



## Content of client emails in internet-delivered cognitive behaviour therapy: A comparison between two trials and relationship to client outcome



Joelle N. Soucy<sup>a</sup>, Heather D. Hadjistavropoulos<sup>a,\*</sup>, Catherine A. Couture<sup>a</sup>, Victoria A.M. Owens<sup>a</sup>, Blake F. Dear<sup>b</sup>, Nickolai Titov<sup>b</sup>

<sup>a</sup> Department of Psychology, University of Regina, Regina, Canada

<sup>b</sup> CentreClinic, Department of Psychology, Macquarie University, Sydney, Australia

### ARTICLE INFO

#### Keywords:

Internet-delivered cognitive behaviour therapy  
Client e-mails  
Content analysis  
Depression  
Anxiety

### ABSTRACT

Many Internet-delivered cognitive behavioural therapy (ICBT) programs include email communication between clients and therapists as a part of treatment; yet relatively little is known about the nature and impact of this communication. Previous research conducted by Svartvatten et al. (2015) has identified 10 themes in written correspondence by clients accessing ICBT for depression. The current study examined: (1) if previously identified themes in client emails would be present in a shorter ICBT program for depression and anxiety; and (2) whether themes in emails similarly correlated with symptom improvement, lesson completion, and perceptions of working alliance. Using 80 randomly selected clients from a published ICBT trial (ISRCTN42729166; Hadjistavropoulos et al., 2016), client emails (average 5.69 per client) were examined for the presence of the themes reported by Svartvatten et al. (2015) and correlated with symptom improvement, lesson completion, perceptions of working alliance. Although most themes developed by Svartvatten et al. (2015) were identified in client emails, the frequency of themes differed between studies. Most notably, emails in the current study were more often coded as involving *alliance bolstering* (~39% vs. 22% of statements) and *identification of patterns and problem behaviours* (~25% vs. 6% of statements). Greater frequency of *tries alternative behaviour* and *identifies patterns and problem behaviours* were correlated with a greater number of lessons completed. In terms of symptom change, greater frequency of *maladaptive repetitive thinking* and *problems with treatment content* in the emails were correlated with smaller improvements in anxiety, whereas *observes positive consequences* was correlated with larger improvements in anxiety. Similarly, greater frequency of *maladaptive repetitive thinking* was correlated with smaller improvements in depression. Regarding perceptions of working alliance, more frequent statements of *observes positive consequences* was correlated with higher alliance. The research provides clinicians and researchers with an improved understanding of the comparability and meaning of client communication in different ICBT programs. Experimental research is needed to better understand the role of client communication in ICBT.

### 1. Introduction

Anxiety and depressive disorders are common mental health concerns, with lifetime prevalence estimates of 16% and 12%, respectively (Kessler et al., 2009). These conditions are associated with personal suffering and poor quality of life (Baxter et al., 2014). The serious nature of anxiety and depression underscores the importance of efficacious treatment options. Cognitive behavioural therapy (CBT) is an effective form of treating anxiety (Hofmann and Smits, 2008) and depression (Cuijpers et al., 2013) and involves assisting individuals in modifying maladaptive thinking and behaviours. Despite the existence of effective treatment options, such as CBT, a notable treatment gap is

reported (McHugh and Barlow, 2010). Numerous factors contribute to the under-treatment of mental health concerns, including low perceived need for treatment, a desire to manage problems independently, limited finances, time constraints, transportation or mobility challenges, poor access to providers, and concerns about privacy and stigma (Andrade et al., 2014).

Advancements in modern technology have allowed for new approaches to make treatment more accessible. Internet-delivered cognitive behavioural therapy (ICBT) is based on the principles of CBT, and involves providing clients with structured psychoeducational and therapeutic materials in an online format (Andersson and Titov, 2014). ICBT programs may either be therapist-guided or self-guided in nature

\* Corresponding author at: University of Regina, Department of Psychology, 3737 Wascana Parkway, Regina, SK S4S 0A2, Canada.  
E-mail address: [hadjista@uregina.ca](mailto:hadjista@uregina.ca) (H.D. Hadjistavropoulos).

(Andersson et al., 2013). Therapist-guided ICBT programs typically involve clients accessing online therapeutic materials as well as weekly email or telephone exchanges between clients and therapists (Andersson et al., 2013). Conversely, self-guided ICBT involves clients working through online materials during the active treatment period without the assistance of a therapist (Andersson et al., 2013). While some research suggests that both forms of ICBT can be effective when using well-designed interventions combined with monitoring of client outcomes (e.g., Titov et al., 2015a), in general, more favourable effect sizes have been reported for therapist-guided ICBT relative to self-guided ICBT (Baumeister et al., 2014).

Despite an increasing number of studies on therapist-assisted ICBT, our understanding of client communication remains quite unclear, with limited research directed toward this aspect of ICBT. Ascertaining a better understanding of client communication has several potential benefits. First, it assists with improved understanding of a treatment method that is still quite novel and not widely available. Second, examination of client communication could lead to earlier recognition of clients who are at risk of not benefitting or failing to engage in ICBT (Hadjistavropoulos, Nugent, et al., 2016). Third, it may inform clinicians as to what aspects of communication are helpful versus unhelpful and, thus, serve as a guide for future therapists in their written communication with clients.

Of note, understanding client communication in ICBT complements a broader literature that has investigated the impact of expressive emotional writing on individuals' wellbeing. Past research, for instance, has shown that writing about one's thoughts and feelings results in small but significant improvements in wellbeing and reduced levels of depression, anger, and anxiety (Frattaroli, 2006; Pennebaker, 1993). In this literature, writing is often analyzed using linguistic inquiry word count (Pennebaker, 1993), a method designed to analyze language use and categorize written text into categories. To date, the majority of research on client communication in ICBT has been in line with the expressive writing research and examined the use and impact of specific word use in client communication during ICBT. Findings have highlighted that client correspondence is an important element of treatment and is related to client outcome (Dirkse et al., 2015; Van der Zanden et al., 2014). As an example, Dirkse et al. (2015) identified that negative emotion, anxiety, causation, and insight words declined in client emails with therapists during ICBT for generalized anxiety, whereas the use of past tense words increased. Further, Dirkse et al. (2015) found that a decline in negative emotion words (e.g., annoyed, bitter) over treatment strongly correlated with symptom improvement.

