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7   **The impact of internet-based cognitive behaviour therapy for perfectionism on different**

8   **measures of perfectionism: A randomised controlled trial**

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26
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The impact of internet-based cognitive behaviour therapy for perfectionism on different measures of perfectionism: A randomised controlled trial

Abstract

The current study investigated the impact of an 8-module internet-based cognitive behaviour therapy for perfectionism (ICBT-P) across a variety of perfectionism subscales. Undergraduate students who identified as having a problem with perfectionism were randomized to receive the intervention (n=41), and were free to choose the number of treatment modules they completed over a 4-week period, while the control group (N=48) received access to treatment 8 weeks post-randomisation. Secondary measures included depression, anxiety, stress, body image and self-compassion. Assessments occurred at baseline, 2-, 4- and 8-week time points. A mean of 3.12 (SD=2.67) modules were completed; 7 participants (17%) completed none and 6 (15%) completed all. Linear mixed modelling (with baseline observation included as a covariate) showed significant Bonferroni-adjusted post-hoc between-group differences for 5 of the 6 perfectionism measures, favouring the intervention group; the most robust between group effect sizes were for the Concern over Mistakes (d=-0.82), High Standards (d=-0.69), and Perfectionistic Standards (d=-0.47) subscales. There were no between-group differences for our secondary measures. ICBT-P was found to be an effective intervention for reducing different components of perfectionism compared to a control group. The relatively low use of modules may have contributed to a lack of effect on secondary measures.

Keywords: Perfectionism, internet intervention, concern over mistakes, high standards

Perfectionistic concerns and perfectionistic strivings (Frost, Marten, Lahart, & Rosenblate, 1990; Smith & Saklofske, 2017) have both been associated with a range of psychological disorders (Limburg, Watson, Hagger, & Egan, 2017), albeit concerns more strongly than strivings. There is no research available to address any differences in perfectionism over lifespan and sex, but both types of perfectionism have increased linearly in college students over the last 27 years regardless of sex (Curran & Hill, 2017).

Several meta-analyses have confirmed the efficacy of cognitive behaviour therapy for perfectionism (CBT-P), showing large effect size within-group decreases (Lloyd, Schmidt, Khondoker, & Tchanturia, 2015) and moderate between-group differences (Suh, Sohn, Kim, & Lee, 2019). Internet delivery (ICBT-P) is equally as effective as face-to-face delivery (Suh et al., 2019). This is consistent with the findings across psychiatric and somatic disorders (Carlbring, Andersson, Cuijpers, Riper, & Hedman-Lagerlöf, 2018; Andersson, Titov, Dear, Rozental, & Carlbring, 2019). The most evaluated form of CBT-P (Shafran, Egan, & Wade, 2010) is informed by *clinical perfectionism,* the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed, standards in at least one highly salient domain, despite adverse consequences (Shafran, Cooper, & Fairburn, 2002). Outcomes also show moderate between-group effect size differences for disordered eating (Robinson & Wade, 2021), and anxiety and depression (Suh et al., 2019) compared to wait-list conditions. To date, evaluations of ICBT-P have included only the Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) and the Clinical Perfectionism Questionnaire (CPQ; Fairburn, Cooper, & Shafran, 2002).

There is much debate in the literature about the optimal operationalisation of the perfectionism construct (Shafran et al., 2002). It has been suggested that measures of striving for high standards and perfectionistic strivings have been used interchangeably in the

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research (Gaudreau, 2018). Comparison of the original version of the High Standards

subscale from the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, &

Ashby, 2001) to a modified version focused on perfectionistic strivings, showed that

associations with harmful outcomes existed for the latter but not the former (Blasberg,

Hewitt, Flett, Sherry, & Chen, 2016). The authors speculated that the former reflected

conscientious striving for high standards and the former reflected the 'all or nothing' thinking

and rigid pursuit of perfection (Blasberg et al., 2016). High standards may have more in

common with *excellencism*, a term coined to denote a hypothesised pursuit of achievement

that is functional (Gaudreau, 2018), and operationalised in a new measure, the Scale of

Perfectionism and Excellencism (SCOPE; Gaudreau & Schellenberg, 2018).

