

**Unpacking the active ingredients of internet based psychodynamic therapy for adolescents**

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## **Abstract**

Internet based psychodynamic psychotherapy (iPDT) for adolescents has been found to be effective for treating depression, but not much is known about its active ingredients. *Objective* to explore the techniques used in chat sessions in an iPDT program for depressed adolescents, and to investigate whether they predicted improvement in depression symptoms. *Method* The study uses data collected from a pilot study. The iPDT consisted of 8 modules delivered over 10 weeks that included text, video, exercises, and a weekly text-based chat session with a therapeutic support worker (TSW). The participants were 23 adolescents meeting criteria for depression. The TSWs were 9 psychology master's students. A depression inventory QIDS-A17-SR was filled weekly by the participants, and a self-rated techniques inventory (MULTI-30) was filled by the TSWs after each chat session. *Results* Common factor techniques were the most widely used techniques in the chat sessions. Both common factors and psychodynamic techniques predicted improvement in depression, with psychodynamic techniques predicting improvement at the following week. CBT techniques were also used but did not predict improvement in depression. *Conclusion* iPDT seem to work in line with theory, where the mechanisms thought to be important for change in treatment were predictive of outcome.

## **Key Words**

Internet-based-therapy, adolescents, depression, psychodynamic, common-factors

## **Clinical or Methodological Significance of this Article**

This is the first study to examine therapist techniques used in internet-based psychodynamic psychotherapy. The results suggest that common factors are indeed the most frequently used techniques, and that greater use of these predicts improvement in depression. Psychodynamic techniques were used less frequently than common factors techniques. However, psychodynamic techniques were found to predict improvement in depression in the next session, and at the end of treatment. Supporting therapists to use such techniques appropriately, alongside common factors, may be important in internet based psychodynamic therapy for adolescents.

### **Introduction**

Understanding the possible connections between the techniques and interventions therapists use and the therapy's outcome is a primary goal of psychotherapy research. By better understanding what kind of interventions are associated with better outcomes (or with poor outcomes), there is the possibility of enhancing the effectiveness of treatments. Whilst some work of this sort has been done with regard to face-to-face treatments (Crits-Christoph et al., 2013), much less is known about internet-based interventions. In this study we examine the kinds of interventions used by therapeutic support workers during text-based sessions in a pilot study of an internet based psychodynamic treatment (iPDT) for depressed adolescents. Our goals were to explore the techniques used by the therapists and to investigate whether the techniques of the treatment predicted improvement in depression symptoms.

Internet-based psychotherapies are therapeutic interventions that are accessed online, and include content such as text, worksheets, or videos that are worked through by the client independently, sometimes with synchronous or a-synchronous remote therapist support. Internet-based psychotherapies in general have been found to be effective for treating depression both for adults and adolescents (e.g., Christ et al., Etzelmueller et al., 2020; Grist et al. 2019) and are considered to be a flexible, low-cost, and accessible option, therefore overcoming some barriers to accessing psychotherapy (Andersson et al., 2019).

To date, the majority of internet-based treatments have been based on cognitive-behavioral models of therapy (iCBT). Yet iPDT has been developed for adults and a recent meta-analysis found iPDT to be effective for treating depression, with the effects maintained or increased at follow-up (Lindegaard et al., 2020). Mechler and Lindqvist (Lindqvist et al., 2020) have developed the first iPDT for adolescent depression; a therapist-supported intervention, based on affect-focused psychodynamic theory. The treatment has been shown to be effective in one RCT (Lindqvist et al., 2020) and a larger non-inferiority study is being finalized, comparing iPDT to iCBT for depressed adolescents (Mechler et al., 2020).

