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Assessing and Promoting the Use of Implementation Intentions in Clinical Practice

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Abstract

Rationale: Striving for goals is a key part of psychological therapy, but people often struggle to translate their goals into action. Prior evidence has found that forming if-then plans (or 'implementation intentions') is an effective way to bridge the gap between goals and action. However, it is unclear if therapists naturally prompt their clients to form implementation intentions and, if not, whether training would be feasible.

Method and Results Study 1: Researchers coded the behavior change techniques used in 40 sessions of therapy for depression using a Cognitive Behavioral Therapy approach and a Person-Centred Experiential Therapy approach and found that therapists do not typically prompt their clients to form implementation intentions in either therapeutic approach.

Objective, Method and Results Studies 2 and 3: The aim was to develop and evaluate a training program for therapists on implementation intentions. Training was delivered face-to-face to 69 cognitive-behavioral therapists (Study 2), and online to 87 therapists working across models (Study 3) and therapists completed self-report measures of their use and knowledge of implementation intentions before training, post-training, and follow-up. The training significantly increased therapists' use and knowledge of implementation intentions.

Conclusions: Taken together, these findings suggest therapists can be trained in the use of implementation intentions and that appropriate content might be integrated into training programs.

Keywords: Implementation intentions; planning; mental health; evidence-based practice; psychotherapy; training; wise interventions; online learning.

Assessing and Promoting the Use of Implementation Intentions in Clinical Practice

Goals are a crucial aspect of any psychological therapy. At the initial session, the therapist usually, implicitly or explicitly, asks the client to report their goals with regards to treatment (e.g., symptom reduction) and/or wider personal goals (e.g., to have a better relationship with their children; Michalak & Holtforth, 2006). Goal setting has been associated with goal attainment (Webb & Sheeran, 2006) and goal attainment has, in turn, been associated with positive emotions and wellbeing (Wiese, 2007), better therapeutic outcomes (Tryon, 2018; Wollburg & Braukhaus, 2010), and higher personal recovery (Sommer et al., 2019) . However, setting a goal is a necessary but often insufficient step to achieving the desired outcome and research typically finds a considerable gap between intentions (or self-instructions to perform particular behaviors or to obtain certain outcomes, Triandis, 1980) and behavior (Sheeran & Webb, 2016). For example, a meta-analysis of meta-analyses with a total sample of n = 82,107 participants across 422 studies, found that goal intentions accounted for just 28% of the variance in behavior (Sheeran, 2002). A major reason for this gap between intentions and action is that people tend to encounter self-regulatory challenges when they strive to enact their intentions, which include failing to get started and getting derailed (Gollwitzer & Sheeran, 2006), with the consequence that committing to a goal is not enough, especially when there are concurrent mental health problems (e.g., depression; Moss & Cheavens, 2019). Finding ways to solve these problems is, therefore, key to ensuring the translation of intentions into behavior and improving psychological therapies.

Many of the challenges associated with striving to attain goals are likely to be exacerbated in mental health service users. For example, the deficits in cognitive functioning associated with depression have been found to influence the ability to recognize opportunities for goal striving,

to plan and initiate action (Fuster, 2008) and undermine confidence (Moss & Cheavens, 2019). There may also be differences in the types of goals that mental health service users set and strive for. For example, clients have been found to set more avoidance goals (e.g., 'to not be anxious'; Elliot & Friedman, 2007) than approach goals (e.g., 'to be more relaxed'), as well as less specific goals (e.g., 'gain skills'; Dickson & Moberly, 2013); both of which have been in turn associated with worse symptomatology (Dickson & MacLeod, 2004; Wollburg & Braukhaus, 2010) and less goal progress (Elliot & Church, 2002). Furthermore, the nature of some mental health difficulties includes avoidance behaviors (Barlow et al., 2011), which can negatively influence goal attainment (Forster, Higgins, & Idson, 1998). Taken together then, the gap between intentions and action is likely to be especially pronounced among those with mental health issues.

Implementation intentions

One technique that has been shown to help people to translate intentions into action is forming implementation intentions (Gollwitzer, 1999; 2014). Implementation intentions are specific if-then plans that specify a critical condition or a good opportunity to further the goal (in the if-part of the plan) and link it to a goal-directed response (in the then-part of the plan). Therefore, implementation intentions specify when, where, and how a person will act on their goal intentions. For example, an individual with the goal to do more pleasurable leisure activities as part of behavioral activation treatment for depression (Mazzucchelli, Kane, & Rees, 2009) might form the plan 'If it is Monday after breakfast, then I will message two friends and invite them for coffee!'

The evidence-base for implementation intentions is well established across a range of behaviors, samples, and methods. For example, a meta-analysis pooling data from 94

independent tests showed a medium-to-large effect of implementation intentions on goal attainment (d_+ = .65; Gollwitzer & Sheeran, 2006). Furthermore, Toli, Webb, and Hardy (2016) found evidence across 28 experimental studies that forming implementation intentions had a large-sized effect (d_+ = .99) on goal achievement among people with diverse mental health difficulties. For example, forming implementation intentions has been found to be effective in improving attendance in psychotherapy (Avishai, Oldham, Kellett, & Sheeran, 2018; Sheeran, Aubrey, & Kellett, 2007), helping people to manage their anxiety (Lakuta, 2020; Varley, Webb, & Sheeran, 2011), and promoting mental health in traumatic brain injury (Hart, Vaccaro, Collier, Chervoneva, & Fann, 2020). As a result, augmenting goal setting with implementation intentions has been recommended across models in counselling and psychotherapy for those seeking to promote goal attainment (Cooper, 2018) and as a "probably efficacious" strategy for youth mental health services (Schleider, Mullarkey, & Chacko, 2020).