The primary aim of the current study is to investigate how ICBT-P impacts across a

variety of measures of perfectionistic measures. We hypothesised that there would be

significant reductions in measures related to perfectionistic concerns and perfectionistic

strivings (Concern over Mistakes and Personal Standards from the FMPS, Discrepancy from

the APS-R, and Personal Standards from the SCOPE), while subscales associated with high

standards (High Standards from the APS-R and the Excellencism from the SCOPE) would

not show significant reductions compared to a control group. Our secondary aim is to

examine the impact of ICBT-P on depression, anxiety and stress, body image flexibility and

self-compassion. Two studies using similar versions of guided ICBT-P showed significant

effects on perfectionism while one showed significant effects on secondary outcomes such as

depression and anxiety (Rozental et al., 2017) but the other did not (Shafran et al, 2017). The

main difference between the two studies (apart from minor differences in the modules) was

the number of modules completed, with 86% completing more than 6 modules versus a mean

of 3.9 modules respectively. We adopted a client-centred approach to module completion,

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104   namely a flexible rather than the more common fixed format. This former format entails

105   completion of modules in any order and number (after the initial module) that meets the

106   needs of the participant.

107   Method

108   Participants

109   Participants were undergraduate students from Flinders University recruited via the School of

110   Psychology Research Participation System and information posters displayed on campus.

111   Inclusion required being 17 years of age or older, fluent in English, and self-reporting current

112   struggles with perfectionism. Exclusion criteria were past registration with the Overcoming

113   Perfectionism website. The number of participants who read these research invitations is

114   unknown, but 114 completed baseline questionnaires, with 89 (78%) progressing on to

115   intervention randomisation and further assessment (see **Figure 1**). Participants received either

116   up to six research participation credits (N=60) or \$20 payment (N=29). The sample

117   comprised of 79 females (89%), 8 males (9%) and 2 not defined (2%) with age ranging from

118   18 to 64 ($M = 24.74$, $SD = 8.36$). Most of the participants identified as Australian ($n = 54$,

119   61%), with the remainder identified as Asian ($n = 26$, 29%) or other. Seventy two percent met

120   the inclusion criteria of a previous ICBT-P study (Shafran et al., 2017), ≥ 29 on the FMPS

121   Concern over Mistakes scale, one standard deviation above published norms. Compared to

122   average item scores in a non-clinical population (Antony, Bieling, Cox, Enns, & Swinson,

123   1998), scores for negative affect were slightly elevated, with a mean of 3.64 compared to

124   2.12 for depression, and a mean of 2.12 for anxiety compared to 1.22. Formal approval was

125   received from the Social and Behavioural Research Ethics Committee (# 7971).

126   *Design*

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127   Participants were randomised to ICBT-P or a waitlist. A within-subjects design was

128   used to compare the difference in magnitude of change on outcome variables at baseline (T_1),

129   2 week mid-treatment (T_2), 4 week end-of-treatment (T_3) and 8 week post-treatment (T_4) time

130   points between the two groups for all randomised participants.

131   *Power*

132   A longitudinal designs power analysis (Hedecker, Gibbons, & Waternaux, 1999) was

133   conducted using the between-group effect size previously obtained for perfectionism in a

134   university population not selected for high levels of perfectionism (Johnson et al., 2019).

135   Assuming three timepoints (adjusting for baseline observations), $\alpha = .05$, power $= 0.80$,

136   attrition rates of $T_1 = 25\%$ and $T_2 = 5\%$, and $d = 0.65$ (Lloyd et al., 2015), a minimum

137   randomised sample size of 64 was estimated, 32 participants per group.

138   *Intervention*

139   ICBT-P consists of eight modules. Participants were asked to complete module 1 and

140   then encouraged to complete as many modules as they liked over 4 weeks. Each module took

141   approximately 30 minutes to complete and addressed specific target areas important in the

142   treatment of perfectionism. Self-managed homework assignments were available for

143   participants to complete but were not compulsory; no guided self-help was provided.