As a relatively complex intervention, using a range of different components (text, video, worksheets, asynchronous and synchronous interaction through text), it is not straightforward to identify which elements of iPDT may be central to the change process. An earlier study on the process of change in iPDT indicated that improvements in emotion regulation acted as a vehicle of change in depressive symptoms (Mechler et al., 2020), but as of yet there are no studies investigating the role of specific techniques. The

weekly text-based support sessions appear to be highly valued by the young people engaged in iPDT, but no empirical analysis has been carried out examining how these sessions are conducted, and whether the use of treatment-specific techniques is associated with better outcomes. To help explore such issues, therapeutic interventions or techniques can be understood in terms of two main components: a common factors component, which would be expected to be used across a range of different treatment modalities, and which generally aim to enhance the therapeutic alliance and create a secure atmosphere for the therapeutic work; and a specific factors component, unique to a particular treatment modality, which aims to deal directly with the perceived problem or pathology according to the specific theoretical and clinical method (Mulder et al., 2017). Previous studies suggest that treatments which are based on common factors techniques succeed in significantly reducing symptoms of depression (Cuijpers et al., 2012), but various specific factors have also been shown to be associated with improved outcomes in a variety of youth therapies (Hayes & Brunst, 2017).

When it comes to psychodynamic therapies, face-to-face psychotherapy has been found to be effective for treating depression in adults (Driessen et al., 2015), and in adolescents (Goodyer et al., 2017). In such psychodynamic treatments, the role of common factors or supportive techniques is recognized, including the therapist demonstrating empathy, acceptance, and affection; noting the patient's gains; instilling hope and believing in the patient's strengths, and working together as a team (Book, 1998; Barber & Crits-Christoph, 1996; Luborsky, 1984). Studies have found that greater use of such common factors in a psychodynamic treatment is associated with stronger alliance (Solomonov et al., 2018) and reduction of symptoms of depression indirectly, by

enhancing the therapeutic alliance (Leibovich et al., 2020). However, the active ingredient of psychodynamic treatment is generally considered by practitioners to be the more modality-specific techniques, such as uncovering unconscious processes, working with the transference and counter-transference, or the appropriate use of transference interpretation (Levy & Scala, 2012). While some studies suggest that such interpretations can actually have a negative effect on treatment success (Ogrodniczuk et al., 1999; Schut et al., 2005), others have demonstrated that the amount of interpretations and their accuracy affect their efficacy, with low to moderate amount of interpretations and accurate interpretations showing better results (Crits-Christoph et al., 1988; Høglend, 2014; McCarthy et al., 2016; Ryum et al., 2010). Other studies have suggested that modality-specific techniques, such as interpretations, are more effective in a "supportive" setting (Leibovich et al., 2020). When it comes to working with adolescents, it seems that transference work may amplify the effect of therapy on depressive symptoms (Ulberg et al., 2021).

Given how little empirical research has examined the techniques used by therapists in PDT or internet-based treatments more generally, especially with adolescents, the first purpose of the present study was exploratory: to examine how often common and certain specific factors were used by TSWs in iPDT, and whether these techniques correlated with treatment adherence (the degree to which participants engaged with the programme materials). We expected higher levels of common factor techniques to be used than modality-specific factor techniques, given the supportive role of TSWs in this intervention. Our second aim was to examine whether greater use by TSWs of common factor and/or psychodynamic and/or CBT techniques predicted higher levels of

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symptom improvement for adolescents. We expected that increased use of psychodynamic and common factors techniques would be predictive of improved outcome as they are thought to be the active ingredients of iPDT. Given that there exist many more studies assessing the efficacy of iCBT in both depressed adolescents and adults we also wanted to rule out that treatment effects in our study were associated with techniques stemming from CBT. We therefore hypothesized that CBT techniques, even if present in the text-based sessions, would be unrelated to outcome as they are not a central part of the iPDT model.

## **Method**

### **Setting for the Study**

This study uses data collected from the Depression: Online Therapy Study (D:OTS; Midgley et al., 2021), a pilot study which aimed to examine the feasibility of delivering affect-focused iPDT for adolescents in the UK, and specifically to examine the acceptability and efficacy of an English-language adaptation of the Swedish iPDT (Lindqvist et al., 2020).

### **Participants**

The study was advertised through several avenues, including schools and social media advertising. Young people expressed an interest in this study via the study website. Overall, 62 young people expressed an interest in this study between January and March 2021, of whom 23 (36%) were included in the program. Participants in the study were 23 adolescents (18 female, 5 male) aged 16 to 18 years old, meeting criteria for clinical depression according to the Mini International Neuropsychiatric Interview 7.0, or the

MINI-KID (MINI 7.0, Sheehan et al., 1998) and with a score of 10 or above on the Quick Inventory of Depressive Symptomatology for Adolescents (QIDS-A17-SR, Bernstein et al., 2010). Of the 23 participants, 3 withdrew from the programme and this at a very early stage. The study was an unfunded pilot study, and therefore was not set for a larger sample size; a larger trial is now being planned. For this study, we used all of the data available to us.