Implementation intentions are distinguished from more general action planning (e.g., as described by the Health Action Process Approach; Schwarzer, 2008) by their specific if-then contingent structure, which links an anticipated opportunity to act with a specific response. This contingent structure invokes two cognitive processes that underpin the effectiveness of if-then planning – namely, (i) the specified opportunity becomes highly accessible and so is less likely to be missed or forgotten (Webb & Sheeran, 2004) and (ii) a strong association is forged between the specified opportunity and intended response (Webb & Sheeran, 2007; 2008), such that the person does not need to deliberate about how to respond when the opportunity arises (termed 'strategic automaticity', Gollwitzer & Schaal, 1998). A number of studies support the idea that forming plans in a contingent if-then format is superior in engendering behavior change in comparison to generic action planning. For example, Palayiwa, Sheeran, and Thompson (2010)

found that women were better able to ignore stigmatizing comments about their appearance when they formed the if-then plan "As soon as I hear comments, then I will immediately ignore them!" than when they simply intended to ignore these comments (see also Chapman, Armitage, & Norman, 2009; Oettingen, Honig, & Gollwitzer, 2000; Study 3).

Implementation intentions in clinical settings

Despite evidence for the effectiveness of using implementation intentions in clinical settings, it is unclear to what extent therapists actually prompt their clients to form plans to support their goals; and, if so, the extent to which these plans (i) identify an opportunity, (ii) identify a response, and (iii) link opportunity and response together in the contingent if-then format that defines implementation intentions (Gollwitzer, 1999; 2014) and has been shown to be critical in their efficacy. Further, while most psychological interventions emphasize some form of behavior change, there are important theoretical differences between psychological approaches which suggests there might also be differences in the use of behavior change techniques between psychological interventions. For example, cognitive behavioral therapy (CBT; Beck, 2011) is one of the most widely used psychological approaches and recommended by the National Institute for Health and Care Excellence for the most common mental health difficulties (NICE, 2018). CBT directly targets behavior change through a mixture of cognitive and behavioral techniques and explicitly promotes goal setting and action planning (Beck, 2011). CBT therapists tend to use a structured approach to goal setting, where clients are prompted to specify when and where they will strive for their goals. However, it is unknown if therapists prompt clients to link a critical cue with a goal-directed response, as suggested by research and theory on implementation intentions.

Person-centered experiential (PCE) therapy (Sanders & Hill, 2014) is another widely used psychological treatment for common mental health problems that is recommended by NICE (NICE, 2018). PCE is based on humanistic principles of congruence, unconditional positive regard, and empathy; and includes a focus on emotions as described in experiential therapy (Greenberg, Safran, & Rice, 1989). The role of the therapist is to actively work with clients' emotions and to facilitate a warm, genuine, and understanding climate within which the individual can tap into their existing resources to promote behavior change. In theory, as a non-directive approach, PCE seems less likely to use directive behavior change techniques; however, to date no empirical studies have tested this hypothesis by examining the extent to which different therapeutic approaches employ techniques like goal setting and action planning; including specific forms like implementation intentions.

If therapists do not use implementation intentions in their practice, then it may be helpful to offer training (see Frank, Becker-Haimes, & Kendall, 2020, for a review of the value of training therapists in evidence-based interventions for mental health). To our knowledge, only one study to date (Martin et al., 2011) has specifically trained health professionals to use implementation intentions with their clients. Martin et al. trained medical staff to prompt women to form implementation intentions in relation to when, where, and how they were going to use contraception. The training was found to reduce rates of pregnancy among clients two years later and there was evidence that the technique was perceived by medical staff as a positive way to promote the use of contraception (Martin, Sheeran, & Slade, 2017). However, to our knowledge, no research to date has trained therapists working in mental health contexts to use implementation intentions.

Study 1: Do Therapists Prompt their Clients to Form If-then Plans?

Study 1 aimed to identify whether implementation intentions are naturally used by psychological therapists to help their clients to achieve their goals. To achieve this aim, we coded the content of sessions where therapists were working with people with depression using either a CBT or a PCE approach, to identify the use of behavior change techniques, including implementation intentions. It was hypothesized that: (a) therapists would use implementation intentions with clients in therapy; and (b) therapists working within a CBT approach would use implementation intentions more frequently than therapists working within a PCE approach.