Taking a somewhat different approach, Svartvatten et al. (2015) employed a thematic content analysis of communication sent by 29 clients to one of eight therapists during a 12-week ICBT course for depression. In this approach, the focus was on themes rather than on specific words. The treatment provided in the study by Svartvatten et al. consisted of eight online modules that presented psychoeducation on, and strategies to, manage symptoms of depression. Treatment content primarily focused on behavioural activation, and was coupled with weekly homework assignments designed to facilitate learning. Additionally, participants answered questions associated with each module and therapists subsequently provided written correspondence to validate, normalize, and clarify participants' responses to these questions.

Using an inductive and deductive approach, Svartvatten et al. (2015) categorized all client emails and lesson responses into 10 themes in order of frequency: *alliance* (22.3%); *tries alternative behaviour* (20.5%); *chooses alternative behaviour* (11.4%); *avoidance of treatment* (8.2%); *observes positive consequences* (7.6%); *maladaptive repetitive thinking* (7.5%); *problems with techniques and administration* (7.2%); *identifies patterns and problem behaviours* (6.4%); *problems with treatment content* (5.2%); and *confrontational alliance rupture* (3.8%). A positive correlation was found between self-assessed changes in symptoms of depression and statements showing *observing positive consequences*

(Spearman's  $r = 0.49$ ,  $p < .01$ ) and *alliance* (Spearman's  $r = 0.42$ ,  $p < .05$ ). Svartvatten et al. also reported several positive correlations between the number of lessons completed and client behaviours, with *observing positive consequences* (Spearman's  $r = 0.91$ ,  $p < .01$ ) and *trying alternative behaviours* (Spearman's  $r = 0.90$ ,  $p < .01$ ) emerging as the two strongest relationships. The results provide clinicians with a greater understanding of client communication in ICBT and suggest that additional research is warranted on how client communication impacts ICBT and is used by therapists. Svartvatten et al. indicated that therapists could use statements about *alliance* and *observations about positive consequences* as textual indicators of client progress; however, it is important to note that the study conducted by Svartvatten et al. was limited in sample size ( $n = 29$ ) and focused on depression. Thus, additional research is needed to consider whether these findings generalize with larger sample sizes, other clinical presentations (i.e., anxiety), and in different ICBT programs.

The goals of the current study were to extend past research and examine: (1) if themes identified by Svartvatten et al. (2015) would be identified in client emails during a shorter, 5-lesson transdiagnostic ICBT program for depression and anxiety; (2) if these themes would be similarly correlated with symptom improvement and lesson completion; and (3) if these themes would be correlated with self-reported ratings of therapeutic alliance. Understanding the generalizability of themes in written ICBT communication is important clinically, as it provides therapists with valuable information about what to expect when delivering ICBT and the extent to which therapists can expect client communication to be indicative of client outcomes.

## 2. Method

### 2.1. Clients

The current study made use of data from a previously conducted trial of transdiagnostic ICBT for symptoms of anxiety and depression (Hadjistavropoulos, Nugent, et al., 2016). Eligibility criteria for the original trial included: (1) age of 18 or older; (2) residents of Saskatchewan, Canada; (3) experiencing symptoms of anxiety and/or depression; (4) able and comfortable using computers and the internet; (5) willing to provide a physician as an emergency contact; (6) no recent or current problems with psychosis, bipolar disorder, severe alcohol or drug-related problems, or suicidal plan or intent; (7) not currently in regular face-to-face therapy; and (8) consent to participate. Additional information concerning client recruitment and screening can be found in Hadjistavropoulos, Nugent, et al. (2016). Clients completed questionnaires assessing symptoms of anxiety and depression at pre- and post-treatment. Of the 466 individuals who met inclusion criteria and completed the pre-treatment measures, 378 completed the post-treatment measures (81% completion rate). In order to fully examine communication over the course of ICBT, the sample for the current study was derived from the 378 treatment completers. A G\*Power analysis (Faul et al., 2007) using a two-tailed correlation point biserial model revealed that a sample size of 80 participants (alpha level 0.05; power level 0.80) is suitable for detecting medium to large effects. Therefore, a random sample of 80 clients from 378 treatment completers was utilized for the current sample.

### 2.2. Treatment

Clients in the current study were offered the Wellbeing Course through the Online Therapy Unit located at the University of Regina in Saskatchewan, Canada. The Unit ([www.onlinetherapyuser.ca](http://www.onlinetherapyuser.ca)) is government funded and offers ICBT to clients across Saskatchewan, Canada. In addition to providing a service, the Unit delivers education to students and community providers and conducts research designed to improve service delivery. The Unit licensed the Wellbeing Course from Macquarie University in Sydney Australia (see Titov et al., 2015a).

**Table 1**

Client behaviours in Internet-delivered cognitive behaviour therapy identified by Svartvatten et al. (2015) compared to the current study. Svartvatten et al. data reprinted from “A content analysis of client e-mails in guided internet-based cognitive behaviour therapy for depression,” by N. Svartvatten, M. Segerlund, I. Dennbag, G. Andersson, and P. Carlbring, 2015, *Internet Interventions*, 2, p. 124. Copyright 2015 by the Authors.