Just over half of participants (52.17%) were white British; 8.69% were black British; 21.74% considered themselves as having different white ethnic background; and 17.39% had mixed ethnic background. Participants were in treatment for this study between January 2021 and May 2021. This means that most participants completed at least some of the treatment whilst living under a COVID19 lockdown, though some returned to school at some point during treatment.

## **Intervention**

The iPDT intervention was an internet-based programme supported by remote contact with a therapeutic support worker (TSW). The intervention includes 8 modules designed to be completed over 10 weeks. Its objective is to reduce depressive symptoms through the promotion of emotional awareness and experiencing, based on affect-focused psychodynamic psychotherapy, and draws on Malan's Triangle of Conflict (1979). The modules include videos and text on a specific topic, complemented by worksheets that young people complete and send to their TSW, who provides feedback messages in the following days. Furthermore, the participants have a 30-minute weekly synchronous text chat session with their TSW, using an instant-messaging platform on the therapy website. The iPDT training emphasizes using common factors techniques such as being warm,

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accepting, instilling hope, and noting gains, in order to form a strong alliance that will enable using psychodynamic and affect-focused techniques such as exploration of unconscious emotions and conflicts. A minimal level of interpretative work related to the transference is suggested in iPDT training, but TSWs were encouraged to address the therapeutic relationship in a more explorative fashion when this was deemed pertinent. The therapy programme was hosted on the same secure online platform used by Lindqvist et al., (2020; Vlaescu et al., 2016).

### **Therapeutic Support Workers**

The TSWs (n=9; 8 female, 1 male) were psychology master's students studying at University College London. They received 2 days of training in the therapeutic approach by treatment developers, involving three shorter introductory seminars followed by a one-day practical iPDT training. The TSWs received ongoing weekly group supervision by a clinical psychologist or psychotherapist with expertise in affect-based psychodynamic therapy, and also had access to 'risk and safeguarding' consultations, where necessary.

### **Measures**

#### ***Depression***

The Quick Inventory of Depressive Symptomatology in Adolescents (QIDS-A17-SR). (Bernstein et al., 2010) was the primary outcome measure and was completed weekly. This questionnaire has 17 items, over 9 criterion domains. Each item is scored from 0 to 3. The total score is calculated on the basis of a scoring system where the highest score from questions 1 through 4, 5/6, 7 through 10, and 16/17 are added to scores from questions 11 through 15. The QIDS-A17-SR score ranges from 0 to 27, with

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a greater score representing greater depression severity. Chronbach's alpha for QIDS at baseline was 0.744.

### ***Technique***

The Multi-theoretical List of Therapeutic Interventions–30 Items (MULTI-30; Solomonov et al., 2019) is a short form of the MULTI (McCarthy & Barber, 2009), which was developed to assess the use of interventions across therapeutic orientations. Therapists rate items on a 5-point Likert scale of 1 (*not typical of the session*) to 5 (*very typical of the session*) based on the intensity and frequency of the use of interventions at the end of each session. These interventions are clustered into eight main therapeutic orientations: psychodynamic, process-experiential, person centered, interpersonal cognitive, behavioral, dialectical-behavioral, and common factors. The psychodynamic cluster includes interventions such as connecting the here and now to the past, exploring avoided feelings, dreams, fantasies, and function of behaviors, and exploring "transference". The common factors cluster describes interventions that are supposed to be shared by all approaches like attentive listening, expression of warmth, empathy and support, expressing hope and encouragement, and working together as a team. TSWs were asked to complete the MULTI-30 following each weekly chat session. Chronbach's alpha for psychodynamic subscale was 0.65 at first timepoint; for common Factors subscale 0.835; for behavioral subscale 0.745, and for cognitive subscale 0.67.