Methods

Dataset. The transcripts came from the 'Pragmatic, Randomized Controlled Trial assessing the non-Inferiority of Counselling and its Effectiveness for Depression' (PRaCTICED; Saxon et al., 2017), which looked at the effectiveness of PCE compared to CBT for depression within the Improving Access to Psychological Therapies (IAPT) services stepped care approach (Clark, 2018) in one city in Northeast of England. IAPT initially offers self-help based on CBT principles to patients with mild-to-moderate depression symptoms, guided by Psychological Well-Being Practitioners (or PWPs). Patients with more severe symptoms or those who remain symptomatic after guided self-help are stepped up to high intensity therapies which include CBT and PCE. In the PRaCTICED trial, CBT was delivered using the standardized interventions described by Roth and Pilling (2008) for up to 20 sessions. PCE, also referred to as counselling for depression in the PRaCTICED trial, was delivered as a non-directive form of therapy aligned to Rogerian humanistic counselling and experiential therapy principles (Murphy, 2019; Sanders & Hill, 2014).

Transcripts from the first 40 randomized clients (20 who received CBT and 20 who received PCE) with an audio-recorded third session were selected for analysis. The third session was chosen as evidence suggests that between sessions two to four CBT therapists generally work on behavioral interventions such as goal setting (Ilardi & Craighead, 1999). Although the structure of PCE is less prescriptive, the counsellor is typically encouraged to develop tentative formulations and focus on problem areas relatively early in therapy (Sanders & Hill, 2014). The PRaCTICED trial was approved by NHS ethics (IRAS project ID: 130352) and participants agreed to their data being used in subsequent research.

Clients. The majority of the clients were female (55%) and employed (68%). There was a wide age range from 18-75 years of age, but 95% of participants were working age adults (i.e., aged 18-60). Most participants identified themselves as White-British (88%).

Therapists. The therapists comprised 8 PCE counsellors accredited by the British Association for Counselling and Psychotherapy and 11 CBT therapists accredited by the British Association for Behavioral and Cognitive Psychotherapies. The majority of the therapists were female (73% of CBT therapists and 88% of PCE therapists). The majority of the PCE therapists were over 50 years old (88%) and had been practicing professionally for an average of 21 years (SD = 4.60). Unfortunately, age and years of professional practice were not recorded for the CBT therapists in the PRaCTICED trial. To ensure protocol fidelity, all practitioners received regular specialist supervision.

Procedure. The third author, blind to participant demographics and the nature of the therapy divided the therapists' discourse into units that could be coded. Next, the transcripts were coded using a framework developed by Toli (2014) to identify if therapists naturally used implementation intentions, following the guidelines for coders. Toli's (2014) framework was

based on the behavior change taxonomy developed by Abraham and Michie (2008) that provided standardized definitions of several techniques designed to change behavior (termed behavior change techniques or BCTs). Toli augmented the taxonomy to enable the identification of implementation intentions in addition to the other BCTs listed by Abraham and Michie (2008). Specifically, BCT10: "prompt specific goal setting" (which Abraham and Michie defined as prompting detailed planning of performance of the behavior and termed "action planning" in later versions of the taxonomy; Michie et al., 2013) was subdivided into three additional BCTs: (i) "identify an opportunity"; (ii) "identify a goal-directed response"; (iii) "link the identified opportunity and a goal-directed response". In order for the third criteria to be met, the therapist needed to use or prompt the client to use a contingent if-then structure that linked the opportunity and response specified in (i) and (ii), respectively. Toli's (2014) framework therefore consisted of 30 BCTs, which were defined for the present study, with examples and notes for coders.

The third author (coder 1) was trained to use the coding framework by Toli, who developed the framework. An independent coder with an undergraduate degree in psychology (coder 2) was then trained to use the coding framework by coder 1. After training, coder 2 coded two transcripts and another meeting was held with coder 1 to discuss initial coding and to resolve any discrepancies. Coders 1 and 2 then coded all 40 transcripts. In addition, Toli acted as expert coder for a quarter (n = 10) of the transcripts. Coder 1 met the expert coder individually after coders 1 and 2 had completed a quarter of the transcripts allocated to them to reduce coding drift (Lyons & Cole, 2016). Coders 1 and 2 achieved 27% agreement (i.e., both coders allocated the same coding category to the same unit of discourse), and coder 1 and the expert coder achieved 45% agreement. Due to the relatively low levels of agreement, coders 1 and 2 collaboratively reviewed the codes for all transcripts and agreed on the frequency with which each BCT

occurred in the transcripts. The average frequency with which each BCT was used across transcripts was then computed and *t*-tests were used to test if there were differences in the average use of BCTs reflecting implementation intentions between CBT and PCE.

Results

To what extent do therapists use implementation intentions with clients in therapy?

Therapists tended to use most of the categories of BCTs at least once (70%). However, six specific BCTs were not used in any of the sessions (see Table 1). This included one of the BCTs reflecting the use of implementation intentions; namely, the formal use of if-then planning, which involved linking the identified opportunity and goal-directed response. Of the three BCTs reflecting aspects of implementation intentions, 'identifying a goal-directed response' was used most frequently (used on average in 12% of the sessions).

Are implementation intentions used more frequently in CBT than in PCE? As expected, the BCTs reflecting the components of implementation intentions – 'Identifying an opportunity' and 'Identifying goal directed responses' – were used more frequently in CBT (M = 2.50, SD = 3.62; and M = 8.25, SD = 10.88, respectively) than in PCE (M = 0.65, SD = 1.23, M = 1.25, SD = 2.25, respectively), ts (38) = 2.17 and 2.82, ps = .007 and .001, respectively. However, there was no evidence that therapists prompted their clients to link opportunities and responses together in an if-then contingent format in either therapy. In general, therapists were more likely to use BCTs (of any form) in CBT (M = 40.50, SD = 62.00) than in PCE (M = 11.03, SD = 20.87), t (38) = 6.55, p = .012.

