Future-Oriented Group Training for Suicidal Individuals: A Randomized Controlled Trial

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Acknowledgments

Funding for this study was provided by the Flemish Government. The authors thank Wessel van Beek and Ad Kerkhof for sharing the protocol of the Future-Oriented Group Training with us. We are very grateful to the participants and the trainers whose time and efforts made this work possible.

ABSTRACT

Introduction Suicide is a serious public health concern worldwide. Current psychological interventions targeting suicidal ideation and behaviour are, however, limited and often lack convincing empirical support. Future-Oriented Group Training (FOGT) targets crucial aspects of the suicidal process, therefore, possibly offering a promising intervention for suicidal ideation. This study aimed at investigating the short-term and long-term effects of FOGT on suicidal thoughts and related variables.

Methods A randomized controlled trial was conducted, comparing the intervention group (FOGT + treatment as usual (TAU)) to a control group (TAU) at pre- and post-treatment and at a 12-week follow-up. Suicidal ideation was the primary outcome, while depressive symptoms, hopelessness, defeat, entrapment, worrying, and the ability to think future-oriented were secondary outcomes.

Results When compared to the control group, the intervention group showed significant decreases in worrying at post-treatment and significant increases in future-oriented thinking at follow-up. Pre-post analyses within the intervention group showed significant small to medium effects for primary as well as most secondary outcomes. Changes in suicidal ideation, depression, hopelessness, and future-oriented thinking remained significant at follow-up.

Conclusion This study provides promising empirical evidence for the use of FOGT for individuals with suicidal ideation.

Keywords: suicide-specific, prospective, group intervention, randomized controlled trial

Introduction

Suicide is a complex and serious global public health problem, with more than 700 000 deaths a year due to suicide (WHO, 2021a). In 2019, Belgium had a suicide rate of 18.9 deaths per 100 000 inhabitants, which is higher than the global and European average rate (WHO, 2021b). For every death by suicide, approximately 25 others attempt suicide (Drapeau & McIntosh, 2017). Moreover, suicidal ideation is even more prevalent, with up to 25.4% of people who have had suicidal thoughts (Bertolote et al., 2005; Biswas et al., 2020; McManus et al., 2016; Nock et al., 2013).

Research shows that suicidal ideation is an important predictor of suicide and suicidal behaviour (Large et al., 2021; McHugh et al., 2019; Ribeiro et al., 2015). Moreover, suicidal ideation is a relevant factor throughout the entire suicidal process, making it a key target for intervention early on in the process as well as prevention of suicide (De Leo et al., 2005; Gunnell et al., 2004, O'Connor & Nock, 2014). Unfortunately, psychological interventions specifically targeting suicidal ideation are scarce and lack convincing empirical evidence (D'Anci et al., 2019). Suicide is a complex, multifaceted phenomenon with a low base rate, which makes it more challenging to provide strong evidence of the efficacy of interventions (Turecki & Brent, 2016). Nevertheless, having strong empirical evidence on effective treatments of suicidal ideation and behaviour is of utmost importance for improving clinical practice and public health.

Two other important risk factors that have been identified and examined in the context of suicide, are hopelessness and the lack of (positive) future-oriented thinking (Hawton et al., 1999; MacLeod et al., 2004). Research generally supports hopelessness as a predictor of suicidal ideation and behaviour (Beevers & Miller, 2004; Brezo et al., 2006; Joiner et al., 2005; Hawton et al., 2012). Longitudinal studies provide evidence for hopelessness as a long-term indicator of suicide risk (Beck et al., 1985; Klonsky et al., 2012). Furthermore, research suggests that hopelessness is associated more strongly than depression to suicidal intention, and thus having a unique predicting value (Beck et al., 1985; Klonsky et al., 2012; Minkoff et al., 1973; Truant et al., 1991).

When looking more closely at mechanisms related to hopelessness, researchers have suggested that the lack of positive future thinking, rather than the presence of negative future thinking, is

crucial in the suicidal process (Hunter & O'Connor, 2003; MacLeod et al., 1997; Macleod et al., 1998; O'Connor et al., 2008). Positive future thinking has previously been presented as a protective factor against general distress (O'Connor et al., 2004). Unfortunately, lower levels of positive future thinking are found in suicidal individuals compared to controls (Hunter & O'Connor, 2003; MacLeod et al., 1997; O'Connor et al., 2015). Research shows that lower levels of positive future thinking are associated with suicidality (Hunter & O'Connor, 2003; MacLeod et al., 1997; O'Connor et al., 2000; O'Connor et al., 2015; Williams et al., 2008). Research thus implies that decreasing hopelessness and increasing future-oriented thinking is essential in the treatment of suicidality. Developing treatment programs that focus on these components can be a promising strategy for treating suicidal ideation and behaviour.

To address the lack of empirically supported interventions specifically targeting suicidality, Van Beek and colleagues developed the Future-Oriented Group Training (FOGT; 2009). Considering the evidence, this intervention uses as a main presumption that reduced future thinking is an important characteristic of suicidal ideation. Countering hopelessness by installing more positive future expectations and improving problem solving skills are core components of this intervention. In a randomized controlled trial (RCT), Van Beek and colleagues (2013) found promising results for this intervention. Their results showed a significant decrease in experienced symptoms and distress, and a five times smaller probability of deliberate self-poisoning without death intent of suicidal patients following FOGT, compared to treatment as usual (TAU) (Van Beek, 2013). Although these results are promising, they did not indicate a direct effect on suicidal thoughts or behaviour (Van Beek, 2013).

Offering short empirically supported treatment programs could help in combating suicidality. Considering the high prevalence of suicidal ideation in Belgium and the current lack of empirically supported treatments that target suicidal ideation specifically, our study aimed to evaluate the effectiveness of the FOGT on suicidal ideation in Flanders (i.e., the Dutch-speaking region in Belgium), compared to a waitlist control condition. Hence, the original FOGT training as developed by Van Beek and colleagues (2009) was adapted to the Flemish context. Two main changes were the use of a safety plan throughout the training (Stanley & Brown, 2012), as well as a reduction in the number of sessions from ten to nine.

The aim of this study was to examine the short- and long-term effects of FOGT on suicidal thoughts, as well as key variables related to suicidal behaviour, i.e. depressive symptoms (Nock et al., 2008), hopelessness (O'Connor & Nock, 2014; Turecki & Brent, 2016), defeat (Dhingra et al., 2015; Dhingra et al., 2016; Tucker et al., 2016), entrapment (Dhingra et al., 2015; Dhingra et al., 2016; Forkmann & Teismann, 2017), worrying (Law & Tucker, 2018) and the ability to think future-oriented. It was hypothesised that the intervention would reduce suicidal ideation and that this effect would remain at follow-up. In addition, improvements were expected on secondary outcomes (depressive symptoms, hopelessness, defeat, entrapment, worrying and future-oriented thinking), though a smaller effect size was hypothesised.