### **Procedure**

Study participants expressed an interest in the D:OTS via the study website and were screened by their scores on the QIDS-A17-SR; participants who scored a 10 or

above on the QIDS-A17-SR then received a phone call from a member of the research team, who completed the MINI Interview by telephone, to further assess study eligibility according to the inclusion and exclusion criteria (for more details see Midgley et al., 2021). Participants completed the QIDS-A17-SR weekly as they progressed through treatment. TSWs were instructed to complete the MULTI each week, immediately after a text-based chat session; but only if a chat session had taken place.

### **Data Analysis**

Due to the relatively small sample size we chose to only use four subscales from the MULTI. For the analyses we were primarily interested in the unique contributions on outcome of psychodynamic and common factors techniques. We also tested the cognitive and behavioral subscales of the MULTI. Due to the relatively small sample size and the exploratory nature of the study we chose to conduct separate analyses for each subscale, rather than analyzing them together in the same model.

All analyses on techniques on outcome were made using linear effects modeling. In all models, for the within-person residuals, we used the first order autoregressive (AR[1]) structure, in order to account for the autoregressive nature of the data. At Level 2, we used an unstructured covariance structure, allowing intercept and slope to correlate.

**Within-Person Effects of Techniques on Outcome.** In order to investigate effects of techniques on subsequent outcome in QIDS-A17-SR, we used linear mixed effects modeling. Individual change over time was analyzed with the time lagged effects of technique on depression as follows: the effect of technique at time point  $t-1$  was used to predict QIDS-A17-SR at time point  $t$  (i.e. the following week). All models also

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included fixed and random effects of time, in order to control for general effects of time (i.e. detrend).

Level 1:

$$QIDS - A17 - SR_{it} = \beta_{00i} + \beta_{10}(technique_{it-1} - \overline{technique_i}) + \beta_{20i}(TIME_t) + \varepsilon_{it}$$

Here, QIDS-A17-SR is the individual's depression score at time point t. The equation also illustrates fixed effects on intercept ( $\beta_{00i}$ ) and the fixed within-person effect of technique on QIDS-A17-SR the following week, i. e. the time lagged effect of person-mean centered technique  $\beta_{10}(technique_{it-1} - \overline{technique_i})$ . Furthermore, this includes the fixed effect of time  $\beta_{20i}$  on QIDS-A17-SR and  $\varepsilon_{it}$  represents the deviation of the individual's (i) score from their own modeled line at each time point (t).

Level 2:

$$\beta_{00i} = \gamma_{00} + \gamma_{01}(\overline{Technique_i} - \overline{Technique}) + u_{0i}$$

$$\beta_{10} = \gamma_{10}$$

$$\beta_{20i} = \gamma_{20} + u_{1i}$$

As illustrated in the first equation, Level 2 also includes random intercepts ( $\beta_{00i}$ ). The grand mean at time 0 is illustrated by  $\gamma_{00}$ , while  $\gamma_{01}(\overline{Technique_i} - \overline{Technique})$  represents the between person effect of technique on the intercept value, and  $u_{0i}$  is each individuals deviation from the modeled intercept value.  $\gamma_{10}$  is the fixed, time aged effect of person-mean centered techniques.

The third equation illustrates the random slopes, where  $\beta_{20i}$  represents the linear growth rate across the entire treatment for each individual.  $\gamma_{20}$  is the average growth rate for all individuals across the entire treatment and  $u_{1i}$  is each individual's growth parameter deviation from that average.

**Between Person Effects of Techniques on Outcome.** In order to assess between-person effects of techniques on outcome, a conditional growth model was estimated.

Level 1:

$$QIDS - A17 - SR_{it} = \beta_{0i} + \beta_{1i}(TIME)\varepsilon_{it}$$

Level 2:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(Technique) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}(Technique) + u_{1i}$$

In the first equation,  $\gamma_{00}$  is the grand mean at time 0,  $\gamma_{01}$  is the contribution of techniques to the intercept value, and  $u_{0i}$  represents each individual's deviation from the modeled intercept value. The second equation estimates the effects of technique on the rate of change in QIDS-A17-SR.  $\gamma_{10}$  represents the average rate of change for all individuals across all time points,  $\gamma_{11}$  stands for the influence of technique on the rate of change, and  $u_{1i}$  represents each individual's growth parameter deviation from the estimated slope.