144   *Primary outcome measure*

145   In the interests of limiting respondent burden, we decided to limit inclusion of

146   perfectionism measures, using two subscales each from three different scales (N=6

147   measures). This included Personal Standards and Concern over Mistakes from the FMPS;

148   (Frost et al., 1990), with 7 (e.g., "I set higher goals than most people") and 9 items (e.g., "I

hate being less than the best at things") respectively each on a 5-point Likert scale (Strongly

agree to Strongly disagree). All item scores were reversed coded such that higher mean item

scores indicated higher levels of perfectionism. High internal consistencies for both subscales

(.83 and .88) were respectively noted in this study. Discrepancy and High Standards from the

APS-R (Slaney, et al., 2001) were also used, consisting of 12 (e.g., "Doing my best never

seems to be enough") and 7 items (e.g., "I have high expectations for myself") respectively.

All subscales used a 7-point Likert scale from 1 ("Strongly disagree") to 7 ("Strongly

agree"). The mean item scores were calculated, with higher scores indicating higher levels of

perfectionism. High respective internal consistencies (.94 and .91) were observed in this

study. Excellencism and Personal Standards from the SCOPE (Gaudreau & Schellenberg,

2018) were used; the latter we herein rename as Perfectionistic Standards in order to

differentiate it from the FMPS. Eleven items from Excellencism (e.g., "As a person, my

general goal in life is to... reach excellence.") and Perfectionistic Standards (e.g., "As a

person, my general goal in life is to... reach perfection.") were used, with a 7-point Likert

scale ranging from 1 (Not at all) to 7 (Totally). A higher mean item score indicates higher

levels of each construct. The SCOPE was made available on the Open Science Framework

and at the time of this study is still under evaluation, with no validity and reliability data

available. High respective internal consistencies were noted for both in the current study (.94

and .97).

Secondary outcome measures

The Depression, Anxiety and Stress Scales – Short Form (DASS-21; Lovibond &

Lovibond, 1995) is a 21 item self-report measure of depression, anxiety and stress which uses

a four point Likert scale from 0 ("did not apply to me at all") to 3 ("applied to me very much,

or most of the time"). Participant subscale response scores were aggregated with a higher

173 mean item score indicating elevated levels of negative affect. The DASS-21 has adequate

174 construct validity and be suitable for use in clinical and non-clinical samples (Henry &

175 Crawford, 2005). In this study good respective internal consistencies were obtained (.90, .85,

176 .86).

177 The Body Image-Acceptance and Action Questionnaire (BI-AAQ; Sandoz, Wilson,

178 Merwin, & Kellum, 2013) is a 12-item self-report questionnaire measuring over-evaluation of

179 weight and shape (e.g., "I care too much about my weight and body shape"), using a seven-

180 point Likert scale ranging from 1 ("Never true") to 7 ("Always true"). Mean item response

181 scores were calculated, with higher scores suggesting more positive body image. This

182 measure has strong internal consistency (Cronbach's $\propto$ = .96), convergent and divergent

183 validity and test-retest reliability (Pellizzer, Tiggemann, Waller, & Wade, 2018). In the

184 current study internal consistency for this scale was high ($\propto$ = .97).

185 The Self-Compassion Scale – Short Form (SCS-SF; Raes, Pommier, Neff, & Van

186 Gucht, 2011) was designed to measure the general higher order factor of self-compassion

187 (e.g., "When something upsets me, I try to keep my emotions in balance."). A five-point

188 Likert Scale ranging from 1 (Almost never) to 5 (Almost Always) is used with items 1, 4, 8,

189 9, 11 and 12 reversed scored, with a higher mean item score indicating higher self-

190 compassion. In the current study high internal consistency was obtained ($\propto$ = .82).

191 *Procedure*

192 After registering all participants were directed to a web based survey platform

193 (Qualtrics) where the study information and consent was available. They were then asked to

194 answer demographic questions (date of birth, gender, ethnicity, fluency in English, if they

195 currently experience perfectionism). Failure to answer in the affirmative to either of the last

two questions automatically ended the survey. Those eligible went on to complete the

baseline (T_1) survey, at the end of which they were asked if they would like to proceed

further as a participant in the study and be randomised.

Those who agreed to proceed were allocated to a group by a randomizer element

within the survey platform and emailed the Information Sheet and Consent Form. Participants

allocated to the treatment group were then registered as a user on the Overcoming

Perfectionism website (Vlaescu, Alasjö, Miloff, Carlbring, & Andersson, 2016), allocated

access to all 8 modules and provided with login details via an automatically generated email.