Category	Definition	Example from Svartvatten et al. (2015)	Example from current study
Alliance	Text expressing the participant's emotional ties in relation to treatment goals, the exercises or the internet therapist.	I believe that this exercise can be useful.	Thank you so much for that response. It was so refreshing for me to hear and it is advice that I will keep to heart.
Avoidance of treatment	Text about the participant not having completed various parts of the treatment, from either a technical or a content-related aspect.	I am behind with respect to week's module.	I apologize for taking so long to complete the questionnaire, school has been hectic!
Chooses alternative behaviour	Text regarding thoughts about implementing a future alternative behaviour or treatment exercise, or alternatively, a text regarding plans that the person made regarding an alternative behaviour or treatment exercise.	I planned to call my friend.	I am going to write a concrete relapse prevention plan. Excellent idea.
Confrontational alliance rupture	Text that indicates an emotional rupture between the participant and the goals, exercises or the therapist.	I have not “found” any alternative behaviour. What do you want me to do?!?! When I sit around at home, I feel worse.	N/A I do find that the very thought of work makes me anxious.
Identifies patterns and problem behaviours	Text in which the participant identifies the relationship between internal and external behaviours and their effect on the participant's affective condition, alternatively, text that identifies avoidance and rumination.	I feel boring, morose and useless.	I have no idea what I did differently that week...I can't find a rhyme or reason to my “symptoms” and sorry to disappoint, but I only have found facts to support that I am pathetic...even doing this online course seems pathetic.
Maladaptive repetitive thinking	Text about the participant's depressive symptoms and their consequences without any suggested solution, or text that expresses mental problem-solving in which the result is uncertain, but contains possibilities of one or more negative outcomes.	When I tried the new behaviours, I discovered it puts me in a better mood. I don't understand where the questionnaire is.	I feel better in all ways when I exercise.
Observes positive consequences	Text that expresses a positive change after the participant tried a specific alternative behaviours or exercise in the treatment.	It is difficult to put a score on a mood in the activity diary.	I've logged on, but can't seem to find these questionnaires, hoping you can help me out with where to find them.
Problems with techniques and administration	Text in which the participant expresses difficulties and problems with techniques relating to the platform, or asks for help with this, or alternatively, reports problems with the administration of the treatment.	I have done the exercises in the module.	-Believe it or not, this course didn't provide me with much information I didn't already have and at times apply.
Problems with treatment content	Text in the form of questions or clarifications from the participant regarding the content of the treatment, or, alternatively, expresses difficulties in filling out or reading the treatment material.		I have been practising the controlled breathing, usually on my way to or from work (I have about a 45 min drive).
Tries alternative behaviour	Text that demonstrates that the participant has completed, or attempted to complete, a specific alternative behaviours or treatment exercise.		

The Wellbeing Course is an 8-week, therapist-guided transdiagnostic ICBT program for symptoms of anxiety and depression. The course consists of five online lessons that present text, visual images, and educational stories that provide information concerning: (1) symptom identification and the cognitive behavioural model; (2) thought monitoring and challenging; (3) de-arousal strategies and pleasant activity scheduling; (4) graduated exposure; and (5) relapse prevention. Information was coupled with lesson summaries and homework assignments. Therapist-guidance consisted of weekly, secure e-mail messaging and/or phone contact. While therapist emails were not standardized, all therapists were provided with the following guidelines: 1) be supportive; 2) ask clients about their progress; 3) provide feedback on symptom improvement; 4) answer client questions; 5) assist with use of skills; 6) reinforce progress and practice of skills; 7) encourage completion of lessons and use of skills; and 8) clarify administrative procedures. Treatment manuals were provided to therapists, and provided examples of responses to common client questions that could be incorporate into therapists' emails where appropriate (e.g., how to identify and challenge a thought). Emails took therapists on average 15 to 20 min to compose. Participants sent on average 5.69 (*SD* = 3.64) emails to their therapists, and received on average 9.86 (*SD* = 1.88) emails from their therapists. Communication was primarily conducted through emails. Phone calls were typically only made if directly requested from the client or if deemed appropriate by therapists (i.e., attempting to reengage a client, client at increased risk of harm). On average, clients received less than one phone call from their

therapist (*M* = 0.65; *SD* = 1.19) over the course of treatment.

### 2.3. Measures

The Generalized Anxiety Disorder-7 items (GAD-7; Spitzer et al., 2006) and the Patient Health Questionnaire-9 items (PHQ-9; Kroenke et al., 2001) were administered at pre- and post-treatment. The GAD-7 is designed to measure severity of general anxiety symptoms over the previous two weeks and involves individuals rating seven statements (e.g., “Worrying too much about different things”) on a scale ranging from 0 (*not at all*) to 3 (*nearly daily*). Total scores range from 0 to 21 and a score of 10 or higher suggests moderate symptoms of anxiety (Spitzer et al., 2006). The GAD-7 has strong psychometric properties (Kroenke et al., 2007), and has been used in online treatment studies (Titov et al., 2013). Cronbach's  $\alpha$  on the GAD-7 at pre-treatment was 0.84. The PHQ-9 is designed to measure severity of depression symptoms over the previous two weeks and involves individuals rating nine statements (e.g., “Little interest or pleasure in doing things”) on a scale from 0 (*nothing at all*) to 3 (*nearly daily*). Total scores range from 0 to 27 and a score of 10 or higher suggests moderate symptoms of depression (Kroenke et al., 2001). The PHQ-9 has been administered over the Internet and has strong psychometric properties (Löwe et al., 2004; Titov et al., 2015a). Cronbach's  $\alpha$  on the PHQ-9 at pre-treatment was 0.85.

In addition to the GAD-7 and PHQ-9, clients completed the Working Alliance Inventory – Short Revised (WAI-SR; Munder et al., 2010) at post-treatment. The WAI-SR is designed to measure perceptions of

therapeutic alliance and involves participants rating 12 statements (e.g., “What I am doing in therapy gives me new ways of looking at my problem”) on a scale from 1 (*seldom*) to 5 (*always*). The scale has been used to measure perceptions of therapeutic alliance in ICBT (e.g., Andersson et al., 2012).

#### 2.4. Coding of client emails

Similar to other studies exploring the generalizability of previously identified statements in ICBT emails (Schneider et al., 2016), a directed content analysis was performed (Hsieh and Shannon, 2005). A directed content analysis employs both inductive and deductive approaches that use pre-existing themes to code the data but allow for the creation of new themes if applicable (Elo and Kyngas, 2008; Hsieh and Shannon, 2005).