Methods

Participants

Participants were recruited between September 2016 and August 2017 through seven out-patient Flemish mental healthcare facilities. Participants needed to speak Dutch, be at least 18 years old, have mild to severe suicidal thoughts, have internet access, and be suitable for group therapy. Mild to severe suicidal thoughts were defined by a score of ≥ 1 on the Beck Scale for Suicide Ideation (BSS, Beck, 1991). Participants with conditions expected to severely hinder group participation, comprehension of the training content or adherence, were excluded from the study.

Eligibility was determined through a two-step process. First, professionals of the mental health facilities performed a first screening of suicidal ideation. In case suicidal ideation was present, informed consent was acquired, and researchers of the study invited the participants for an online screening where information about socio-demographics as well as inclusion and exclusion criteria was obtained.

Study design

In this study, a RCT design was applied. Participants were randomized to the intervention or control group, using a computer-generated randomization sequence with block sizes of 4, stratified by gender. In the intervention group, participants received FOGT in addition to TAU, while participants in the waitlist control condition only received TAU.

The different outcome measurements were assessed at three moments, namely baseline (T1; 2 weeks before the intervention), after the intervention (T2; 9 weeks after baseline), and at follow-up (T3; 3 months after T2). Only suicidal ideation was measured twice more (after week 3 and 6) during the intervention, in the context of a safety protocol.

This study was approved by the Commission for Medical Ethics of the University Hospital Ghent (Belgian registration number: B670201628574). Written informed consent was obtained before joining the study once eligibility was confirmed.

Safety of Participants

The participants were selected on the basis of having suicidal thoughts, and thus had a higher risk of suicidal behaviour. Therefore, a safety protocol was installed based on the one used in earlier studies in which there were participants at risk of suicide (De Jaegere et al., 2019; van Spijker, van Straten, & Kerkhof, 2014).

Specifically, participants who scored higher than 26 on the BSS (Beck & Steer, 1991) were contacted by telephone by a clinical psychologist. The clinical psychologist performed a risk assessment. In case of acute risk for suicide, participants were informed that their GP would be contacted for further help and follow-up.

Intervention

Future-Oriented Group Training

This study's experimental condition consisted of Future-Oriented Group Training (FOGT), originally developed in 2008 by van Beek et al. (2009). Participants followed this training weekly, over a period of 9 weeks in groups of 6 to 10 participants. The sessions, which lasted 90 minutes each, were each led by one trainer. Trainers were recruited and trained prior to the study through two training days organized by the Flemish Centre of Expertise in Suicide Prevention. The main materials for the intervention are a trainer's manual, a participant workbook, and audio materials.

The main goal of FOGT is to reduce suicidal ideation by decreasing hopelessness and stimulating goal-oriented as well as future-oriented thinking and behaviour. The focus throughout the sessions is on thinking in terms of possibilities and learning to create a personal meaningful image of one's future by setting small goals.

Outcome measures

All questionnaires were self-report and administered online.

Sample Characteristics

At baseline, demographic characteristics were obtained from the participants. These included gender, age, marital status, living situation, education level, employment, physical and psychological conditions, and psychological or pharmaceutical help for psychological complaints.

Primary Outcome

Suicidal ideation

The Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) is a 21-item self-report questionnaire used to measure (the severity of) suicidal ideation. Each item is rated on a scale from 0 to 2, resulting in a total score ranging from 0 to 38. The BSS has moderate test-retest reliability high internal consistency (Beck & Steer, 1991).

Secondary Outcomes

Depressive symptoms. The second edition of the Beck Depression Inventory (BDI-II; Beck, Steer & Brown, 1996) was used to measure depressive symptoms. This is a 21-item self-report questionnaire aimed to measure depressive symptoms and attitudes over the last week on a scale from 0 to 3. It has an internal consistency ranging from .73 to .95 and a test-retest reliability ranging from 0.48 to 0.86 (Beck, Steer & Garbin, 1988).

Hopelessness. The Beck Hopelessness Scale (BHS; Beck et al., 1974) is a 20-item self-report questionnaire to measure hopelessness. The items consist of statements that respondents rate as 'true' (score= 0) or 'false' (score= 1) for themselves over the past week, resulting in a total score between 0 and 20. Studies have reported sufficient internal consistency of .88 (Steed, 2001) and reliability of .93 (Beck et al., 1974).

Defeat and entrapment. Defeat and entrapment were measured using, respectively, the Defeat Scale (DS) and Entrapment Scale (ES), developed by Gilbert and Allan (1998). These two 16-item scales use a five-point Likert scale. Both scales showed good psychometric properties (Gilbert & Allen, 1998).

Worrying. The Penn State Worry Questionnaire – past week (PSWQ-PW; Stöber & Bittencourt, 1998) was used to measure worrying. This 15-item self-report questionnaire is an adaptation of the regular Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990) which is developed for the weekly assessment of worrying. Participants rate statements on a 7-point Likert scale, ranging from 0 ("never') to 6 ("almost always"). The PSWQ-PW has a high reliability and substantial validity (Stöber & Bittenvourt, 1998).

Future-oriented thinking. The Future-oriented repetitive thought scale (ForT; Miranda et al., 2017) is a 22-item self-report questionnaire that was developed to assess repeated thinking about the future, specifically about the likelihood of negative and positive events happening. Frequency of thoughts is rated on a 4-point Likert scale, ranging from 0 ("never") to 3 ("almost always"). Research supports the reliability and validity of the ForT scale (Miranda et al., 2017).

Evaluations

In order to evaluate their experiences with the FOGT, participants were asked to rate the training in general, with a score ranging from 0 to 10, and rate several aspects of the format, content, and effect of training on 3- or 5-point Likert scales.

Statistical analysis

Prior to conducting this study, power analyses were performed to estimate the needed sample size, based on the previous study of van Spijker et al. (2014). An effect size of 0.50 was estimated. For this effect size and a power of 0.90, 50 participants needed to be included for analyses in each

group. Considering drop-out rates of previous research (van Beek et al., 2009), the researchers aimed to recruit 134 participants for the entire study.

At baseline, descriptive statistics, as well as differences in demographics and clinical baseline characteristics, were obtained to compare the composition of both groups. The differences were calculated using chi-square or Fisher's exact test (when there were less than 5 observations per cell) and t-tests. To examine the effect of TT on our primary, as well as our secondary outcomes, t-tests between the intervention and control group were conducted for the within-subject differences between baseline and post-treatment assessment and between baseline and follow-up assessment. Effect sizes (Cohen's d) were calculated. These analyses were performed on the per protocol (PP) sample as well as the intention-to-treat (ITT) sample. Differences from pre to post/follow-up measures were also examined within each group separately. For the subjective evaluation, means and standard deviations of the responses were calculated. All analyses were conducted using SPSS version 27 (IBM Corp., 2020).