Follow up email reminders to complete surveys were sent to participants manually.

Treatment group participants were instructed that they had four weeks to complete as many

modules as they liked, starting with module 1 and then moving on to the other modules; and

that the worksheets were available to be completed if they chose to, but were not compulsory.

Statistical Analyses

Baseline data was analysed using bivariate correlations and logistic regressions for

two group comparisons. The fixed effects of treatment allocation, time and two-way

interactions between time and treatment allocation were analysed using general linear mixed

models, which are robust with respect to unbalanced designs in repeated-measures research

(Nich & Carroll, 1997) offering the benefits of estimation maximization (EM), which

provides joint linear modelling for each individual for observed *and* missing data based on

maximizing likelihood for population parameters as a function of observed data. Baseline

observations were included as a covariate, and thus both main effects of group and

interactions are of interest. Between group effect sizes and 95% confidence intervals were

calculated using the online Campbell Collaboration effect size calculator. An effect size of

219 0.2–0.5 is considered small, 0.5–0.8 moderate, and >0.8 large. We do not expect to see the

220 95% CI cross zero if the effect is substantial.

221 Results

222 ***Baseline descriptives***

223 An analysis of bivariate correlations is provided in **Table 1**. With the exception of Personal

224 Standards (FMPS) and High Standards (APS-R), which showed no significant relationship to

225 secondary outcome measures, higher levels of perfectionism were associated with higher

226 levels of depression, anxiety and stress, and lower levels of positive body image and self-

227 compassion. It is of note that Excellencism from the SCOPE, intended to measure benign

228 pursuit of excellence, showed a small but significant association with higher levels of

229 anxiety, stress and body image concerns.

230 Logistic regression analysis of baseline variables showed no differences between

231 participants who completed baseline questionnaires only and were not randomised to the 89

232 participants who were randomised. Given the advent of COVID-19 half-way through data

233 collection, impacting 39% of our participants, we also used logistic regressions to test

234 baseline differences between those affected and not affected. None of the baseline differences

235 were different except for Personal Standards (OR=0.41, 95% CI: 0.21-0.82). There were

236 lower Personal Standards in the affected group (M=3.69, SD=0.72) compared to the

237 unaffected group (M=4.07, SD=0.62); Excellencism approached significance (*p*=.07),

238 trending the same way with respective means of 5.20 (SD=0.74) and 5.56 (0.97).

239 ***Treatment module and survey completion***

240 The number of ICBT-P modules completed is shown in **Table 2**. The mean number of

241 modules completed was 2.57 (SD=2.65). Half of the participants stopped after the first 2

242 modules, just over a third completed 4 modules, and only 12% completed all eight modules.

243 There were no significant correlations between the N modules completed and any of our

244 measures. Seventy (79%) of participants completed all four surveys and 14 (16%) completed

245 just the first two survey time points.

246 ### *Changes over time*

247 The baseline covariate mean value and subsequent means and standard errors across

248 the eleven general linear mixed models are displayed in **Table 3**. Five significant effects were

249 obtained indicating between-group differences - three interactions, and two between group

250 differences. The first interaction was observed for Concern over Mistakes where the

251 intervention group decreased at each follow-up assessment and was significantly lower than

252 the control group at post-intervention and follow-up. The second interaction was for Personal

253 Standards, with the intervention group lower than the control group at post-intervention and

254 follow-up. While an interaction for body image was indicated, and the intervention group

255 improved at each time point in contrast to the control group which decreased at each time

256 point, no significant post-hoc comparisons were evident. This latter result may be somewhat

257 explained by greater baseline variability where differences between groups approached

258 significance at baseline (p=.08), where the control group started with better body image

259 (M=4.17, SD=1.68) compared to the control (M=3.49, SD=1.88). The significant between

260 group differences related to High Standards and Excellencism, where intervention group was

261 lower than the control group at post-intervention and follow-up. The between group effect

262 sizes and 95% confidence intervals (CI) are shown in **Figure 2**. While 95% CI do not cross

263 zero for three variables: Concern over Mistakes (large), High Standards and Perfectionistic

264 Standards (both moderate), the latter result is hard to interpret. While it accorded with a

265   significant post-hoc difference favouring the intervention group at follow-up (see **Table 3**),

266   there was only a significant main effect of time noted in the linear mixed modelling.