Discussion

The findings of Study 1 suggest that therapists helped their clients to identify opportunities to strive for a goal and goal-directed responses. However, there was no evidence

that therapists explicitly prompted their clients to link an identified opportunity with a goal-directed response in a specific if-then plan. Hence, therapists were not found to naturally use implementation intentions. While identifying relevant opportunities and goal-directed responses have been shown to promote goal attainment (Aarts, Dijksterhuis, & Midden, 1999; Gollwitzer, 1999), explicit if-then planning that links opportunities with responses has been found to confer incremental benefit (Chapman et al., 2009; Oettingen et al., 2000; Palayiwa et al., 2010). The finding that therapists do not naturally do this therefore suggested it might be helpful to actively train therapists to use implementation intentions.

While neither CBT nor PCE therapists used implementation intentions in the sense of prompting clients to link opportunities with responses in a contingent if-then format, CBT therapists were more likely to help their clients to identify opportunities and goal directed responses than PCE therapists. More frequent use of components of implementation intentions in CBT compared to PCE fits with the idea that CBT therapists use a structured approach to goal setting (e.g., Hobbis & Sutton, 2005; Kazantis & Deane, 1999). Setting mutually agreed goals continue to be considered a key part of CBT (O'Donohue & Fisher, 2012) and goal setting worksheets are amongst the most frequently used supporting materials by CBT therapists (Tallon et al., 2019). Incorporating implementation intentions within materials supporting goal setting could potentially make a valuable contribution to promote goal attainment if therapists had the appropriate training on how to use the technique in their clinical practice.

Studies 2 and 3: Training Therapists to Prompt Clients to form Implementation Intentions

The overall aim of Studies 2 and 3 was to investigate the feasibility of delivering training on implementation intentions to mental health therapists. Study 2 investigated the feasibility of training PWPs who deliver treatment based on the principles of CBT. Study 3 was developed

alongside and aimed to investigate the feasibility of delivering the same training on an online platform where it might reach a broader audience of mental health therapists. The specific aims of each study were to investigate the effects of the training on therapists' knowledge about implementation intentions (i.e., theoretical knowledge), ability to apply this knowledge (i.e., practical knowledge), and the use of implementation intentions in clinical practice.

Development of the training

The content of the training was developed via a review of the literature on implementation intentions and consultations with experts in the field. Specifically, a scoping review was conducted to identify the components of implementation intentions, how they have been used in mental health contexts, and factors that influence their efficacy. This information was used to develop an outline of the training, which was emailed to members of the Synergy Expert Group (a group convened to discuss the research and practice on implementation intentions; Hagger et al., 2016) and additional experts identified by the fourth author. Sixty-nine experts were identified of whom 25 responded and consented to participate. Over 50% of the experts rated the content of the training as 'good enough' and their qualitative feedback was used to improve the training.

The final components of the training included: (a) reflection on goal setting and attainment in personal experience and clinical settings (Corrigan et al., 2009); (b) discussion of the intention-behavior gap (Sheeran, 2002; Sheeran & Webb, 2016; Webb & Sheeran, 2006); (c) an outline of the Model of Action Phases (Heckhausen & Gollwitzer, 1987; Keller, Gollwitzer, & Sheeran, 2020); (d) a description of implementation intentions (Gollwitzer, 1999; 2014); (e) discussion of how and when to form implementation intentions (Keller et al., 2020; Rhodes, Grant, & de Bruijn, 2020; Toli et al., 2016); and (f) an opportunity for practice (e.g., a role-play

or case vignettes). Studies 2 and 3 used similar content, but the training was adapted for the specific audience, the training modality, and time constraints. The training materials are available on the Open Science Framework (https://osf.io/apcxq/).

Method

Two studies with repeated measures designs were used to evaluate the feasibility of delivering training via the two modalities. Study 2 delivered the training via a face-to-face workshop and relevant outcomes were assessed before training, post-training, and one- and six-months later. Study 3 delivered the training online and outcomes were assessed before training, post-training, and one-month later. Ethical approval for each study was provided by the Research Ethics Committee in the Department of Psychology at (masked for review) (#011985 and #012149).

Participants and procedure. A priori power analyses assuming a medium-sized effect (d = 0.50) of training on therapists' knowledge of implementation intentions, indicated that 34 participants would provide 80% power to detect a medium-sized effect of training on outcomes using a paired-samples t-test. Subsequent reviews have indicated that training can have a large effect on knowledge (e.g., Frank et al., 2020; Trivasse, Webb, & Waller, 2020), so we note that this estimate of the size of the effect is likely conservative.