Client messages were de-identified by the research team involved in the publication of the original trial (Hadjistavropoulos, Nugent, et al., 2016) prior to analysis in the current study. The content of clients' messages was then coded following an existing scheme developed and tested by Svartvatten et al. (2015) described in Table 1. Message text was imported into NVivo 10, a qualitative coding software. Following a similar protocol to Svartvatten et al., two of the authors (JNS & CAC) first jointly coded emails from one client to become familiar with the coding guide. Of note, the coders were not therapists in the study, and were blind to therapist identity, gender, and age as well as client identity, gender, age, and outcome.

To establish Cohen's Kappa, all emails sent from three additional clients were coded separately to establish reliability; excellent agreement between the raters was established (Kappa = 0.97). This approach allowed the researchers to determine if statements identified by Svartvatten et al. (2015) were present in the dataset and allowed for the creation of new categories if needed. Next, the two researchers independently coded a random sample of 10% of the data (n = 63 emails) to establish reliability for the main dataset. Strong agreement (Kappa = 0.98) was found and the remaining data was independently coded by one of the authors (CAC).

Consistent with Svartvatten et al. (2015), statements coded typically consisted of 1 to 3 sentences. As previously demonstrated in the literature (Schneider et al., 2016), paragraphs were often coded as one statement if the same code was continuous throughout; however, if more than one code appeared within a sentence (e.g., *alliance, avoidance, and maladaptive thinking*), the sentence was coded as multiple statements. Salutations were only coded if they appeared to illustrate alliance between the client and the therapist (e.g., “Thank you for all your assistance, everything you have said is very helpful” rather than “Thanks”).

#### 2.5. Statistical analyses

Descriptive statistics were calculated to describe the demographic characteristics of the sample. The frequency of thematic categories was calculated indicating the number of times clients exhibited specific statements in e-mails to therapists. Using a z-test for proportions, the frequencies of the 10 categories of client statements found in the current study were then compared to the frequencies of statements reported by Svartvatten et al. (2015). Correlations between the frequency of written statements in emails, the number of lessons accessed, the degree of anxiety and depression symptom improvement, and perceptions of working alliance were assessed using Spearman's Rho. Treatment outcome was measured by deriving residual change scores for symptoms of anxiety (i.e., GAD-7 scores) and depression (i.e., PHQ-9 scores) from pre- to post-treatment using the formula  $Z_2 - (Z_1 * R_{12})$ . As described by Schneider et al. (2016), a positive residual change score represents symptom deterioration while a negative change score represents symptom improvement. Alpha level was set to  $p < .01$  in an attempt to account for the possibility that significant correlations may

have occurred by chance because of multiple correlations being examined. No missing data techniques were required, given that only clients with completed post-treatment data on the GAD-7 and PHQ-9 were analyzed in the current study. Of note, data on the WAI-SR was only available for 69 out of the 80 clients but missing data techniques were not employed; rather correlations between perceptions of working alliance and number of statements were run for the subsample of clients.

### 3. Results

#### 3.1. Demographics and treatment outcomes

Clients' average age was 39.28 (SD = 11.781). The majority of clients were Caucasian (n = 73; 91.25%), female (n = 53; 66%), in a marital or common law relationship (n = 55; 68.75%), and residing in a city with a population over 200,000 (n = 44; 55%). Over half the sample reported obtaining a university level education (n = 43; 53.75%), with most clients indicating current employment (n = 55; 68.75%). Over half of the sample was not accessing another form of psychological services (n = 45; 56.96%) and over half reported taking medication at the time of treatment (n = 41; 51.25%).

Pre-treatment GAD-7 (M = 12.35; SD = 4.70) and PHQ-9 (M = 12.53; SD = 5.68) scores suggest moderate symptoms of anxiety and depression, respectively, prior to treatment. Post-treatment GAD-7 (M = 5.33; SD = 4.27) and PHQ-9 (M = 5.65; SD = 4.87) scores suggest minimal symptoms of anxiety and depression, respectively, following completion of treatment. Further, the majority of participants accessed all five lessons (n = 70; 87.5%).

#### 3.2. Frequency of and correlations among client behaviours

A total of 2785 meaningful units were coded in the current study into one of the 10 categories of client behaviours identified by Svartvatten et al. (2015). As illustrated in Table 2, the relative frequencies of the clients' statements in the current study were as follows:

**Table 2**  
Comparison of percentage of original client behaviour categories in current study to Svartvatten et al. (2015) study.  
Svartvatten et al. data reprinted from “A content analysis of client e-mails in guided internet-based cognitive behaviour therapy for depression,” by N. Svartvatten, M. Segerlund, I. Dennbåg, G. Andersson, and P. Carlbring, 2015, *Internet Interventions*, 2, p. 124. Copyright 2015 by the Authors.

Client behaviours	Current study		Svartvatten et al. (2015) study		Z score
	N	Percentage	N	Percentage	
Alliance	1086	38.99	391	22.3	-11.71*
Avoidance	91	3.27	144	8.2	7.31*
Chooses alternative behaviour	151	5.42	200	11.4	7.34*
Confrontational alliance rupture	0	0	66	3.8	10.31*
Identifies patterns and problem behaviours	698	25.06	113	6.4	-15.95*
Maladaptive repetitive thinking	36	1.29	131	7.5	10.76*
Observes positive consequences	315	11.32	133	7.6	-4.11*
Problems with techniques and administration	52	1.87	127	7.2	9.05*
Problems with treatment content	41	1.47	91	5.2	7.25*
Tries alternative behaviour	315	11.31	359	20.5	8.44*
Total behaviours	2785		1755		

\* p < .05.



alliance (38.99%;  $M = 13.58$ ;  $SD = 12.26$ ); identifies patterns and problem behaviours (25.06%;  $M = 8.73$ ;  $SD = 9.88$ ); observes positive consequences (11.32%;  $M = 3.94$ ;  $SD = 5.56$ ); tries alternative behaviour (11.31%;  $M = 3.94$ ;  $SD = 5.26$ ); chooses alternative behaviour (5.42%;  $M = 1.89$ ;  $SD = 3.76$ ); avoidance (3.27%;  $M = 1.14$ ;  $SD = 1.64$ ); problems with techniques and administration (1.87%;  $M = 0.65$ ;  $SD = 1.17$ ); problems with treatment content (1.47%;  $M = 0.51$ ;  $SD = 1.41$ ); and maladaptive repetitive thinking (1.29%;  $M = 0.45$ ;  $SD = 1.49$ ). No statements were coded as *confrontational alliance rupture*, and no new categories were created.