267   Discussion

268   The current study investigated the impact of ICBT-P on subscales measuring perfectionistic

269   strivings and perfectionistic concerns (Concern over Mistakes and Personal Standards from

270   the FMPS, Discrepancy from the APS-R, and Personal Standards from the SCOPE) as well

271   as measures considered to indicate high standards (High Standards from the APS-R and

272   Excellencism from the SCOPE). The results showed the strongest between-group differences

273   for Concern over Mistakes and High Standards. Less consistent across the various tests of

274   significance but showing a between group difference at follow-up were subscales of Personal

275   Standards, Excellencism, and Perfectionistic Standards.

276   The results are not entirely consistent with our hypotheses. The results for

277   Discrepancy showed no between-group differences but a significant main effect of time

278   where decreases were noted for both groups, which suggests an impact of time or assessment.

279   We also suggested that High Standards and Excellencism were expected to be helpful and

280   therefore would not be decreased by ICBT-P. Both showed greater decreases in the

281   intervention group compared to the control. While our correlations showed no associations

282   between our secondary variables and the High Standards subscale but we note that

283   Excellencism was associated with higher levels of anxiety, stress and body image concerns.

284   We know little about which higher-order dimensions of perfectionism the SCOPE measures

285   fall under and validation of this instrument is required. Overall our results may indicate that

286   measures of perfectionism and high standards requires further investigation and validation, or

287   that the intervention requires some modification to clarify messages related to the

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288 functionality of high standards and differentiating this adequately from perfectionistic

289 standards, as well as decreasing discrepancy between goals and perceived performance.

290 None of our secondary outcome measures showed significantly greater improvements

291 over time in the treatment compared to the control group. There was an indicative result for

292 our body image variable, which improved in the intervention group and deteriorated in the

293 control group. This is consistent with the findings of Wade et al. (2019) and adds to the

294 evidence suggesting that ICBT-P may have a potentially beneficial effect for disordered

295 eating, as suggested by a previous study (Shu et al., 2019) and a meta-analysis (Robinson &

296 Wade, 2021). The lack of improvement noted in depression, anxiety, stress and self-

297 compassion was similar to results of Shafran et al. (2017), which also experienced low

298 module completion rates. These psychopathologies seem to respond to higher module

299 completion rates (Rozental et al., 2017), with previous research suggesting completion of at

300 least 4 modules is required before we see meaningful changes in secondary variables (Wade

301 et al., 2019). In suitably powered studies further research is required into what impacts on

302 module completion rates and how ICBT-P module completion impacts changes in both

303 perfectionism and secondary measures.

304 The modules completed in the current study need to be interpreted in the context of

305 the wider literature on psychological internet interventions for mental health. Assessing

306 adherence is somewhat problematic given the number of different definitions used, with the

307 most common definition conflating the number of assessments or modules (Beatty & Binion,

308 2016). Randomised controlled trials show completion of assessments ranging from 50% to

309 99%, typically higher in the experimental intervention group relative to the control

310 (Christensen, Griffiths, & Farrer, 2009). The current study reports assessment completion in

311 the upper range at 79%. Completion of the intervention modules across studies varies (Beatty

312 & Binion, 2016), with one review suggesting that between 4% to 84% of research

313 participants open any modules of an internet intervention (Waller & Gilbody, 2009). While

314 100% of our participants used some modules only 12% completed all modules. This may

315 reflect the flexible format used, where completion of all modules was not required, and

316 participants could choose to complete the modules they felt were most relevant to them.

317 Reported reasons across the literature for lack of engagement include time constraints, lack of

318 motivation, technical or computer-access problems, depressive episode or physical illness,

319 the lack of face-to-face contact, improvement in condition and burden of the program

320 (Christensen et al., 2009). It has been suggested that engagement can be increased, in part,

321 with use of guidance or support (Andersson, Carlbring, Berger, Almlov, & Cuijpers, 2009).