Participants (Study 2). Two cohorts of PWP trainees received the training as part of their mandatory teaching in a university in the Northeast of England. PWP trainees do a post-graduate diploma, which includes teaching sessions and supervised clinical practice to become qualified PWPs. A total of 70 trainees attended the training session and 69 participants (99%) completed questionnaires before and after training. Forty-one participants completed the follow-up at one month (59%), and 40 (57%) completed the follow-up at six-months. The mean age of

participants at baseline was 27.72 years (*SD* = 6.17 years) and the sample was predominantly female (*n* = 60; 87%). The highest level of education completed was most commonly a bachelor's degree (*n* = 38; 55%), followed by postgraduate degree (*n* = 26; 38%). On average, participants had been delivering psychological interventions for just over one year (*M* = 13 months; *SD* = 31 months), and the average number of clients that participants had worked with in the past month was 15.57 (*SD* = 23.46).

Procedure (Study 2). Participants completed paper questionnaires immediately before the training and immediately after the training (i.e., post-training). Participants were also asked to provide an email address so that they could be contacted at follow-ups, and to generate a code that would allow their data to be matched without revealing their identity. One month-later, participants were sent an email (and a subsequent reminder email) asking them to complete a short online questionnaire and paper questionnaires were also provided at the University if participants preferred to complete the questionnaire offline. The same procedure was followed six-months following training.

Participants (Study 3). Participants for Study 3 were recruited via email, digital newsletters, social media adverts, academic seminars, and professional training courses. Participants were required to: (a) be currently delivering psychological interventions, (b) have access to a computer or laptop, and (c) be able to access audio-visual content. Of the 181 participants who clicked on the link to training, 87 (48%) consented to take part and provided demographic information. Thirty-five participants (19%) completed the one-month follow-up. The majority of the participants defined themselves as psychologists (*n* = 63; 72%), followed by CBT therapists (*n* = 12; 14%), other mental health professionals (*n* = 8; 9%), and nurses (*n* = 4; 5%). Thirty-five participants (40%) were undergoing training in mental health. The theoretical

orientation reported was mainly CBT (*n* = 57; 66%), but participants also reported eclectic (*n* = 20; 23%) and other (*n* = 10; 11%) orientations. On average, participants were aged 32.44 years (*SD* = 9.30 years) and the sample was predominantly female (*n* = 70; 80%). The highest level of education completed was most commonly postgraduate (*n* = 61; 67%), followed by a bachelor's degree (*n* = 25; 27%). On average participants had been delivering psychological interventions for just over four years (*M* = 52 months; *SD* = 64 months), and the average number of clients that participants had worked with in the past month was 4 (*SD* = 4.60).

Procedure (Study 3). A video-based training program was developed using VideoScribe software for delivery online. Participants watched five audio-visual animations ranging from 109 to 222 seconds (total time of 15 minutes 45 seconds). The program was hosted by the Qualtrics survey platform (Qualtrics Labs, Provo, Utah) and participants were emailed an invitation containing a link to the study. Participants who provided consent completed a series of questionnaires before and after watching the videos. One-month later, participants were invited via email to complete a follow-up questionnaire, with a subsequent reminder email a week later.

Measures

Demographics. Before training, participants were asked to specify their age, gender, highest level of education completed, the amount of time that they had been delivering psychological interventions (in months), and the number of clients that they had worked with in the past month. In addition, as Study 3 was open to any mental health professionals, participants were asked to specify their job title, current training status, and theoretical orientation.

Before training awareness of implementation intentions. Before training, participants were asked to indicate if they had heard of implementation intentions (yes/no), and if so, what they had heard and where. Participants also rated the extent they thought that they knew about

implementation intentions and how to use them with their clients (on a ten-point scale from "not at all" to "completely").

Theoretical knowledge of implementation intentions. Before training and post-training, participants completed five multiple-choice questions designed to assess their knowledge and understanding of implementation intentions. In Study 3, participants also completed the same measure one-month later. The questions asked participants about goal pursuit, when implementation intentions are likely to be effective, what they are, and what each part of implementation intentions should describe. Example item include, 'If-then planning is a technique that…' (a) is used to form goal intentions; (b) helps people who lack motivation to achieve their goal; (c) links a specified opportunity with a goal directed response; (d) specifies why a goal is important. A binary outcome for each response was generated (i.e., correct/ incorrect) and the items were summed to give a total score ranging from 0 to 5.

Practical knowledge of implementation intentions. Participants' knowledge of how to appropriately apply implementation intentions was assessed using three fictional clinical vignettes before and after training in Study 2, and at post-training and one-month follow-up in Study 3. Participants were asked to read each vignette and complete two multiple-choice questions and one open-ended question. Items asked about the components of implementation intentions and appropriateness of use. The last vignette where participants were asked to form implementation intentions included five items, with the following scoring criteria: (a) inclusion of 'if'; (b) inclusion of 'then'; (c) correct order; (d) inclusion of a situational cue; and (e) inclusion of a goal directed response. A binary outcome for each response was generated (i.e., correct/incorrect). The total score ranged from '0' to '7' where a higher score indicated higher practical knowledge of implementation intentions.

Self-reported use of implementation intentions. Before training and each follow-up point, participants were asked to specify: (a) the number of clients that they had worked with in the past month, and (b) the number of clients that they had prompted to form implementation intentions in the past month. This information was used to calculate: (a) how many participants prompted at least one of their clients to form implementation intentions in the last month; and (b) the percentage of clients that were prompted to form implementation intentions.

Data analysis. Independent *t*-tests, Mann-Whitney U-tests and Chi-square analyses were used to examine differences between completers' and non-completers' demographic characteristics, clinical experience, and awareness of implementation intentions before training. Where the outcome variables violated the assumptions of parametric analysis, non-parametric assessments were used.