The frequency of the 10 categories reported in the current study were compared to the frequencies reported by Svartvatten et al. (2015) to determine if frequency of client statements in the current study were comparable. As illustrated in Table 2, there were statistically significant differences in the frequencies of all 10 categories between the two studies. Statements coded as *alliance*, *identifies patterns and problem behaviours*, and *observes positive consequences* were more common in the current study, whereas all other statements were more commonly reported by Svartvatten et al. (2015).

### 3.3. Correlations between client behaviours, outcomes, and treatment completion

Table 3 describes correlations between the frequency of client statements across all emails, the number of lessons completed, the degree of improvement from pre- to post-treatment on the GAD-7 and the PHQ-9, and perceptions of working alliance on the WAI-SR. Regarding treatment adherence, greater frequency of statements that reflect *tries alternative behaviour* ( $p = .001$ ) and *identifies patterns and problem behaviours* ( $p = .003$ ) were correlated with more lessons completed. More frequent statements of *maladaptive repetitive thinking* ( $p = .003$ ) and *problems with treatment content* ( $p = .010$ ) were associated with smaller improvements on symptoms of anxiety. Conversely, more frequent statements of *observes positive consequences* ( $p = .010$ ) was correlated with larger improvements in anxiety. In terms of depression, greater frequency of *maladaptive repetitive thinking* ( $p = .002$ ) was associated with smaller symptom improvements. Regarding perceptions of working alliance, more frequent statements of *observes positive consequences* ( $p = .010$ ) was correlated with higher alliance. No other significant differences were found.

## 4. Discussion

To further understand therapist-guided ICBT, we sought to characterize the nature of client emails with a therapist in a brief,

transdiagnostic ICBT program for anxiety and depression. Specifically, we looked to confirm whether client email statements were similar in nature and frequency to those reported in a study of ICBT for depression (Svartvatten et al., 2015). Finally, we aimed to elucidate whether the frequency of various types of client statements in email correspondence correlated with treatment outcome, adherence, and perceptions of working alliance. This type of process research is important to assist clinicians in understanding client experiences with ICBT, and to examine the extent to which client communication is reliably related to client engagement and outcomes. Clinical process outcome research is regarded as a complementary to experimental research (Elliot, 2010).

In the current study, client statements were most often coded as related to *alliance building* (38.99%), *identifying patterns and problem behaviours* (25.06%) or *observing positive consequences* (11.31%). Other types of statements that have been described in past research by Svartvatten et al. (2015), including *avoidance*, *chooses alternative behaviour*, *maladaptive repetitive thinking*, and *describing problems with techniques and administration*. These statement types were present in the current study, although to a lesser degree (1.29–5.42% of emails). *Confrontational alliance rupture* was the only behaviour that was not observed in the current sample. The results highlight the commonalities of client communication across ICBT studies in that similar themes emerged. Nevertheless, the frequency with which clients bring up topics to their therapists differs, suggesting that variations among different ICBT programs exists. One potential implication of the finding is that when publishing research on ICBT, it may prove helpful for researchers to more clearly describe the nature of client communication to better understand similarities and differences across trials.

In terms of most notable differences, almost 40% of the statements in the current study were coded as *alliance building*, a much larger portion (22%) than reported by Svartvatten et al. (2015). Additionally, approximately a quarter of statements were related to *identifying patterns and problem behaviours* in the current study compared to only a very small percentage (6%) in the study by Svartvatten et al. Other differences, although significant, were not as large. Svartvatten et al. found slightly greater frequency of *avoidance*, *choosing alternative behaviours*, *confrontational alliance*, *maladaptive repetitive thinking*, and mention of *problems with techniques and administration* than the current study. On the other hand, we observed slightly more statements reflecting *observing positive consequences*.

In the current study, we found significant relationships between the number of lessons completed and the frequency of client statements about *tries alternative behaviour* and *identifies patterns and problem behaviours*. Although Svartvatten et al. (2015), also reported a strong correlation between *tries alternative behaviour* and treatment adherence,

**Table 3**  
Correlations (Spearman's rho) between client behaviours and symptom improvement and treatment adherence.

Theme category	Residualized change scores for PHQ-9 (p value)	Residualized change scores for GAD-7 (p value)	Lessons completed (p value)	Perceptions of working alliance (p value)
Alliance	-0.11 (.326)	-0.16 (.144)	0.16 (.141)	0.20 (.099)
Avoidance of treatment	0.16 (.166)	0.08 (.497)	-0.09 (.454)	-0.26 (.028)
Chooses alternative behaviour	0.15 (.173)	0.04 (.700)	0.15 (.195)	0.01 (.973)
Confrontational alliance rupture	-	-	-	-
Identifies patterns and problem behaviours	-0.02 (.858)	-0.11 (.343)	0.33 (.003)*	0.16 (.196)
Maladaptive repetitive thinking	0.35 (.002)*	0.33 (.003)*	-0.01 (.945)	-0.08 (.501)
Observes positive consequences	-0.18 (.107)	-0.29 (.010)*	0.20 (.075)	0.31 (.010)*
Problems with techniques and administration	-0.01 (.917)	0.09 (.419)	0.09 (.446)	0.13 (.271)
Problems with treatment content	0.19 (.088)	0.28 (.011)*	-0.01 (.973)	-0.28 (.041)
Tries alternative behaviour	0.04 (.750)	-0.06 (.583)	0.35 (.001)*	0.26 (.029)

Note. PHQ-9 = Patient Health Questionnaire, 9-item; GAD-7 = Generalized Anxiety Disorder, 7-items; Residualized change scores from pre- to post-treatment were calculated using the formula  $Z_2 - (Z_1 * R_{12})$ . A positive correlation indicates a given behaviour was associated with symptom deterioration. A negative correlation indicates a behaviour was associated with symptom improvement.