322 In the case of flexible delivery of modules, it may be that participants should be given the

323 information that the more they complete, the greater the likelihood that there will be an

324 impact on anxiety and depression.

325 Recent studies suggest an increase and severity of mental problems and help-seeking

326 behaviours in University students around the world in the last decade (Lipson, Lattie, &

327 Eisenberg, 2019), where students face new challenges that are vulnerable to perfectionistic

328 tendencies, such as making independent decisions about their lives and studies, adjusting to

329 the academic demands of a less-structured learning environment, and interacting with a

330 diverse range of new people. It is encouraging to see that ICBT-P resulted in a decrease in

331 four dimensions of potentially maladaptive forms of perfectionism in this population, albeit

332 while also decreasing high standards which is argued by some to be adaptive (Gaudreau,

333 2019). These results should be interpreted in the context of the following limitations of the

334 current study. First, the use of an undergraduate sample motivated by course credit or

335 payment, which may have impacted on module completion, may mean that generalisability to

336   a clinical sample is a potential issue. Second, we had few males (9%), which may impact

337   adherence as females have higher internet intervention adherence rates than males (Beatty &

338   Binion, 2016). Third, it is possible that some of our participants (39%) were affected by the

339   COVID-19 outbreak which created significant disruption. Our results suggest that some

340   forms of perfectionism were lower in those affected and this may mean that they responded

341   somewhat differently than the remainder of the sample.

342   In conclusion, even use of, on average, less than half the modules of ICBT-P in a non-

343   clinical population shows a decrease in measures of perfectionism compared to control. This

344   impact, however, did not discriminate as predicted, with lowering of two measures of

345   perfectionism that showed no association with poorer mental health in our study. This could

346   reflect the need for improving the psychometrics of capturing harmful efforts to reach

347   ambitious goals and distinguishing these from efforts that do not cause harm. In further

348   development and evaluation of shorter ICBT-P interventions, attention should be paid to

349   impact on goal directed behaviour that is not associated with harmful outcomes. Future

350   studies should also examine ways of optimising the impact of fewer modules, given the

351   consistent reluctance of populations to complete internet modules related to mental health

352   (Christensen et al., 2009).

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Table 1. Baseline correlations.

	FMPS-CM	FMPS-PersS	APS-R-D	APS-R-HS	SCOPE-EX	SCOPE-PerfS	DASS-21-D	DASS-21-A	DASS-21-S	BIAAQ
FMPS-PersS	.35**									
APS-R-D	.63**	.17								
APS-R-HS	.33**	.47**	.37**							
SCOPE-EX	.46**	.62**	.22*	.50**						
SCOPE-PerfS	.62**	.53**	.39**	.31**	.65**					
DASS-21-D	.41**	-.09	.55**	.007	.05	.25**				
DASS-21-A	.41**	.03	.49**	.10	.19*	.37**	.66**			
DASS-21-S	.45**	.11	.48**	.13	.23*	.35**	.66**	.73**		
BIAAQ	-.44**	.004	-.49**	-.13	-.19*	-.36**	-.51**	-.53**	-.46**	
SCS-SF	-.53**	-.06	-.48**	-.15	-.15	-.36**	-.52**	-.45**	-.45**	-.43**

Note. FMPS = Frost Multi-dimensional Perfectionism Scale; APS-R = Almost Perfect Scale-Revised; SCOPE = Scale of Perfectionism and Excellencism; DASS = Depression, Anxiety and Stress Scales – Short Form; BIAAQ = Body Image-Acceptance and Action Questionnaire; SCS-SF = Self Compassion Scale-Short Form; CM = Concern over Mistakes; PS = Personal Standards; D = Discrepancy; HS = High Standards; EX = Excellencism, PS = Perfectionistic Standards; D = Depression; A = Anxiety; S = Stress; Group = Treatment or Control, * = $p < .05$, ** = $p < .01$.

Table 2. Treatment modules completed (mean=3.12, SD=2.67), with 7 participants (17%) completing no modules.