## Results

### Therapists' Usage of Techniques

As to the first, exploratory aim of the study, the results show that common factors techniques were rated by the TSWs as used more often than the other techniques, see Table 1. Mean ratings for the modality-specific psychodynamic, cognitive and behavioral sub-scales were fairly equivalent.

### **Adherence and Technique**

Across the 20 participants, the average number of chapters opened was 7 (range: 2–8), and 13 participants opened all eight chapters. Excluding a participant who had no chat sessions, the average number of chat sessions was 8.4 (range: 3–10) (Midgley et al., 2021). We correlated the mean rate of the techniques over treatment with adherence (number of modules opened and chat sessions attended). There were no significant correlations between any techniques and adherence, however, one subscale came very close to significance, namely the psychodynamic subscale ( $r = .438$ ;  $p = 0.053$ ). Hence, there seems to be a trend that more psychodynamic techniques leads to higher adherence.

### **Within-Person Effects of Techniques on Outcome**

To explore the second aim, we used estimates of fixed effects to explore within-person effects of MULTI scale in predicting depression (QIDS-A17-SR) score at the next week. All models included TIME as fixed and random effects (i.e., detrending) to take general effects of time into account. Results are presented in Table 2. The only set of techniques that rendered a significant within-person effect were psychodynamic techniques. The time-lagged relationship was in the expected direction, meaning that higher amounts of psychodynamic techniques predicted lower scores on QIDS-A17-SR the following week. A significant effect of psychodynamic techniques was shown, where

a one-point increase in psychodynamic techniques predicted a reduction of  $-.96$  in QIDS-A17-SR the following week ( $\gamma_{10} = -.96$ ;  $SE = .42$ ; 95% CI  $[-1.80$  to  $-.12]$ ).

As a post hoc test, in order to account for possible reversed causality effects, we also lagged depression score on psychodynamic techniques (since psychodynamic techniques was the only significant technique after detrending). This did not render any significant results, meaning that there was no effect of depression rate on subsequent use of psychodynamic techniques. Post hoc power analysis was performed using Gpower computer program (Faul & Erdfelder, 1998) for ANOVA repeated measures, within factors. The input parameter for power calculation was the within-person psychodynamic techniques effect of  $\eta^2_p=0.05$  for predicting QIDS-A17-SR and the total sample size of 20 participants and 10 measurements per participant. Correlation between measurements was set to 0.4. Power was 83%.

### **Between-Person Effects of Techniques on Outcome**

In order to explore between-person effects of techniques on outcome, we built a model including fixed within-person as well as between-person effects of techniques, time, and the interaction between between-person effects of techniques and time. Random slopes for time were also included. A significant effect for the interaction between common factors and time was shown ( $p = 0.010$ ), indicating that a higher amount of common factors during the entire course of the treatment was significantly related to increased reduction in QIDS-A17-SR scores during treatment. For more numerical results, see Table 2. No other techniques rendered significant between-person effects.

## Discussion

This study aimed both to explore therapists' use of different techniques in text-based chat sessions delivered as part of iPDT for depressed adolescents, and to examine whether the techniques which are considered the active ingredients in iPDT for adolescents predict the young people's improvement in depressive symptoms. We found that common factors techniques were reported by TSWs as the techniques most frequently used during the chat sessions. This has been also found in studies of iCBT ([Sanchez-Ortiz et al. \(2011\)](#)). This suggests that a key role of the TSWs was providing support, both by helping the participants engage and not drop out of the program (by working together as a team, and being empathic and nonjudgmental), and supporting the participant's strengths and self-value, by being warm, sympathetic, and by providing hope and encouragement. This very basic function of human support in internet psychotherapies has been acknowledged in the literature (Baumeister et al., 2014; Johansson & Andersson, 2012; Munzinger & Lin, 2014; Richards & Richardson, 2012) and seems very important in order to prevent dropout and work indirectly at symptoms of depression, by offering a positive experience of being cared for and listened to, as well as hope and encouragement for a possibility of change. A qualitative study exploring the role of the therapeutic alliance using data from this same study also identified the "supportive" techniques of praise, warmth and creating a sense of hope, as being important for building a strong alliance (Mortimer et al., under review).