The trial is registered at ClinicalTrials.gov, registration ID: NCT05158946.

Results

Participant flow

As depicted in figure 1, 90 persons registered for the study. Among these 44 were ineligible. 46 participants filled out the baseline assessment. Randomization was applied in two of the four training groups. Therefore, 28 (60.9%) participants were randomized, 13 (28.3%) to the intervention group and 15 (32.6%) to the control group. The remaining 18 (39.1%) participants were allocated to the intervention group since the number of participants that was originally allocated to the intervention group in those two training groups was too low ($n < 5$) to start the FOGT. Of the participants allocated to the intervention group, 93.5% attended the FOGT.

FIGURE 1 ABOUT HERE

Sample Characteristics

The mean age of our participants was 42.2 years (*SD* = 11.9) and the majority of the sample was female (*n* = 30, 65.2%).

Information on the demographic and baseline clinical characteristics of our sample can be found in table 1. Participants in the intervention group were significantly older ($t(44) = -2.4$, $p = 0.020$) and scored higher on the BSS at baseline ($t(44) = 2.1$, $p = 0.020$) than participants in the control group.

TABLE 1 ABOUT HERE

Table 2 shows the number of safety procedures performed per study group. There were no significant differences between both groups. At post-test, 2 (25.0%) participants in the control group and 0 (0.0%) participants in the intervention group reported that they tried to kill themselves during the study period ($p = 0.111$). During the follow-up period 2 (20.0%) participants in the control group and 0 (0.0%) participants in the intervention group made a suicide attempt ($p = 0.178$). No deaths by suicide were reported during the study.

TABLE 2 ABOUT HERE

Main Analyses

Intervention group versus control group

Table 3 presents the mean changes from baseline to post-treatment and to follow-up in both groups, with corresponding effect sizes. When comparing mean changes in the control and intervention group, the intervention group showed a significant decrease in worrying at post-treatment ($d = 0.60$; $t(198.4) = 2.03$, $p = 0.043$), which did not remain significant at follow-up ($d = 0.46$; $t(200.5) = 1.66$, $p = 0.098$). Furthermore, the intervention group showed a non-significant increase in future oriented thinking post-treatment ($d = -0.64$; $t(190.6) = -1.80$, $p = 0.073$), which however became significant at follow-up ($d = -0.67$; $t(256.9) = -2.31$, $p = 0.022$). For the primary outcome, i.e., suicidal ideation, and for the other secondary outcomes, no significant differences between study groups were found.

Pre-post analysis in the intervention group

As the control group was relatively small and as limited significant results were found in our main analyses, additional pre-post analyses were conducted using merely the data of the intervention group. These results are also presented in table 3.

These pre-post analyses showed the hypothesized changes in primary as well as secondary outcomes. Participants of the intervention group showed decreased scores on our primary outcome, i.e. suicidal ideation, at both post-treatment ($t(296) = 2.21$, $p = 0.028$) and follow-up assessments ($t(128) = 2.36$, $p = 0.020$). The effect size of these changes was approximately medium at post-treatment ($d = 0.49$, 95% *CI* = -0.02; 0.99) and at follow-up ($d = 0.48$, 95% *CI* = -0.033; 0.98).

For the secondary outcomes, significantly decreased scores for depression ($d = 0.65$; $t(168) = 3.00$, $p = 0.003$), hopelessness ($d = 0.50$; $t(169) = 4.48$, $p = 0.014$), worrying ($d = 0.60$; $t(214) = 2.64$, $p = 0.009$) and entrapment ($d = 0.64$; $t(228) = 3.07$, $p = 0.002$) were found at post-treatment. Future oriented thinking increased significantly between pre-treatment and post-treatment ($d = 0.-0.48$; $t(138) = -2.19$, $p = 0.030$). At follow-up, significant decreases remained for depression ($d = 0.72$; $t(181) = 4.37$, $p < 0.001$) and hopelessness ($d = 0.41$; $t(208) = 2.30$, $p = 0.023$) and significant increases remained for future oriented thinking ($d = -0.46$; $t(243) = -2.66$, $p = 0.008$). All these changes had small to medium effect sizes, as shown in table 3.

TABLE 3 ABOUT HERE

Participant evaluation

On average, participants rated the training 7.4 out of 10. Two-thirds (66.7%) of participants liked the group format, only 13.3% did not like it. The majority (86.7%) of participants liked that FOGT focusses on suicidal thoughts, the remaining 13.3% were neutral.

A vast majority of participants (80%) agreed that the training was applicable in daily life, no one disagreed. Most participants (66.7%) gained new insights regarding their suicidal thoughts and 40% indicated the training taught them to better cope with their suicidal ideation, while 46.7% did not agree nor disagree.

When asked about the effect of FOGT on their suicidal ideation, 46.7% of participants indicated to have less frequent suicidal thoughts, while for 46.7% there was no difference in frequency. More than half (53.3%) of participants reported that their suicidal thoughts were less intense, and none of the participants reported that suicidal thoughts were more intense after FOGT.

Discussion

This study aimed at investigating the effectiveness of FOGT in the treatment of suicidal ideation, using a RCT.

A comparison of the control and intervention group resulted in two main findings. Participants in the intervention group showed significantly less worrying at post-treatment while their future-oriented thinking was increased at follow-up when compared to pre-treatment. The two main targeted constructs, namely hopelessness and future oriented thinking, thus appear to show lasting improvements.

Additional analyses within the intervention group showed significant changes in all measured outcomes, except for defeat. The primary outcome, suicidal ideation, was significantly decreased at both post-treatment and follow-up. For the secondary outcomes small to medium improvements were found. The effects on hopelessness, depression, and future oriented thinking remained at follow-up. The FOGT training thus appears to have a positive effect on suicidal ideation and secondary outcome characteristics, as was hypothesised.

This is in line with the participants' subjective evaluations of the training. About half of participants in the intervention groups indicated that the training led to less frequent and less intense suicidal thoughts and that they had learned to cope better with their suicidal ideation. The subjective overall experience of participants in the training was positive, indicating that the training not only is effective in reducing suicidal ideation and other important risk factors, but also is given in a format that participants like. These findings are in line with the results of a previous RCT of FOGT, in which subjects gave the training a positive evaluation (8.2/10) (van Beek, 2013).