To test if participants' knowledge improved following training, paired samples Wilcoxon signed-rank tests were used to compare before training and post-training scores for theoretical and practical knowledge. To test whether participants used implementation intentions with their clients more frequently following training, paired samples Wilcoxon signed-rank tests were used to compare (i) the percentage of participants who prompted at least one of their clients to form if-then plans, and (ii) the percentage of clients in their caseload that were prompted to form implementation intentions, between before training and the last follow-up point. Where we had dichotomous data at three time points, Cochran's *Q* test was used to examine changes with post-hoc analyses being conducted using McNemar tests with a Bonferroni correction applied.

All of the analyses were conducted using intent-to-treat analysis (ITT-analysis) and missing data was imputed using the Last Observation Carried Forward (LOCF) method, which has been shown to be a valid way to deal with dropout in clinical trials (Shao & Zhong, 2003).

Results

Comparison between completers and non-completers. In Study 3, maximum results on Chi-square (χ^2 (16) = 9.95, p = .460) and independent t-tests (t (85) = -0.92, p = .360) analyses revealed that there were no significant differences between participants who completed versus participants who did not complete the study with regards to demographics and clinical experience. Similarly, no significant differences were found between completers and non-completers' awareness of implementation intentions before training (U = 672.00, z = -1.87, p = .620).

Before training awareness and use of implementation intentions. Eighty-four percent (n = 58) of the participants in Study 2 and 62% (n = 32) of the participants in Study 3 had not heard of implementation intentions before the training. In Study 2, the majority of the participants were not aware of what forming implementation intentions involved (M = 0.90, SD = 1.73) and did not feel that they knew how to prompt their clients to form implementation intentions (M = 0.54, SD = 1.37). In Study 3, participants were more aware of what forming implementation intentions involved (M = 2.61, SD = 2.56); but most did not feel that they knew how to prompt their clients to form implementation intentions (M = 2.07, SD = 2.24). The percentage of participants who reported having used implementation intentions with their clients in the month before training was 3% (n = 2) in Study 2, and 20% (n = 17) in Study 3.

Did participants' knowledge improve following training? Participants' theoretical and practical knowledge of implementation intentions tended to increase over timeovertime (see Table 2). A Wilcoxon signed-rank test revealed a statistically significant increase in theoretical knowledge about implementation intentions from before training to post-training in Study 2 (z = -5.50, p < .001), as well as in Study 3 (z = -5.13, p < .001). In Study 3, where theoretical

knowledge was also measured at one-month follow-up, a significant difference was found across the three time-points, $\chi^2(2) = 59.60$, $p < .001$. Post-hoc analyses revealed a significant increase in knowledge between before training and post-training ($z = -5.13$, $p < .001$), and before training and follow-up ($z = -5.15$, $p < .001$). There was no significant difference in knowledge between post-training and follow-up ($z = -1.22$, $p = .221$). Wilcoxon signed-rank tests revealed a statistically significant increase in practical knowledge about implementation intentions from before training to post-training in Study 2 ($z = -3.67$, $p < .001$), but not in Study 3 ($z = -1.28$, $p = .201$).

Did participants use implementation intentions more frequently following training?

Three percent of the participants in Study 2 reported prompting at least one of their clients to form implementation intentions before training, compared to 19% of the participants at the one-month follow-up and 36% of the participants at the six-month follow-up. Cochran's *Q* test found a statistically significant difference in the proportion of participants in Study 2 who reported using implementation intentions at least once over time, x^2 (2) = 30.54, $p < .001$. A post-hoc McNemar test with Bonferroni corrections revealed significant differences between before test and one-month follow-up ($p = .001$), between before test and six-months follow-up ($p < .001$), and between one-month follow-up and six-months follow-up ($p < .001$).

Sixteen percent of the participants in Study 3 reported prompting at least one of their clients to form implementation intentions in the month before training, compared to 30% of the participants at the one-month follow-up. A McNemar test revealed that this difference was statistically significant ($p = .013$). Further, a chi square analysis revealed no difference between CBT-orientated therapists and non CBT-orientated therapists in Study 3 with regards to the

number of clients prompting at least one of their clients to form implementation intentions at one-month follow-up, x^2 (1) = 0.78, p = .376.

The use of implementation intentions increased significantly over time across training modality (see Table 3). In Study 2, the number of clients prompted to form implementation intentions increased from 0.25 clients on average before training to 0.58 clients on average at one-month follow-up and 2.13 clients on average at six-months follow-up, which a Friedman test determined was a statistically significant difference, x^2 (2) = 26.42, p < .001. In Study 3, the number of clients prompted to form implementation intentions increased from 0.55 clients on average before training to 1.01 clients on average at one-month follow-up, which a Wilcoxon test indicated was a statistically significant difference (z = -2.37, p = .018).

The mean percentage of clients prompted to form implementation intentions increased from 1% before training to 7% at one-month follow-up and 10% at six-months follow-up in Study 2. In Study 3, the mean percentage of clients prompted to form implementation intentions increased from 6% before training to 13% at one-month follow-up. A Wilcoxon signed-rank test indicated that there was a significant increase in the percentage of clients prompted to use implementation intentions from before training to the last follow-up in Study 2 (z = -4.37, p < .001) and Study 3 (z = -4.37, p < .001).