Our second aim was to examine possible connections between technique and the reduction of depressive symptoms. We found that both common factors and psychodynamic techniques predict change in outcome, but through seemingly different

mechanisms. Common factor techniques seem to work on a general level, where more frequent use of common factors techniques throughout treatment was associated with better outcomes in depression – in other words, ‘the more, the better’. Similarly to this finding, Holländare et al., (2016) found that affirming and encouraging behavior were the only therapist behaviours in iCBT for depression that correlated with improvement in depression after treatment and at follow up. It may be that common factor techniques are especially important in online therapies, given that the TSW cannot create warmth or promote a good relationship through facial gestures or body language. Therefore, TSWs working via instant messaging have to be really explicit in demonstrating support and positive regard verbally, in order to form a good alliance that creates a safe environment for the young person to think about difficult emotions and discuss uncomfortable topics. It is perhaps harder to repair therapeutic ruptures in internet-based therapies, so more important to prevent them.

When examining psychodynamic techniques, we found that within a specific dyad, more psychodynamic interventions reported by a TSW predicted subsequent improvement in the participant's symptoms the following week. Although TSWs did not use as many psychodynamic techniques as they used common factors techniques, this finding suggests that the use of these techniques was meaningful and important for the working through of depression. We also found a trend suggesting that more PDT techniques lead to higher adherence, i.e. the degree to which participants engaged with the programme materials, specifically the number of chapters that were opened, and the number of chat-sessions attended .

Since the chat sessions follow reading material about the ‘triangle of feelings’ and its different implications, as well as writing tasks, it seems possible for the TSWs to go quite deep into psychodynamic material in chat sessions, quite quickly. The results of this study suggest that TSWs in this kind of setting should be encouraged to use psychodynamic techniques such as making connections between current situations and the past (item 2 of the MULTI), encouraging the patient to talk about feelings he/she had previously avoided or never expressed (item 6), or talking about the function or purpose that the client’s problem might have (item 12).

This study therefore adds to the evidence from previous studies suggesting that psychodynamic techniques are valuable for therapy with depressed adolescents, even if the total amount of psychodynamic technique being used is relatively low (Ulberg et al., 2021). The results appear to support the findings of a previous study, which showed that interpretations which came after supportive techniques and that were given in a supportive way (both building on the patient's strengths and instilling hope) resulted in better outcome in terms of depressive symptoms and alliance for psychodynamic therapy (Leibovich et al., 2020).

When examining possible mechanisms of change it seems plausible that the use of affect-focused psychodynamic techniques such as encouraging the patient to talk about difficult or avoided feelings led to increased affect experiencing, as has been shown in research on face-to-face psychodynamic therapy (Town et al., 2012). This increased affect experiencing could in turn have been the mediator of symptomatic improvement for the patients (Diener et al., 2007). Another possibility is that the use of psychodynamic techniques led to improved capacity for emotion regulation which was shown to act as a

mechanism of change in iPDT as it drives subsequent changes in depression (Mechler et al., 2020).

### **Strengths and Limitations**

As far as we know, this is the first study to examine the techniques used in text-based chat sessions in internet-based psychotherapy, and we believe there are a number of strengths to the study. The fact that we controlled for general effects of time (i.e. detrending) in the within-person analyses makes the results more robust and strengthens claims of causality in the findings. Moreover, we found no reversed causality indicating that the case was not that improvements in depression predicted use of psychodynamic techniques, also strengthening the pathway between techniques and symptoms. For the between-person effect of common factors, causality cannot be similarly demonstrated. For this finding, it could be the case that TSWs rate higher use of common factors in more successful therapies. Separating between within and between person effects, weekly assessments of the techniques as well as depressive symptoms are other strengths of this study.

Nevertheless, there are a number of reasons why the findings must be treated with caution. One limitation of this study is the relatively small sample size. The small size of the sample did not allow for a systematic exploration of the effects of all the different techniques rated by the TSWs. Another important limitation is that the TSWs rated their own sessions, and so the ratings are subjective and might be different from ratings of an outside observer. A third major limitation is the lack of control group (for example iPDT with no chat sessions, or with support-only chat sessions), that make it more difficult to attribute outcome to psychodynamic techniques in chat sessions.