Considering the limited amount of current empirically supported treatments for suicidal patients and given the promising results of the current study, the findings suggest that FOGT addresses a very important unmet need in suicide prevention. The findings of the current study should, however, be interpreted and promoted with caution for several reasons. First, the number of participants was limited as only 46 participants started at baseline and drop-out rates were substantial in the intervention (58.1%) and control (33.3%) group. The number of participants was much lower than anticipated presumably due to the short recruitment time (i.e., one year) and the small number of sites (i.e., four) where the intervention could take place. Secondly, and possibly linked to this, most results were not significant in the main analyses. Thirdly, the groups may not properly be randomised as there was a difference in age as well as suicidal ideation scores between the control and intervention group at baseline, with participants of the intervention group being significantly older and having higher levels of suicidal ideation. This, and especially the difference in suicidal ideation, could well have had an impact on the reported effects. Finally, allocation to study groups occurred via a randomisation procedure for only a limited proportion of participants. The findings may thus have been confounded by known or unknown characteristics.

The similarities between current study findings and those from previous research suggest that the effect of these methodological issues may be limited. The lack of significance of outcome variables in the main analyses is similar to the results of the study of Van Beek and colleagues (2013). Their study showed significant results only for general symptoms and distress. For the other characteristics, a non-significant trend towards improvement was found, similar to what was found in the current study. A priori power analyses indicated that 50 participants in each study group were needed to detect significant medium effect sizes, the lack of significant results in the current study may well be due to the limited sample size, especially that of the control group. The effect sizes found in the main analyses show the hypothesised trends for primary (suicidal ideation) and secondary (depression, hopelessness, worrying, entrapment, defeat, and future oriented thinking) outcomes, although not significant. The results of the additional pre-post analyses are not as reliable as comparisons between study groups, but they do show promising results for the FOGT intervention.

Remarkably, the main analyses showed that future-oriented thinking was significantly increased at follow-up, but not at post-treatment. This finding again is in line with the results of the previous RCT of FOGT (Van Beek et al, 2013), in which participants who followed at least 7 sessions showed significant improvements, particularly at 9 months follow-up. The lack of early effects again could be due to the limited sample size, but the finding of such an effect in the longer term may indicate that the effects of FOGT intervention take time to be installed. It could be that the more participants actively integrated the insights and exercises of the training in daily life, the better they became at dealing with their suicidal thoughts. Indeed, the majority of participants indicated that they had acquired new insights about their suicidal thoughts and that the training is applicable in daily life.

Overall, the results of this study suggest that FOGT may well be a useful intervention for treating suicidal ideation and related aspects. The training thus tackles suicidal ideation, as was intended, but also has an effect on several other risk factors for suicidal ideation and behaviour. The effects of FOGT on worrying and future-oriented thinking as seen in our main analyses suggest an important impact of the training on cognitive aspects of suicidal ideation. The main goal of the FOGT intervention is to reduce suicidal ideation by decreasing hopelessness and stimulating realistic future-oriented thinking. The improvement in future-oriented thinking thus provides support for the effectiveness of FOGT in reaching its goal. Moreover, the reduction in worrying could imply that participants apply more problem-solving strategies, thus reducing worrying. By reducing risk factors that appear early on in the suicidal process, as shown in the Integrated Motivation-Volitional model (O'Connor & Kirtley, 2018), FOGT may help suicidal individuals on a broader level and thus may reduce their suicide risk. Moreover, the current study findings suggest a lasting effect, remaining significant after a three-month follow-up.

Future research should investigate the effectiveness of FOGT in larger sample sizes, with similar baseline scores. More research is needed internationally and in different age groups, in order to investigate the generalisability of these findings. Other known risk factors, based on existing theoretical frameworks for suicide risk, should be included as outcomes measures to get a better view of the mechanisms through which FOGT may improve suicidal thinking.

Conclusions

In summary, the current study findings suggest a beneficial and lasting effect of FOGT on suicidal ideation and related risk factors. The findings contribute to the scarce research on the specific effects of treatments on suicidal ideation and suicidal behaviour and thus address an important unmet need in suicide prevention. Taking methodological issues into account, the findings provide empirical evidence for the effectiveness of FOGT and document the positive subjective experience of patients following this treatment. More research using larger samples in different populations is needed to further substantiate the evidence supporting the use of FOGT.

Declaration of Interest

The authors declare that there are no conflicts of interest.

Funding

This work was supported by the Flemish Government - Department of Wellbeing, Public Health and Family.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, EDJ, upon reasonable request.

References

Beck, A.T., & Steer, R.A. (1991). *Manual for the Beck Scale for Suicide Ideation*. The Psychological Corporation

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for the Beck Depression Inventory-II* (2nd edition). The Psychological Corporation.

Beck, A.T., Steer, R.A., & Garbin, M.G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*(1), 77-100. doi:10.1016/0272-7358(88)90050-5

Beck, A. T., Steer, R. A., Kovacs, M., & Garrison, B. (1985). Hopelessness and Eventual Suicide: a 10-year Prospective Study of Patients Hospitalized with Suicidal Ideation. *American Journal of Psychiatry*, *142*(5), 559–563. doi:10.1176/ajp.142.5.559

Beck, A.T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology, 42*(6), 861–865. doi:10.1037/h0037562

Beevers, C.G., & Miller, I.W. (2004). Perfectionism, cognitive bias, and hopelessness as prospective predictors of suicidal ideation. *Suicide and Life-Threatening Behavior, 34*(2), 126-137. doi:10.1521/suli.34.2.126.32791

Bertolote, J. M., Fleischmann, A., De Leo, D., Bolhari, J., Botega, N., De Silva, D., Thanh, H.T.T., Philips, M., Schlebusch, L., Värnik, A., Vijayakumar, L., & Wasserman, D. (2005). Suicide attempts, plans, and ideation in culturally diverse sites: the WHO SUPRE-MISS community survey. *Psychological Medicine, 35*(10), 1457–1465. doi:10.1017/s0033291705005404

Biswas, T., Scott, J. G., Munir, K., Renzaho, A. M. N., Rawal, L. B., Baxter, J., & Mamun, A. A. (2020). Global variation in the prevalence of suicidal ideation, anxiety and their correlates among adolescents: A population based study of 82 countries. *EClinicalMedicine, 24*, 100395. doi:10.1016/j.eclinm.2020.100395

Brezo, J., Paris, J., & Turecki, G. (2006). Personality traits as correlates of suicidal ideation, suicide attempts, and suicide completions: a systematic review. *Acta Psychiatrica Scandinavica, 113*(3), 180–206. doi:10.1111/j.1600-0447.2005.00702.x

D'Anci, K.E., Uhl, S., Giradi, G., & Martin, C. (2019). Treatment for the prevention and management of suicide: A systematic review. *Annals of Internal Medicine, 171*(5), 334-342. doi:10.7326/M19-0869

De Jaegere, E., van Landschoot, R., van Heeringen, K., van Spijker, B. A. J., Kerkhof, A. J. F. M., Mokkenstorm, J. K., & Portzky, G. (2019). The online treatment of suicidal ideation: A randomised controlled trial of an unguided web-based intervention. *Behaviour Research and Therapy, 119,* 103406.