\*  $p < .01$ .

we did not similarly find relationships between the number of lessons completed and the frequency of client statements about *alliance*, *observes positive consequences*, *avoidance of treatment*, and *chooses alternative behaviour*. These findings highlight the importance of clients engaging in the treatment content across ICBT trials. We did not find the same correlations Svartvatten et al. reported between treatment outcome, as measured on the PHQ-9, and statements regarding *alliance* and *observes positive consequences*. Instead, we found that clients who experience smaller changes in symptoms of depression from pre- to post-treatment expressed greater *maladaptive repetitive thinking*. Regarding symptoms of anxiety, we found clients who experienced smaller changes in symptoms from pre- to post-treatment expressed more frequent *problems with the treatment content* and greater *maladaptive repetitive thinking*. Conversely, we found that clients who experienced greater changes in symptoms of anxiety expressed greater statements that reflected *observing a positive consequence*. Extending beyond Svartvatten et al., we found that more frequent statements of *observes positive consequences* was correlated with higher perceptions of working alliance. Lack of correlations between perceptions of working alliance and client statements in ICBT could reflect that therapeutic alliance ratings are very high in ICBT (Hadjistavropoulos, Pugh, et al., 2016). Consequently, finding lack of relationships between these constructs is not that surprising.

There are many variables that could explain differences between studies. Therapists in the study by Svartvatten et al. (2015) were Masters level students, whereas therapists in the current study were typically registered psychologists or social workers. It is possible that therapists' qualifications may have resulted in small differences in study results; however, we acknowledge that there is a body of research suggesting that higher level of therapist qualification is not related to improved outcome (e.g., Baumeister et al., 2014). Therefore, it is plausible that the varying levels of therapist qualifications may not account for study differences. Although on the surface, therapist instructions appeared similar across studies (e.g., in both studies therapists were to encourage, clarify, normalize), it is possible that therapist support was different between the studies, wherein variation in statements made by therapists could alter the content of reciprocal client messages. In the current study, therapists were specifically encouraged to be supportive and engaging (Hadjistavropoulos, Nugent, et al., 2016), thus, clients may have been reciprocating the actions of their therapists in emails. Another difference is that clients in the current study were not required to submit homework and, therefore, communication with the therapist was largely dependent on what the client decided to share. In contrast, Svartvatten et al. had clients complete regular homework assignments. Therapists were specifically instructed to spend ~15 min providing feedback on clients' homework, which may explain why clients in Svartvatten et al.'s study were more likely to report *trying alternative behaviour* than in the current study. Other differences may relate to treatment content, as clients in Svartvatten et al.'s study were primarily exposed to information about behavioural activation, whereas clients in the current study were presented with greater variability of information. The Wellbeing Course includes information on behavioural activation in addition to the cognitive behavioural model, cognitive restructuring, exposure, and breathing (Titov et al., 2015b). It is possible these content differences resulted in clients in the current study being more likely to *identify patterns and problem behaviours*, as they were exposed to a greater breadth of CBT strategies relative to clients in the study by Svartvatten et al. In general, the limited consistency of findings across studies suggests that, without future research, it is premature for clinicians to use client statements to predict adherence and outcomes. Future research is ultimately needed in order for client communication to be used in a meaningful way in clinical practice.

There are a number of limitations to the current study that warrant consideration. Importantly, differences between the current study and the study conducted by Svartvatten et al. (2015) limit the ability of the

current researchers to directly compare findings. Such differences include sample size, target population, and coding procedures. For example, the current study worked within the context of a pre-existing framework of themes generated by Svartvatten et al. While the approach taken in the current study allowed for the emergence of new themes if needed, it is important to acknowledge that the findings may have differed to a greater degree had we conducted the content analysis without attention to the study by Svartvatten et al. Further, many of the categories identified by Svartvatten et al. have relatively broad definitions. It is possible that narrower categories could yield different results. As previously reported in the literature (e.g., Schilling, 2006; Svartvatten et al., 2015), we did not attend to what clients did not communicate, which could be as important as what clients choose to share. The approach of counting the frequency of statements in emails also represents only one method of assessing client behaviours in emails. Another approach might be for coders to attend more to the strength or depth of the statements than a pure frequency count. It must, therefore, be acknowledged that it is possible the coders may have misinterpreted the meaning of statements. For instance, a statement that expresses a missed deadline could be interpreted as *avoiding treatment*; yet, this could also reflect a client who is *identifying patterns and problem behaviour* (Schilling, 2006). The current study is also correlational rather than experimental in nature and, thus, there can be no cause derived from the current findings. It is also plausible that lack of correlations could potentially be related to lack of variability in client outcomes. Lastly, we acknowledge that multiple correlations were examined and, thus, the possibility exists that some correlations may have occurred by chance despite using a more conservative alpha level ( $p < .01$ ).