## **Further Research**

These findings should be replicated in larger studies, also using observer-rated assessment of techniques in order to strengthen these conclusions. Furthermore, this study only focused on the synchronous chat interactions. Future studies should also assess the content and meaning of the asynchronous support given by the TSWs. An RCT comparing iPDT with or without text-based chat sessions and iPDT is also much needed in order to understand the nature of support necessary for good results of iPDT. Furthermore, this study suggests that whilst there is evidence that both iPDT and iCBT are effective, iPDT works in a different way to iCBT, and therefore it will be important to continue to develop and adapt internet-based interventions with a psychodynamic orientation, and to ensure these are available to young people, facilitating patient choice.

## **Conclusion**

For chat-based sessions delivered as part of an iPDT program for depressed adolescents by MSc-level psychology students, the common-factors techniques appear to be the most widely used, and greater use of common factors across treatment was found to predict lower depression scores at the end of treatment. This is in keeping with the iPDT training, which emphasizes the importance of TSWs being supportive, emphasizing alliance-building and promoting the young person's strengths. The findings also suggest that the TSW's use of psychodynamic techniques plays a role in the change process, with an increased use of psychodynamic techniques in one session being associated with improvements in depressive symptoms the following week. This highlights the fact that iPDT seem to work in line with theory, where those mechanisms thought to be important for change in treatment indeed do predict outcome.

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## Unpacking the active ingredients of iPDT

Table 1.

The distribution of the different MULTI scales

	N	Minimum	Maximum	Mean	Std. Deviation
Psychodynamic	165	1	5	2.87	.882
Common Factors	165	3	5	4.61	.465
Behavioral	165	1	5	2.97	1.016
Cognitive	165	1	5	3.24	.950

Table 2.

Within- and between-person effects of techniques on QIDS-A17-SR when controlling for time

	Psychodynamic	Common factors	Cognitive	Behavioral
<b>Fixed effects</b>	Estimate (SE) [95% CI]			
$\gamma_{00}$ (model intercept)	15.85*** (1.18) [13.40, 18.31]	16.18*** (1.22) [13.62, 18.74]	16.6*** (1.18) [13.77, 18.68]	16.34*** (1.18) [13.89, 18.79]
$\gamma_{10}$ (within-person effect, lagged process on outcome)	-0.96* (.42) [-1.80, -.12]	0.17 (0.70) [-1.22, 1.57]	-0.28 (0.36) [-1.00, 0.44]	0.08 (0.35) [-0.62, 0.77]
$\gamma_{20}$ (effect of time on outcome)	-0.49** [-0.82, -0.17]	-0.54** (0.16) [-0.87, -0.21]	-0.54** (0.16) [-0.88, -0.211]	-0.56** (0.16) [-0.90, -0.23]

## Unpacking the active ingredients of iPDT

$\gamma_{01}$ (between-person effect on outcome)	-1.27 [-4.62, 2.08]	-8.23* (3.08) [-14.68, -1.78]	-1.66 (1.51) [-4.82, 1.49]	-1.97 (1.38) [-4.87, 0.93]
<b>Random effects</b>				
$u_{0i}$ (variance intercept)	20.45* (8.42) [9.13, 45.82]	21.83* (9.66) [9.17, 51.97]	19.65* (8.73) [8.23, 46.92]	19.57* (8.59) [8.29, 46.24]
$u_{2i}$ (variance slopes for time)	0.29* (0.14) [0.11, 0.77]	0.29* (0.15) [0.11, 0.78]	0.28 (0.15) [0.09, 0.81]	.30 (0.15) [0.11, 0.82]
Correlation intercept and slopes	-.10 [-0.61, 0.47]	-0.41 (0.28) [-0.80, 0.22]	-.09 (0.35) [-0.65, 0.53]	-0.12 (0.33) [-0.66, 0.49]
$\varepsilon_{it}$ (residual variance)	5.02*** [3.57, 7.05]	5.32*** (0.96) [3.73, 7.59]	5.57*** (1.12) [3.76, 8.26]	5.35*** (1.05) [3.64, 7.85]

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\*  $p \leq .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

NOTE: QIDS-A17-SR, Quick inventory of Depressive Symptomatology Adolescent version Self-Rated