De Leo, D., Cervin, E., Spathonis, K., & Burgis, S. (2005). Lifetime risk of suicide ideation and attempts in an Australian community: Prevalence, suicidal process, and help-seeking behaviour. *Journal of Affective Disorders, 86*(2-3), 215-224. doi:10.1016/j.jad.2005.02.001

Dhingra, K., Boduszek, D., & O'Connor, R. C. (2015). Differentiating suicide attempters from suicide ideators using the Integrated Motivational–Volitional model of suicidal behaviour. *Journal of Affective Disorders, 186*, 211–218. doi:10.1016/j.jad.2015.07.007

Dhingra, K., Boduszek, D., & O'Connor, R. C. (2016). A structural test of the Integrated Motivational-Volitional model of suicidal behaviour. *Psychiatry Research, 239*, 169–178. doi:10.1016/j.psychres.2016.03.023

Drapeau, C.W., & McIntosh, J.L. (2017). *U.S.A. suicide 2016: Official final data*. American Association of Suicidology. https://cdn.ymaws.com/www.palibraries.org/resource/collection/AAC7582D-A904-46B5-BC14-79385309AAEE/QPR_Data_Handout.pdf

Forkmann, T., & Teismann, T. (2017). Entrapment, perceived burdensomeness and thwarted belongingness as predictors of suicide ideation. *Psychiatry Research, 257*, 84–86. doi:10.1016/j.psychres.2017.07.031

Gilbert, P., & Allan, S. (1998). The role of defeat and entrapment (arrested flight) in depression: an exploration of an evolutionary view. *Psychological Medicine, 28*(3), 585–598. doi:10.1017/s0033291798006710

Gunnell, D., Harbord, R., Singleton, N., Jenkins, R., & Lewis, G. (2004). Factors influencing the development and amelioration of suicidal thoughts in the general population. *British Journal of Psychiatry, 185*(5), 385-393. doi:10.1192/bjp.185.5.385

Hawton, K., Saunders, K. E., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *The Lancet, 379*(9834), 2373–2382. doi:10.1016/s0140-6736(12)60322-5

Hawton, K. K., Townsend, E., Arensman, E., Gunnell, D., Hazell, P., House, A., & van Heeringen, K. (1999). Psychosocial and pharmacological treatments for deliberate self-harm. *Cochrane Database of Systematic Reviews, 4*. doi:10.1002/14651858.cd001764

Hunter, E. C., & O'Connor, R. C. (2003). Hopelessness and future thinking in parasuicide: The role of perfectionism. *British Journal of Clinical Psychology, 42*(4), 355–365. doi:10.1348/014466503322528900

IBM Corp. (2020). *IBM SPSS Statistics for Windows* (Version 27.0). Armonk, NY: IBM Corp. https://www.ibm.com/products/spss-statistics

Joiner, T. E., Brown, J. S., & Wingate, L. R. (2005). The Psychology and Neurobiology of Suicidal Behavior. *Annual Review of Psychology, 56*(1), 287–314. doi:10.1146/annurev.psych.56.091103.070320

Klonsky, D. E., Kotov, R., Bakst, S., Rabinowitz, J., & Bromet, E. J. (2012). Hopelessness as a Predictor of Attempted Suicide among First Admission Patients with Psychosis: A 10-year Cohort Study. *Suicide and Life-Threatening Behavior*, *42*(1), 1–10. doi:10.1111/j.1943-278X.2011.00066.x

Large, M.M., Corderoy, A., & McHugh, C.M. (2021). Is suicidal behaviour a stronger predictor of later suicide than suicidal ideation? A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry, 55*(3), 254-267. doi:10.1177/0004867420931161

Law, K. C., & Tucker, R. P. (2018). Repetitive negative thinking and suicide: a burgeoning literature with need for further exploration. *Current Opinion in Psychology, 22*, 68–72. doi:10.1016/j.copsyc.2017.08.027

MacLeod, A. K., Pankhania, B., Lee, M., & Mitchell, D. (1997). Parasuicide, depression and anticipation of positive and negative future experiences. *Psychological Medicine, 27*, 973–977. doi:10.1017/ S003329179600459X

MacLeod, A. K., Tata, P., Evans, K., Tyrer, P., Schmidt, U., Davidson, K., Thornton, S., & Catalan, J. (1998). Recovery of positive future thinking within a high-risk parasuicide group: Results from a pilot randomized controlled trial. *British Journal of Clinical Psychology, 37*(4), 371–379. doi:10.1111/j.2044-8260.1998.tb01394.x

MacLeod, A.K., Tata, P., Tyrer, P., Schmidt, U., Davidson, K., & Thompson, S. (2004). Personality Disorder and Future Directed Thinking in Parasuicide. *Journal of Personality Disorders, 5*, 459-466.

McHugh, C.M., Corderoy, A., Ryan, C.J., Hickie, I.B., & Large, M.M. (2019). Association between suicidal ideation and suicide: meta-analyses of odds ratios, sensitivity, specificity and positive predictive value. *BJPsych Open 5*(2): e24. doi:10.1192/bjo.2018.88

McManus, S., Hassiotis, A., Jenkins, R., Aznar, C., Dennis, M.S., & Appleby, L. (2016). Suicidal thoughts, suicide attempts and self-harm. In S. McManus, P. Bebbington, R. Jenkins & T. Brugha (Eds.), *Mental Health and Wellbeing in England: Adult Psychiatric Morbidity Survey 2014* (pp. 294-322). NHS Digital.

Meyer T.J., Miller M.L., Metzger R.L., & Borkovec T.D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, *28*(6): 487–495. doi:10.1016/0005-7967(90)90135-6.