General Discussion

The present research is the first to explore if therapists naturally use implementation intentions (or if-then planning) with their clients and to implement and evaluate a training program for therapists on how to use implementation intentions in clinical settings. Study 1 found that, although therapists sometimes prompt their clients to identify when and how they might strive for their goals, they do not typically prompt their clients to form implementation

intentions, in the sense that they do not explicitly prompt them to link anticipated opportunities and responses in a contingent if-then format. Given that if-then planning has been shown to be an effective way to help people to translate intentions into action (e.g., Gollwitzer & Sheeran, 2006; Toli et al., 2016) and has been recommended across psychological therapies (Cooper, 2018), Studies 2 and 3 investigated whether it was possible to train therapists to explicitly use implementation intentions with their clients.

Studies 2 and 3 both provided evidence that training significantly increased therapists' theoretical knowledge of implementation intentions. In Study 2, therapists also significantly increased their knowledge about how to effectively use implementation intentions in clinical settings (i.e., practical knowledge), but the increase was not statistically significant in Study 3. The latter finding may be explained by the increased risk of self-selection bias in Study 3, as one fifth of the sample claimed to have prior knowledge regarding implementation intentions, unlike participants in Study 2. Regardless, an increase in theoretical knowledge about implementation intentions in both studies provides initial evidence that the training was effective. More importantly, the results of both studies suggested that the main aim of the training – to increase therapists' use of implementation intentions in routine practice – was met. Specifically, after a single training session, the percentage of therapists that prompted at least one of their clients to use implementation intentions increased from 3% before training to 36% at six-month follow-up in Study 2 and from 16% before training to 30% at one-month follow-up in Study 3. Further, across training modalities, approximately one in every 10 clients in therapists' caseload was prompted to form implementation intentions following the training, compared to between one (Study 2) and six (Study 3) in every 100 clients before the training. These results encourage the

delivery of training to therapists to increase the number of clients that may benefit from forming implementation intentions.

Since the samples differed in professional background and recruitment, no conclusion can or should be drawn at this stage as to potential differences in effectiveness between the face-to-face and online training methods. However, prior studies have found that online training is often cost-effective, accessible to a large number of people without the need to 'train the trainers', and is therefore scalable (Cooper et al., 2017; Fairburn & Cooper, 2011). This may suggest that the online training on implementation intentions developed as part of the present research may be an efficient way to train a large number of mental health professionals. Future research that directly compares methods of delivery within each population would enable policy makers to reach an informed decision about which type of training is best for particular therapists in particular contexts.

Limitations

The conclusions above need to be taken in the context of some limitations. First, there were relatively low levels of initial agreement between the coders in Study 1 with respect to the nature and frequency of the BCTs employed by therapists. Difficulties in reliably identifying the use of BCTs is not specific to our study, and indeed, is one reason why extensive training materials have been developed for those wanting to code the BCTs used in interventions (e.g., the online training developed by the BCT taxonomy project, https://www.bct-taxonomy.com). Going forward, it may be that similar training materials are needed for those looking to identify BCTs used in mental health contexts. Fortunately, however, the coders did agree with respect to our key finding that therapists did not explicitly prompt clients to link opportunities and responses together in the contingent if-then format that defines implementation intentions; furthermore, the

subsequent involvement of experienced coders alongside less experienced coders meant that the final coding was robust.

Second, Studies 2 and 3 relied on therapists' self-reports of their clinical practice, which may have been influenced by recall error and/or therapists' ability to discriminate between if-then planning and other therapeutic strategies. Further, clinical competency in using implementation intentions was not measured; that is, therapists only reported how often they prompted their clients to form implementation intentions – we did not assess the quality or nature of this intervention. Future research may therefore benefit from independently rated assessment (e.g., standardized role-plays or measures) and/or a measure of behavior (e.g., direct observation or session recordings). It would also be valuable to measure client outcomes. While there is evidence that forming implementation intentions is beneficial in clinical samples (for a review, see Toli et al., 2016), future research might explore if training therapists in the use of implementation intentions improves outcomes for clients, an effect which should be mediated by changes in therapists' theoretical and practical knowledge of implementation intentions, as well as clinical competency in using the technique.

Finally, we would note that the sample in Study 3 was potentially biased by self-selection at recruitment and the relatively high rate of attrition. Although there were no significant differences in demographics and initial outcome variables between completers and non-completers, future research might consider integrating the online training in implementation intentions into broader training programs for mental health professionals to minimize self-selection, especially if such programs include mechanisms to promote engagement (e.g., incentives) to minimize attrition.

Implications for practice

The primary implication of the present research is that information on implementation intentions might be integrated into formal training programs for therapists, especially given the strong evidence that if-then planning has a positive impact on client outcomes (Toli et al., 2016). With this in mind, the training tools that we developed are publicly available via the Open Science Framework (https://osf.io/apcxq/). In our view, little training for trainers is needed; however, so far only the first author has delivered the face-to-face training, so further research may need to investigate who is able to deliver training and whether this has an impact on the effectiveness of that training, especially in the light of recent evidence that therapists' personality can influence treatment outcomes (Delgadillo et al., 2020).

