	0.47	0.5	-0.38	-0.36
Perfectionistic Standards	0.44	1.00	0.31	0.02	0.23
Negative Affect	0.29	-0.04	1.00	-0.46	-0.32
Body Image Flexibility	-0.35	-0.10	-0.32	1.00	0.35
Self-efficacy	-0.14	0.31	-0.50	0.23	1.00

Table 3

Linear Mixed Models Analyses (Intent-to-Treat) for Study 1, Mean number of modules = 1.96

Intervention (*N*=28)		Control (*N*=23)		Main effect of time *F* (*p*)	Main effect of group *F* (*p*)	Group x Time *F* (*p*)	Cohen's *d* (95% confidence intervals) change over time [1]
Baseline M (SE)	Post-treatment M (SE)	Baseline M (SE)	Post-treatment M (SE)				
Concern over Mistakes							
3.56 (0.25)	2.44 (0.27)	3.47 (0.26)	3.09 (0.27)	**40.53 (<.001)**	1.31 (.26)	**9.64 (.004)**	**1.10 (0.54, 1.66)**
Perfectionistic Standards							
3.85 (0.16)	3.36 (0.17)	4.15 (0.17)	3.89 (0.18)	**19.30 (<.001)**	3.35 (.07)	1.71 (.20)	**0.89 (0.34, 1.43)**
Negative Affect (depression and anxiety)							
1.40 (0.28)	1.00 (0.29)	1.37 (0.29)	1.11 (0.29)	**9.60 (.004)**	0.06 (.82)	0.44 (.51)	0.29 (-0.23, 0.82)
Body Image Flexibility							
4.41 (0.45)	4.93 (0.43)	4.61 (0.48)	4.98 (0.45)	**14.63 (<.001)**	0.06 (.80)	0.41 (.53)	0.45 (-0.08-0.98)
Self-efficacy							
3.11 (0.38)	3.12 (0.38)	3.29 (0.38)	3.37 (0.39)	0.33 (.57)	1.38 (.25)	0.22 (.64)	0.01 (-0.53, 0.52)

[1] This refers to the intervention group only. In each case, we followed the advice of Morris (2008, p.111) and estimate the within-group (time) effect size by taking the correlation between the pre- and post-test into account. Note: All significant differences are bolded.

Table 4

Linear Mixed Models Analyses (Intent-to-Treat) for Study 2, Mean number of modules = 4.36

Variable	Fixed (N=28)		Flexible (N=27)		Main effects			Within group effect size Cohen's *d* and 95% confidence intervals		
	Baseline	PT	Baseline	PT	T	G	TxG	Both groups[1]	Fixed	Flexible
Concern over Mistakes	3.66 (0.12)	2.30 (0.20)	3.75 (0.13)	2.28 (0.19)	**112.03***	0.03	0.15	**2.03 (1.57, 2.48)**	**2.54 (1.84, 3.25)**	**1.72 (1.10, 2.34)**
Perfectionistic Standards	4.07 (0.11)	3.24 (0.15)	4.05 (0.11)	3.37 (0.14)	**54.55***	0.14	0.56	**1.25 (0.84, 1.65)**	**1.06 (0.70, 1.85)**	**1.21 (0.63, 1.79)**
Negative Affect	2.10 (0.11)	1.53 (0.12)	2.13 (0.12)	1.76 (0.11)	**24.41***	0.90	1.34	**0.79 (0.40, 1.18)**	**1.09 (0.53, 1.65)**	**0.59 (0.05, 1.14)**
Body Image Flexibility	3.70 (0.26)	5.30 (0.29)	3.26 (0.26)	4.51 (0.27)	**76.15***	3.11	1.15	**1.13 (0.73, 1.53)**	**1.16 (0.60, 1.73)**	**1.30 (0.71, 1.88)**
Self-efficacy	3.19 (0.38)	3.52 (0.38)	3.15 (0.38)	3.48 (0.37)	**16.97***	0.05	0.00	0.17 (-0.21, 0.54)	0.24 (-0.29, 0.76)	0.23 (-0.31, 0.76)

[1] Groups were collapsed given both received the intervention and there were no group x time interactions but within group effect sizes for the fixed and flexible groups are also provided. In each case, we followed the advice of Morris (2008, p.111) and estimate the within-group (time) effect size by taking the correlation between the pre- and post-test into account. Note: All significant differences are bolded.

* $p < 0.001$; T=time, G=group, TxG=time x group interaction.