Module	Topic	N completed (%)
1	Understanding Perfectionism	34 (83)
2	Perfectionistic Behaviours and Model	27 (66)
3	Surveys and experiments	20 (49)
4	New ways of thinking	16 (39)
5	Procrastination and problem solving	11 (27)
6	Moving from self-criticism to self-compassion	7 (17)
7	Redefining how we assess our self-worth	7 (17)
8	Staying well in the long term	6 (15)

Table 3. Intent to Treat linear mixed models adjusting for baseline observations: estimated means and standard errors.

Variable		Control (N=48)			Treatment (N=41)		
	Baseline covariate	T2 M (SE)	T3 M (SE)	T4 M (SE)	T2 M (SE)	T3 M (SE)	T4 M (SE)
FMPS-CM [b,c]	3.63	3.44 (0.09)	3.56 (0.09) [1]	3.51 (0.09) [1]	3.39 (1.00)	3.13 (0.11) [2]	2.95 (0.12) [2]
FMPS-PS [b,c]	3.90	3.68 (0.35)	3.78 (0.35) [1]	3.77 (0.35) [1]	3.52 (0.35)	3.14 (0.36) [2]	3.28 (0.36) [2]
APS-R-D [a]	4.93	5.44 (0.17)	5.35 (0.18)	4.79 (0.18)	5.33 (0.18)	5.00 (0.21)	4.34 (0.22)
APS-R-HS [a,b]	5.83	6.56 (0.13)	6.45 (0.15) [1]	5.71 (0.12) [1]	6.18 (0.15)	5.84 (0.18) [2]	5.10 (0.15) [2]
SCOPE-EX [a,b]	5.36	5.23 (0.95)	5.23 (0.95) [1]	5.04 (0.95) [1]	4.99 (0.95)	4.74 (0.95) [2]	4.59 (0.96) [2]
SCOPE-PerfS [a]	4.28	4.09 (0.14)	3.87 (0.18)	3.88 (0.19) [1]	3.94 (0.15)	3.56 (0.22)	3.24 (0.23) [2]
DASS-21-D	1.99	2.00 (0.08)	1.87 (0.09)	1.93 (0.10)	2.05 (0.09)	1.95 (0.11)	1.99 (0.13)
DASS-21-A	1.94	1.83 (0.32)	1.70 (0.32)	1.76 (0.33)	1.81 (0.32)	1.76 (0.33)	1.78 (0.33)
DASS-21-S	2.28	2.26 (0.13)	2.16 (0.13)	2.18 (0.14)	2.20 (0.13)	2.07 (0.14)	2.02 (0.16)
BIAAQ [c]	4.04	4.26 (0.09)	4.23 (0.14)	4.11 (0.16)	4.04 (0.10)	4.34 (0.17)	4.52 (0.19)
SCS-SF [a]	2.64	2.64 (0.20)	2.66 (0.20)	2.69 (0.21)	2.62 (0.20)	2.84 (0.20)	2.92 (0.22)

Note. M = Mean; SE = Standard Error; d = Cohen's d; FMPS = Frost Multi-dimensional Perfectionism Scale; APS-R = Almost Perfect Scale-Revised; SCOPE = Scale of Perfectionism and Excellencism; DASS = Depression, Anxiety and Stress Scales – Short Form; BIAAQ = Body Image-Acceptance and Action Questionnaire; SCS-SF = Self Compassion Scale-Short Form; CM = Concern over Mistakes; PS = Personal Standards; D = Discrepancy; HS = High Standards; EX = Excellencism, PerfS = Perfectionistic Standards; D = Depression; A = Anxiety; S = Stress.

[a] significant main effect of time; [b] significant main effect of group; [c] significant interaction between time and group; numerical superscripts indicate at which time points the two groups differed using Bonferroni adjusted post-hoc comparisons

Figure 1. Flow of participants through the trial.