The current study provides important avenues for research. Future research should first seek to analyze client communications without referring to pre-existing themes to elucidate whether similar themes and relationships would emerge without following an existing framework. As the current study cannot infer causation, future research is also warranted to discover whether providing clients with instructions on what to write to therapists could facilitate greater change in symptoms, such as having clients focus on engaging in reflection rather than in ruminative thinking. In the future, it would be beneficial to explore whether therapists can use the presence of *maladaptive repetitive thinking* and *problem with treatment content* in emails to identify clients who are at risk of poorer outcomes. Additionally, in future studies, it may prove fruitful to examine the relationship between client statements and long-term outcomes beyond pre-post treatment changes. As suggested by Svartvatten et al. (2015), further analyses may explore whether client text at the beginning, middle, or end of treatment are more predictive of outcomes. There may also be a place for micro-analytic sequential process research that investigates the relationship between client communication and therapist communication (Elliot, 2010). This type of research could examine the direct influence of key therapist responses (e.g., empathy) on client responses (e.g., trying new behaviour) and vice versa. Further study of the relationship between the quality of messages sent from therapists to clients and client communication could also be valuable in an attempt to elucidate whether therapists' statements predict client behaviours in ICBT correspondence. Finally, it is possible that if working alliance was measured on a weekly basis throughout ICBT and correlated with concurrent weekly communication, we may see significant relationships between what clients write and what is stated in emails. Extending beyond the scope of client outcomes, future research may seek to explore the utility of written correspondence in conducting risk assessments in ICBT. There is a body of literature to suggest that, through machine learning algorithms, written communication can be used to assess an individual's level of suicide risk (Braithwaite et al., 2016; Poulin et al., 2014).

#### 4.1. Conclusions

The findings from the current study provide important insight into client communication in ICBT by further elucidating for future therapists what clients typically discuss while participating in ICBT. The current results highlight that the content of what clients write about is similar across differing ICBT programs yet, varies in frequency, as well as relationship to adherence and outcomes, although future research is needed to confirm that similar results would emerge without following an existing coding framework. The study serves to highlight that themes derived by Svartvatten et al. (2015) show promise for understanding how clients are engaged with ICBT. Results also suggest that researchers should in the future consider improving their descriptions of client communication in order for the field to advance.

#### Conflict of interest

None.

#### Acknowledgement

**Funding Source:** This work was supported by funding provided by the Canadian Institutes of Health Research (reference number 293379), Saskatchewan Health Research Foundation, and Rx & D Health Research Foundation. Funders had no involvement in the study design, collection, analysis, or interpretation of the data. The authors would like to acknowledge research staff, therapists and clients associated with the Online Therapy Unit at the University of Regina. Furthermore, the authors would like to acknowledge Dr. Nick Titov and Dr. Blake Dear from Macquarie University for the use of the Wellbeing Course.