Minkoff, K., Bergman, E., Beck, A. T., & Beck, R. (1973). Hopelessness, Depression, and Attempted Suicide. *American Journal of Psychiatry*, *130*(4), 455–459. doi:10.1176/ajp.130.4.455

Miranda, R., Wheeler, A., Polanco-Roman, L., & Marroquín, B. (2017). The future-oriented repetitive thought (FoRT) scale: A measure of repetitive thinking about the future. *Journal of Affective Disorders, 207*, 336–345. doi:10.1016/j.jad.2016.09.055

Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A., … Williams, D. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *British Journal of Psychiatry, 192*(2), 98–105. doi:10.1192/bjp.bp.107.040113

Nock, M. K., Green, J. G., Hwang, I., McLaughlin, K. A., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Prevalence, Correlates, and Treatment of Lifetime Suicidal Behavior Among Adolescents. *JAMA Psychiatry, 70*(3), 300. doi:10.1001/2013.jamapsychiatry.55

O'Connor, R. C., Connery, H., & Cheyne, W. (2000). Hopelessness: The role of depression, future directed thinking and cognitive vulnerability. *Psychology, Health & Medicine, 5*, 155–161. doi:10.1080/713690188

O'Connor, R. C., Fraser, L., Whyte, M. C., MacHale, S., & Masterton, G. (2008). A comparison of specific positive future expectancies and global hopelessness as predictors of suicidal ideation in a prospective study of repeat self-harmers. *Journal of Affective Disorders, 110*, 207–214. doi:10.1016/j.jad.2008.01.008

O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational–volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences, 373*(1754), 20170268. doi:10.1098/rstb.2017.0268

O'Connor, R. C., & Nock, M. K. (2014). The psychology of suicidal behaviour. *The Lancet Psychiatry, 1*(1), 73–85. doi:10.1016/s2215-0366(14)70222-6

O'Connor, R., O'Connor, D., O'Connor, S., Smallwood, J., & Miles, J. (2004). Hopelessness, stress, and perfectionism: The moderating effects of future thinking. *Cognition & Emotion, 18*(8), 1099–1120. doi:10.1080/02699930441000067

O'Connor, R. C., Smyth, R., & Williams, J. M. G. (2015). Intrapersonal positive future thinking predicts repeat suicide attempts in hospital-treated suicide attempters. *Journal of Consulting and Clinical Psychology, 83*(1), 169–176. doi:10.1037/a0037846

Ribeiro, J. D., Franklin, J. C., Fox, K. R., Bentley, K. H., Kleiman, E. M., Chang, B. P., & Nock, M. K. (2015). Self-injurious thoughts and behaviors as risk factors for future suicide ideation, attempts, and death: a meta-analysis of longitudinal studies. *Psychological Medicine, 46*(2), 225–236. doi:10.1017/s0033291715001804

Stanley, B., & Brown, G. K. (2012). Safety Planning Intervention: A Brief Intervention to Mitigate Suicide Risk. *Cognitive and Behavioral Practice*, 19, 256–264. doi: 10.1016/j.cbpra.2011.01.001

Steed, L. (2001). Further Validity and Reliability Evidence for Beck Hopelessness Scale Scores in a Nonclinical Sample. *Educational and Psychological Measurement, 61*(2), 303–316. doi:10.1177/00131640121971121

Stöber, J. & Bittencourt, J. (1998). Weekly assessment of worry: An adaptation of the Penn State Worry Questionnaire for monitoring changes during treatment. *Behaviour Research and Therapy, 36*, 645-656. doi:10.1016/s0005-7967(98)00031-x

Truant, G. S., O'Reilly, R., & Donaldson, L. (1991). How Psychiatrists Weigh Risk Factors When Assessing Suicide Risk. *Suicide and Life-Threatening Behavior*, *21*(2), 106– 114. doi:10.1111/j.1943-278X.1991.tb00459.x

Tucker, R. P., O'Connor, R. C., & Wingate, L. R. (2016). An Investigation of the Relationship Between Rumination Styles, Hope, and Suicide Ideation Through the Lens of the Integrated Motivational-Volitional Model of Suicidal Behavior. *Archives of Suicide Research, 20*(4), 553–566. doi:10.1080/13811118.2016.1158682

Turecki, G., & Brent, D. A. (2016). Suicide and suicidal behaviour. *The Lancet, 387*(10024), 1227–1239. doi:10.1016/s0140-6736(15)00234-2

van Beek, W. (2013). *Future Thinking in Suicidal Patients: Development and evaluation of a Future Oriented Group Training in a randomized controlled trial*. [Doctoral dissertation, Vrije Universiteit Amsterdam]. https://research.vumc.nl/ws/portalfiles/portal/374174/dissertation.pdf.

van Beek, W., Kerkhof, A., & Beekman, A. (2009). Future oriented group training for suicidal patients: a randomized clinical trial. *BMC Psychiatry, 9*(1). doi:10.1186/1471-244x-9-65

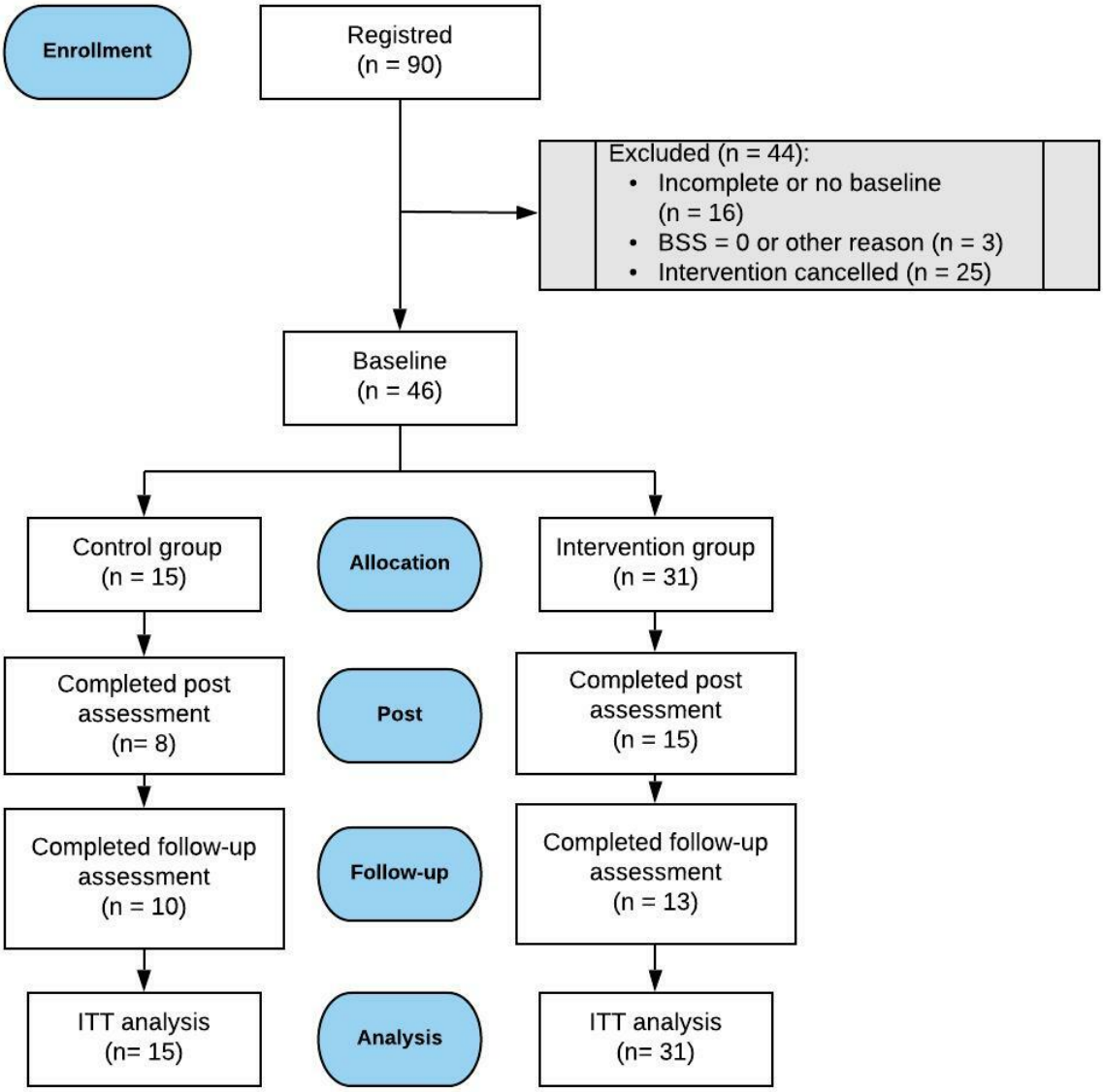
van Spijker, B. A. J., van Straten, A., & Kerkhof, A. J. F. M. (2014). Effectiveness of Online Self-Help for Suicidal Thoughts: Results of a Randomised Controlled Trial. *PLoS ONE, 9*(2), e90118. https://doi.org/10.1371/journal.pone.0090118