Completed baseline survey (n=114)

ENROLMENT

Only completed baseline (n=25)

Randomized (n=89)

ALLOCATION

Allocated to intervention (n= 41)
- Did not complete any modules (n=7)

Allocated to control (n=48)

FOLLOW-UP

2-week assessment (n=10)
2- and 4-week assessment (n= 3)
2- and 8-week assessment (n= 2)
All assessments completed (n=26)

2-week assessment (n=4)
All assessments completed (n=44)
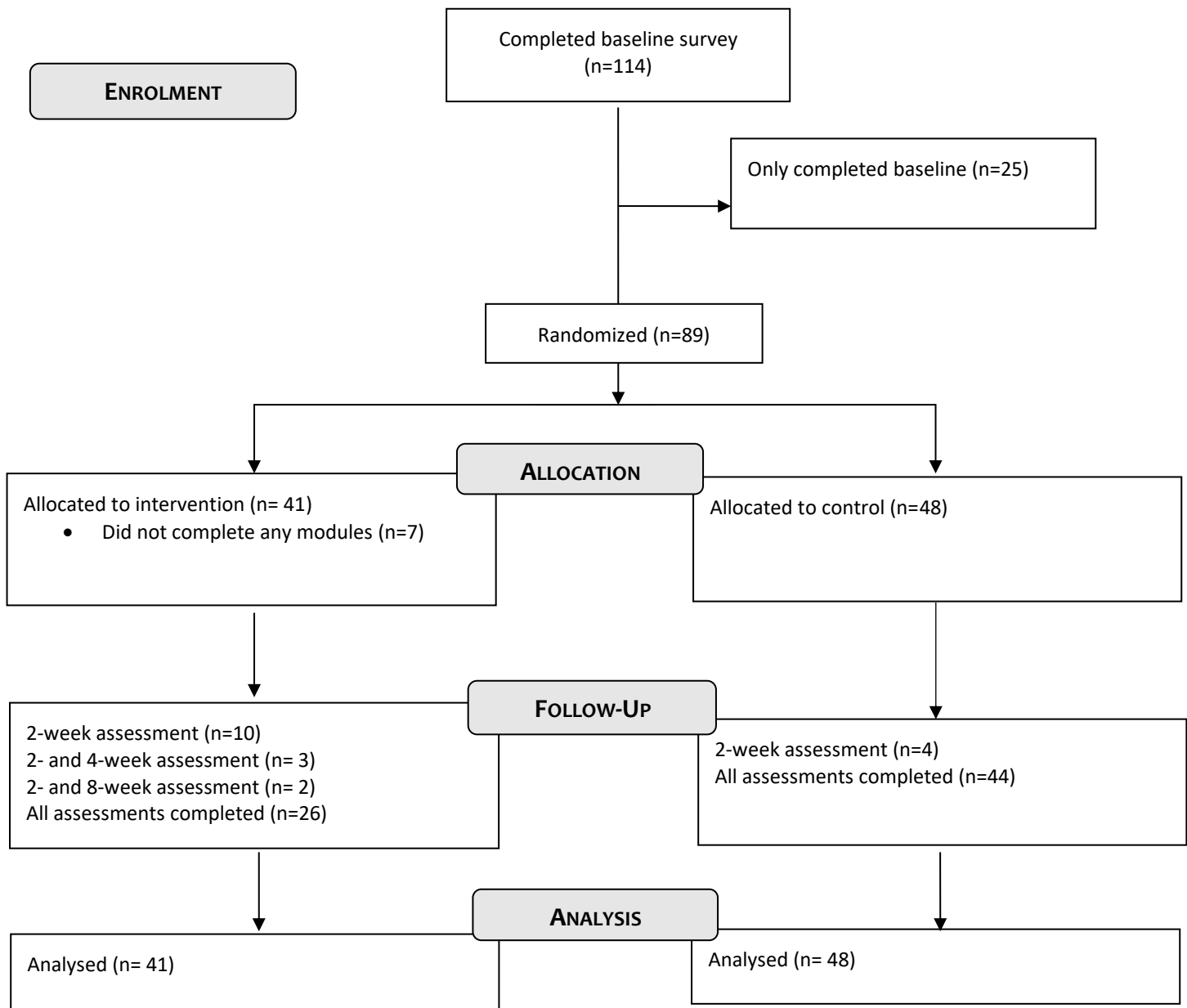
ANALYSIS

Analysed (n= 41)

Analysed (n= 48)

Figure 2. Between group effect sizes and 95% confidence intervals at follow-up, with effect sizes below zero for the perfectionism and DASS-21 scales favouring treatment over control, and effect sizes above zero for body image and self-compassion favouring treatment over control.