#### References

- Andersson, G., Titov, N., 2014. Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry* 13, 4–11. <http://dx.doi.org/10.1002/wps.20083>.
- Andersson, G., Paxling, B., Wiwe, M., Vernmark, K., Felix, C.B., Lundborg, L., Carlbring, P., 2012. Therapeutic alliance in guided internet-delivered cognitive behavioural treatment of depression, generalized anxiety disorder and social anxiety disorder. *Behav. Res. Ther.* 50, 544–550. <http://dx.doi.org/10.1016/j.brat.2012.05.003>.
- Andersson, G., Carlbring, P., Ljótsson, B., Hedman, E., 2013. Guided internet-based CBT for common mental disorders. *J. Contemp. Psychother.* 43, 223–233. <http://dx.doi.org/10.1007/s10879-013-9237-9>.
- Andrade, L.H., Alonso, J., Mneimneh, Z., Wells, J., Al-Hamzawi, A., Borges, G., Levinson, D., 2014. Barriers to mental health treatment: results from the WHO World Mental Health surveys. *Psychol. Med.* 44 (6), 1303–1317. <http://dx.doi.org/10.1017/S0033291713001943>.
- Baumeister, H., Reichler, L., Munzinger, M., Lin, J., 2014. The impact of guidance on Internet-based mental health interventions—a systematic review. *Internet Interv.* 1, 205–215. <http://dx.doi.org/10.1016/j.invent.2014.08.003>.
- Baxter, A.J., Vos, T., Scott, K.M., Ferrari, A.J., Whiteford, H.A., 2014. The global burden of anxiety disorders in 2010. *Psychol. Med.* 44, 2363–2374. <http://dx.doi.org/10.1017/S0033291713003243>.
- Braithwaite, S.R., Giraud-Carrier, C., West, J., Barnes, M.D., Hanson, C.L., 2016. Validating machine learning algorithms for twitter data against established measures of suicidality. *JMIR Ment. Health* 3, e21. <http://dx.doi.org/10.2196/mental.4822>.
- Cuijpers, P., Berking, M., Andersson, G., Quigley, L., Kleiboer, A., Dobson, K.S., 2013. A meta-analysis of cognitive-behavioural therapy for adult depression, alone and in comparison with other treatments. *Can. J. Psychiatr.* 58 (7), 376–385. <http://dx.doi.org/10.1177/070674371305800702>.
- Dirkse, D., Hadjistavropoulos, H.D., Hesser, H., Barak, A., 2015. Linguistic analysis of communication in therapist-assisted internet-delivered cognitive behavior therapy for generalized anxiety disorder. *Cogn. Behav. Ther.* 44 (1), 21–32. <http://dx.doi.org/10.1080/16506073.2014.952773>.
- Elliot, R., 2010. Psychotherapy change process research: realizing the promise. *Psychother. Res.* 20, 123–135. <http://dx.doi.org/10.1080/10503300903470743>.
- Elo, S., Kyngas, H., 2008. The qualitative content analysis process. *J. Adv. Nurs.* 62, 107–115. <http://dx.doi.org/10.1111/j.1365-2648.2007.04569.x>.
- Faul, F., Erdfelder, E., Lang, A.-G., Buchner, A., 2007. G\*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav. Res. Methods* 39 (2), 175–191. <http://dx.doi.org/10.3758/BF03193146>.
- Frattaroli, J., 2006. Experimental disclosure and its moderators: a meta-analysis. *Psychol. Bull.* 132, 823–865. <http://dx.doi.org/10.1037/0033-2909.132.6.823>.
- Hadjistavropoulos, H.D., Nugent, M., Alberts, N., Staples, L., Dear, B., Titov, N., 2016. Transdiagnostic Internet-delivered cognitive behaviour therapy in Canada: an open trial comparing results of a specialized online clinic and nonspecialized community clinics. *J. Anxiety Disord.* 42, 19–29. <http://dx.doi.org/10.1016/j.janxdis.2016.05.006>.
- Hadjistavropoulos, H.D., Pugh, N., Hesser, H., Andersson, G., 2016. Therapeutic alliance in therapist-assisted Internet-delivered cognitive behavior therapy for depression and anxiety. *Clin. Psychol. Psychother.* 24, 451–461.
- Hofmann, S.J., Smits, J.A.J., 2008. Cognitive-behavioral therapy for adult anxiety disorders: a meta-analysis of randomized placebo-controlled trials. *J. Clin. Psychiatry* 69, 621–632.
- Hsieh, H.F., Shannon, S.E., 2005. Three approaches to qualitative content analysis. *Qual. Health Res.* 15, 1277–1288. <http://dx.doi.org/10.1177/1049732305276687>.
- Kessler, R.C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., ... Wang, P.S., 2009. The global burden of mental disorders: an update from the WHO World Mental Health (WMH) Surveys. *Epidemiol. Psychiatr. Sci.* 18, 23–33. <http://dx.doi.org/10.1017/S1121189X00001421>.
- Kroenke, K., Spitzer, R.L., Williams, J.B.W., 2001. The PHQ-9: validity of a brief depression severity measure. *J. Gen. Intern. Med.* 16 (9), 606–613. <http://dx.doi.org/10.1046/j.1525-1497.2001.016009606.x>.
- Kroenke, K., Spitzer, R.L., Williams, J.W., Monahan, P.O., Löwe, B., 2007. Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Ann. Intern. Med.* 146 (5), 317–325. <http://dx.doi.org/10.7326/0003-4819-146-5-200703060-00004>.
- Löwe, B., Spitzer, R.L., Gräfe, K., Kroenke, K., Quenter, A., Zipfel, S., Herzog, W., 2004. Comparative validity of three screening questionnaires for DSM-IV depressive disorders and physicians' diagnoses. *J. Affect. Disord.* 78 (2), 131–140. [http://dx.doi.org/10.1016/S0165-0327\(02\)00237-9](http://dx.doi.org/10.1016/S0165-0327(02)00237-9).
- McHugh, R.K., Barlow, D.H., 2010. The dissemination and implementation of evidence-based psychological treatments. A review of current efforts. *Am. Psychol.* 65, 73–84. <http://dx.doi.org/10.1037/a0018121>.
- Munder, T., Wilmers, F., Leonhart, R., Linster, H.W., Barth, J., 2010. Working Alliance Inventory-Short Revised (WAI-SR): psychometric properties in outpatients and inpatients. *Clin. Psychol. Psychother.* 17, 231–239.
- Pennebaker, J.W., 1993. Putting stress into words: health, linguistic, and therapeutic implications. *Behav. Res. Ther.* 31, 539–548. [http://dx.doi.org/10.1016/0005-7967\(93\)90105-4](http://dx.doi.org/10.1016/0005-7967(93)90105-4).
- Poulin, C., Shiner, B., Thompson, P., Vepstas, L., Young-Xu, Y., Goertzel, B., ... McAllister, T., 2014. Predicting the risk of suicide by analyzing the text of clinical notes. *PLoS One* 9 (1), e85733. <http://dx.doi.org/10.1371/journal.pone.0085733>.
- Schilling, J., 2006. On the pragmatics of qualitative assessment. *Eur. J. Psychol. Assess.* 22 (1), 28–37. <http://dx.doi.org/10.1027/1015-5759.22.1.28>.
- Schneider, L.H., Hadjistavropoulos, H.D., Faller, Y.N., 2016. Internet-delivered cognitive behaviour therapy for depressive symptoms: an exploratory examination of therapist behaviours and their relationship to outcome and therapeutic alliance. *Behav. Cogn. Psychother.* 44 (6), 625–639. <http://dx.doi.org/10.1017/S1352465816000254>.
- Spitzer, R.L., Kroenke, K., Williams, J.B., Löwe, B., 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch. Intern. Med.* 166 (10), 1092–1097. <http://dx.doi.org/10.1001/archinte.166.10.1092>.
- Svartvatten, N., Segerlund, M., Denhag, I., Andersson, G., Carlbring, P., 2015. A content analysis of client e-mails in guided internet-based cognitive behavior therapy for depression. *Internet Interv.* 2 (2), 121–127. <http://dx.doi.org/10.1016/j.invent.2015.02.004>.
- Titov, N., Dear, B.F., Johnston, L., Lorian, C., Zou, J., Wootton, B., Rapee, R.M., 2013. Improving adherence and clinical outcomes in self-guided internet treatment for anxiety and depression: randomised controlled trial. *PLoS One* 8 (7), e62873.
- Titov, N., Dear, B.F., Staples, L.G., Bennett-Levy, J., Klein, B., Rapee, R.M., et al., 2015a. MindSpot Clinic: an accessible, efficient, and effective online treatment service for anxiety and depression. *Psychiatr. Serv.* 66 (10), 1034–1050. <http://dx.doi.org/10.1176/appi.ps.201400477>.
- Titov, N., Dear, B.F., Staples, L.G., Terides, M.D., Karin, E., Sheehan, J., et al., 2015b. Disorder-specific versus transdiagnostic and clinician-guided versus self-guided treatment for major depressive disorder and comorbid anxiety disorders: a randomized controlled trial. *J. Anxiety Disord.* 35, 88–102. <http://dx.doi.org/10.1016/j.janxdis.2015.08.002>.
- Van der Zanden, R., Curie, K., Van Londen, M., Kramer, J., Steen, G., Cuijpers, P., 2014. Web-based depression treatment: associations of clients' word use with adherence and outcome. *J. Affect. Disord.* 160, 10–13. <http://dx.doi.org/10.1016/j.jad.2014.01.005>.