Williams, J. M. G., Van der Does, A. J. W., Barnhofer, T., Crane, C., & Segal, Z. S. (2008). Cognitive reactivity, suicidal ideation and future fluency: Preliminary investigation of a differential activation theory of hopelessness/suicidality. *Cognitive Therapy and Research, 32*, 83–104. doi:10.1007/s10608-006-9105-y

World Health Organization. (2021a, June 17). *Suicide Fact Sheet*. World Health Organization. Retrieved from https://www.who.int/en/news-room/fact-sheets/detail/suicide

World Health Organization. (2021b, February 2). *Global Health Observatory data repository: Suicide rate estimates, crude*. World Health Organization. Retrieved from https://apps.who.int/gho/data/view.main.MHSUICIDEv

Tables and figures



Note: BSS = Beck Scale for Suicide Ideation; ITT = Intention-to-treat

Figure 1: Participant flow-chart

Table 1

Demographic and baseline clinical characteristics.

Characteristics	Total	Control	Intervention	*p*-value
Gender, *n* (%)				0.195
Female	30 (65.2)	12 (80.0)	18 (58.1)	
Male	16 (34.8)	3 (20.0)	13 (41.9)	
Other	0 (0.0)	0 (0.0)	0 (0.0)	
Age, *M* (*SD*)	42.2 (11.9)	36.5 (12.4)	45.0 (10.8)	0.020
Education level, *n* (%)				0.112
No degree	1 (2.2)	0 (0.0)	1 (3.2)	
Primary school	9 (19.6)	5 (33.3)	4 (12.9)	
Secondary education	23 (50.0)	4 (26.7)	19 (61.3)	
Higher education, non-university	10 (21.7)	5 (33.3)	5 (16.1)	
Higher education, university	3 (6.5)	1 (6.7)	2 (6.5)	
Living situation, *n* (%)				0.959
Alone	11 (23.9)	3 (20.0)	8 (25.8)	
Together with partner	9 (19.6)	3 (20.0)	6 (19.4)	
Together with partner & children	8 (17.4)	3 (20.0)	5 (16.1)	
Together with children	11 (23.9)	3 (20.0)	8 (25.8)	
Other	7 (15.2)	3 (20.0)	4 (12.9)	
Marital status, *n* (%)				0.375
Single	15 (32.6)	7 (46.7)	8 (25.8)	
Living together	2 (4.3)	1 (6.7)	1 (3.2)	
Married	14 (30.4)	4 (26.7)	10 (32.3)	
Divorced	15 (32.6)	3 (20.0)	12 (38.7)	
Work status				0.543
Student	2 (4.3)	1 (6.7)	1 (3.2)	
Employed	13 (28.3)	3 (20.0)	10 (32.3)	
Houseman/wife	1 (2.2)	1 (6.7)	0 (0.0)	
Seeking a job	2 (4.3)	1 (6.7)	1 (3.2)	
Incapacitated	27 (58.7)	9 (60.0)	18 (58.1)	
Retired	1 (2.2)	0 (0.0)	1 (3.2)	
Treatment for physical problems, *n* (%)				0.365
No	26 (56.5)	10 (66.7)	16 (51.6)	
Yes	20 (43.5)	5 (33.3)	15 (48.4)	
Psychological disorder, current				
No diagnosis	4 (8.7)	2 (13.3)	2 (6.5)	0.587
Yes	42 (91.3)	13 (86.7)	29 (93.5)	
Depression	33 (71.7)	9 (60.0)	24 (77.4)	0.299
Anxiety	17 (37.0)	5 (33.3)	12 (38.7)	0.758
Alcohol and/or drug abuse	3 (6.5)	0 (0.0)	3 (9.7)	0.541
Other	18 (39.1)	6 (40.0)	12 (38.7)	1.000
Treatment for psychological problems, *n* (%)				
No	2 (4.3)	1 (6.7)	1 (3.2)	1.000