A second implication of the present research is that taxonomies developed by behavioral scientists (primarily health psychologists) to describe BCTs might be used to understand processes in therapy. Study 1 was (to our knowledge) the first to apply a BCT taxonomy in a clinical setting. Prior research has used the taxonomy developed by Abraham and Michie (2008); which was refined and expanded by Michie et al. (2013); as well as other taxonomies (e.g., the Intervention Mapping Taxonomy, Kok et al., 2016) to code interventions designed to promote health behaviors (e.g., Webb et al., 2010; Webb & Sheeran, 2006). However, the present research suggests that it may be possible to apply a similar approach to describe the BCTs used during therapeutic sessions and evaluate their impact on mental health outcomes. So, doing could help to develop a cumulative science of behavior change as applied to mental health, much as the approach has done for health psychology (Michie & Johnston, 2012).

The present research also extends the current BCT taxonomy approach to decompose action planning (defined as prompting detailed planning of performance of the behavior) into

three specific BCTs reflecting aspects of forming implementation intentions; namely, (i) identifying an opportunity; (ii) a goal-directed response, and (iii) linking the identified opportunity and a goal-directed response. These revisions make it clear that merely specifying at least one of context, frequency, duration, and intensity (the current operationalization of detailed planning) may not capture the use of a contingent if-then structure that is crucial to the effectiveness of forming implementation intentions (Chapman et al., 2009; Oettingen et al., 2000; Palayiwa et al., 2010). It is therefore hoped that these revisions prove useful for understanding and describing interventions in other contexts.

Conclusion

The present research examined the extent to which therapists draw on insights from behavioral science (in this case, on the efficacy of if-then planning in helping people to translate goals into action) in their clinical practice. The findings suggested that, although therapists sometimes prompt their clients to identify when and how they might strive for their goals, they do not typically prompt their clients to form implementation intentions. We therefore developed online and face-to-face training and provided initial evidence that such training is effective in the sense that it increases therapists' knowledge and use of implementation intentions. Given that forming implementation intentions has been found to promote goal achievement among people with diverse mental health difficulties (Toli et al., 2016), our primary conclusion is that such training should be integrated into formal training programs for therapists.

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Table 1

Descriptive statistics (Study 1)

Variable	*N*	*Mean*	*SD*
Use of any BCTs	40	1.20	3.42
Natural consequences (BCTs 1-3)		1.19	2.16
Goals and planning (BCTs 4-16)		1.44	4.06
Feedback and monitoring (BCTs 17-18)		5.19	7.55
Repetition (BCTs 19-24)		0.88	2.14
Social (BCTs 25-27)		0.13	0.55
Other (BCTs 28-30)		0.09	0.43
Use of BCTs reflecting implementation intentions	40	2.11	5.51
Identify an opportunity		1.58	2.83
Identify a goal directed response		4.75	8.53
Link opportunity and response		0.00	0.00

Note. BCT = Behavior change technique

Table 2

Knowledge of implementation intentions as a function of training (Studies 2 and 3).

		Theoretical knowledge			Practical knowledge		
Training delivery		Before training	Post-training	1-month Follow-up	Before training	Post-training	1-month Follow-up
Face-to-face (Study 2)	Median	3.00	6.00		5.00	6.50	
	IQR	(2.00 – 4.00)	(4.75 – 7.00)		(3.50 – 5.00)	(6.00 – 7.00)	
Internet-based (Study 3)	Median	2.00	5.00	5.00		6.00	6.00
	IQR	(1.00 – 4.00)	(3.00 – 5.00)	(3.00 – 5.00)		(5.00 – 6.00)	(5.00 – 6.00)

Note. IQR = Interquartile range (25-75 percentile). Blank areas indicate that data was not collected at this time point.

Table 3

Use of implementation intentions in clinical practice as a function of training (Studies 2 and 3)

		Before training				One-month follow-up				Six-month follow-up			
		Mean	*SD*	Median	*IQR*	Mean	*SD*	Median	*IQR*	Mean	*SD*	Median	*IQR*
Number of clients prompted to form if-then plans*	Face-to-face (Study 2)	0.25	1.46	0.00	(0.00-0.00)	0.58	1.65	0.00	(0.00-0.00)	2.13	5.17	0.00	(0.00-2.00)
	IBT (Study 3)	0.55	1.55	0.00	(0.00-0.00)	1.01	2.33	0.00	(0.00-1.00)				
Percentage of clients in caseload prompted to form if-then plans*	Face-to-face (Study 2)	0.68	5.58	0.00	(0.00-0.00)	6.61	19.91	0.00	(0.00-0.00)	10.06	22.70	0.00	(0.00-9.00)
	IBT (Study 3)	6.23	17.05	0.00	(0.00-0.00)	12.53	24.12	0.00	(0.00-16.67)				

Note. * In the past month. IQR = Interquartile Range (25^{th} - 75^{th} percentile). Face-to-face = interactive workshop delivered to Trainee Psychological Well-being Practitioners in Study 2; IBT = internet-based training open to all mental health professionals in Study 3. Blank areas indicate that data was not collected at this time point. All of the data was analyzed as intent-to-treat using the last observation carried forward (LOCF) method for dealing with missing data.