Yes	44 (95.7	14 (93.3)	30 (96.8)	
General practitioner	16 (34.8)	5 (33.3)	11 (35.5)	1.000
Psychologist	34 (73.9)	12 (80.0)	22 (71.0)	0.723
Psychiatrist	28 (60.9)	7 (46.7)	21 (67.7)	0.208
Inpatient	8 (17.4)	5 (33.3)	3 (9.7)	0.092
Other	7 (15.2)	2 (13.3)	5 (16.1)	1.000
Waitlisted	4 (8.7)	0 (0.0)	4 (12.9)	0.288
Use of medication (current), *n* (%)				
No	2 (4.3)	1 (6.7)	1 (3.2)	1.000
Yes	44 (95.7)	14 (93.3)	30 (96.8)	
Analgesics	14 (30.4)	6 (40.0)	8 (25.8)	0.495
Sedatives/anxiolytics	17 (37.0)	6 (40.0)	11 (35.5)	1.000
Hypnotics	15 (32.6)	5 (33.3)	10 (32.3)	1.000
Antidepressants	37 (80.4)	12 (80.0)	25 (80.6)	1.000
Antipsychotics	9 (19.6)	5 (33.3)	4 (12.9)	0.127
Other	5 (10.9)	2 (13.3)	3 (9.7)	1.000
Treatment (last year), *n* (%)				
No	8 (17.4)	3 (20.0)	5 (16.1)	1.000
Yes	38 (82.6)	12 (80.0)	26 (83.9)	
Psychotherapy	32 (69.6)	11 (73.3)	21 (67.7)	1.000
Mindfulness training	8 (17.4)	4 (26.7)	4 (12.9)	0.407
Meditation training	3 (6.5)	1 (6.7)	2 (6.5)	1.000
Online self-help training Think Life	0 (0.0)	0 (0.0)	0 (0.0)	
Other	8 (17.4)	0 (0.0)	8 (25.8)	0.040
Baseline outcome measures, *M* (*SD*)				
BSS	19.37 (6.80)	22.33 (4.94)	17.94 (7.18)	0.020
BDI-II	39.07 (9.89)	42.33 (9.02)	37.48 (10.04)	0.120
BHS	15.35 (3.48)	16.53 (2.85)	14.77 (3.66)	0.109
PSWQ-PW	65.33 (10.92)	65.20 (12.45)	65.39 (10.33)	0.957
Entrapment	44.87 (10.18)	47.60 (10.82)	43.55 (9.76)	0.209
Defeat	47.76 (9.62)	51.53 (8.37)	45.94 (9.77)	0.063
ForT	15.72 (5.77)	14.13 (6.39)	16.48 (5.38)	0.198

Note: Significance tests for categorial variables performed with χ^2-test, for continuous variables with t-test. BSS = Beck Scale for Suicide Ideation. BDI-II = Beck Depression Inventory-second edition. BHS = Beck Hopelessness Scale. PSWQ-PW = Penn State Worry Questionnaire-Past Week. ForT = Future-oriented repetitive thought scale

Table 2

Performed safety procedures per group at different time points.

Time	Total	Control	Intervention	*p*-value
2 weeks after baseline, n (%)	3 (7.9)	2 (16.7)	1 (3.8)	0.229
4 weeks after baseline, n (%)	2 (7.4)	1 (11.1)	1 (5.6)	1.000
Post, n (%)	3 (13.0)	2 (25.0)	1 (6.7)	0.269
Follow-up, n (%)	2 (8.7)	2 (20.0)	0 (0.0)	0.178

Table 3

Mean changes from baseline to post-treatment and to follow-up and effect sizes on the outcome measures.

Measure	Time	Control (n = 15)			Intervention (n = 31)				
		M (SD)	d (95% CI)	p-value	M (SD)	d (95% CI)	p-value	d (95% CI)	p-value
BSS									
	Baseline - Post	-2.34 (11.01)	-0.29 (-1.01; 0.43)	0.412	-4.69 (11.82)	-0.49 (-0.99; 0.02)	0.028	-0.21 (-0.82; 0.41)	0.491
	Baseline - FU	-2.71 (8.69)	-0.38 (-1.10; 0.35)	0.228	-4.94 (11.67)	-0.48 (-0.98; 0.03)	0.020	-0.22 (-0.83; 0.40)	0.460
BDI-II									
	Baseline - Post	-7.59 (17.92)	-0.50 (-1.23; 0.22)	0.104	-10.97 (20.34)	-0.65 (-1.16; -0.14)	0.003	-0.18 (-0.79; 0.44)	0.557
	Baseline - FU	-5.54 (13.31)	-0.45 (-1.18; 0.27)	0.108	-10.19 (13.00)	-0.72 (-1.23; -0.20)	<0.001	-0.35 (-0.97; 0.27)	0.257
BHS									
	Baseline - Post	-0.80 (4.29)	-0.22 (-0.94; 0.50)	0.470	-2.60 (5.85)	-0.50 (-1.01; 0.01)	0.014	-0.35 (-0.97; 0.27)	0.219
	Baseline - FU	-2.78 (4.54)	-0.97 (-1.73; -0.22)	0.018	-1.95 (4.73)	-0.41 (-0.91; 0.09)	0.023	0.18 (-0.44; 0.80)	0.564
PSWQ-PW									
	Baseline - Post	0.86 (14.68)	0.05 (-0.66; 0.77)	0.821	-10.46 (22.07)	-0.60 (-1.11; -0.09)	0.009	-0.60 (-1.23; 0.02)	0.043
	Baseline - FU	1.05 (12.04)	0.07 (-0.65; 0.78)	0.736	-6.45 (19.36)	-0.38 (-0.88; 0.12)	0.066	-0.46 (-1.09; 0.16)	0.098
Entrapment									
	Baseline - Post	-5.85 (17.22)	-0.40 (-1.12; 0.32)	0.189	-9.89 (17.96)	-0.64 (-1.15; -0.13)	0.002	-0.23 (-0.85; 0.39)	0.444
	Baseline - FU	-2.76 (13.48)	-0.21 (-0.93; 0.51)	0.428	-5.34 (16.28)	-0.34 (-0.84; 0.16)	0.069	-0.17 (-0.79; 0.44)	0.558
Defeat									
	Baseline - Post	-2.34 (13.11)	-0.21 (-0.93; 0.50)	0.490	-4.84 (15.99)	-0.33 (-0.83; 0.17)	0.093	-0.17 (-0.79; 0.45)	0.582

ForT	Baseline - FU	-4.07 (9.93)	-0.43 (-1.15; 0.29)	0.113	-4.13 (12.84)	-0.32 (-0.82; 0.18)	0.075	0.00 (-0.62; 0.61)	0.987
	Baseline - Post	-0.84 (7.59)	-0.11 (-0.83; 0.60)	0.668	4.02 (10.22)	0.48 (-0.03; 0.98)	0.030	0.54 (-0.09; 1.17)	0.073
	Baseline - FU	-0.64 (4.58)	-0.09 (-0.81; 0.62)	0.586	3.17 (6.63)	0.46 (-0.04; 0.97)	0.008	0.67 (0.04; 1.30)	0.022

Note: FU = Follow-up. CI = Confidence interval. d = Cohen's d (0.20-0.30 small effect, 0.50 medium effect, >0.80 large effect). BSS = Beck Scale for Suicide Ideation. BDI-II = Beck Depression Inventory-second edition. BHS = Beck Hopelessness Scale. PSWQ-PW = Penn State Worry Questionnaire - Past Week. ForT = Future-oriented repetitive thought scale.