Do counselor techniques predict quitting during smoking cessation treatment? A component analysis of telephone-delivered Acceptance and Commitment Therapy

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ABSTRACT

No studies to date have examined the effect of counselor techniques on smoking cessation over the course of treatment. To address this gap, we examined the degree to which the use of specific Acceptance and Commitment Therapy (ACT) counseling techniques in a given session predicted smoking cessation reported at the next session. The data came from the ACT arm of a randomized controlled trial of a telephone-delivered smoking cessation intervention. Trained raters coded 139 counseling sessions across 44 participants. The openness, awareness and activation components of the ACT model were rated for each telephone counseling session. Multilevel logistic regression models were used to estimate the predictive relationship between each component during any given telephone session and smoking cessation at the following telephone session. For every 1-unit increase in counselors' use of openness and awareness techniques there were 42% and 52% decreases in the odds of smoking at the next counseling session, respectively. However, there was no significant predictive relationship between counselors' use of activation techniques and smoking cessation. Overall, results highlight the theoretical and clinical value of examining therapists' techniques as predictors of outcome during the course of treatment.

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With 42 million cigarette smokers in the US (US Department of Health and Human Services, 2014), and 1.2 billion smokers worldwide (Mackay, Eriksen, & Shafey, 2006), smoking related deaths currently top 5 million per year, with a projected doubling to 10 million by 2025 (Hatsukami, Stead, & Gupta, 2008). The development of effective behavioral interventions to address tobacco addiction is thus a major public health need. Unfortunately, although there has been considerable innovation in pharmacotherapeutic interventions for smoking cessation over the past 25 years, behavioral interventions have seen little change during this time (Mottillo et al., 2009). Moreover, studies show that across different modalities of delivery, behavioral interventions help only 20% of smokers quit smoking (Lancaster & Stead, 2005; Stead & Lancaster, 2005; Stead, Perera, & Lancaster, 2006). Thus, innovations in behavioral interventions for smoking cessation are long overdue. One way to innovate is to investigate process-level predictors of treatment outcome in order to learn which

processes hold promise for improving quit rates (e.g., Kazdin, 2007; Murphy, Cooper, Hollon, & Fairburn, 2009; Paul, 1969).

To date, the analyses of process-level predictors have focused on the study of *participant*-level processes. For example, in the smoking cessation literature, studies have shown that quit smoking outcomes were mediated by individuals' self-reported self-efficacy (e.g., Bricker, Liu, et al., 2010), cravings and positive affect (e.g., Bolt, Piper, Theobald, & Baker, 2012; McCarthy et al., 2008). Another study found that quitline counseling had an effect on smoking abstinence by increasing individuals' confidence and reducing perceived difficulty quitting (McCarthy et al., 2010). While valuable to the field, the critical limitation of this approach is that it leaves out the role of an important manipulable variable on treatment outcomes — variations in *counselor*-level processes. Variations in counselor-level processes are typically ignored in the analysis of randomized controlled trials that use manual-guided interventions. Therefore examining co-variation between the level of use of counselor strategies and treatment outcomes could be of great value for treatment development purposes.

With a few exceptions (e.g., Calero-Elvira, Froján-Parga, Ruiz-Sancho, & Alpañés-Freitag, 2013), process analysis of counselor-level behavior are rare in the cognitive behavioral literature.

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A notable exception is counselor-level process analyses of Motivational Interviewing (MI). For example, observer ratings of MI counselor techniques predicted relevant client behaviors (e.g., change talk) in alcohol (Glynn & Moyers, 2010), pathological gambling (Hodgins, Ching, & McEwen, 2009), illicit drug use (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003), cocaine dependence (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008) and smoking cessation interventions (Boardman, Catley, Grobe, Little, & Ahluwalia, 2006; Catley et al., 2006).

Although the degree of use of some therapeutic techniques has been directly linked with some treatment outcomes (e.g., McCambridge, Day, Thomas, & Strang, 2011), no study to date examined smoking cessation as the treatment outcome. Furthermore, to our knowledge there have been no counselor-level process analyses of Acceptance and Commitment Therapy (ACT) —an innovative intervention with the promise of improving quit rates of smoking cessation programs. ACT is a transdiagnostic model that has been utilized in a variety of populations (e.g., Bach & Hayes, 2002; Lillis, Hayes, Bunting, & Masuda, 2009; Luoma, Kohlenberg, Hayes, & Fletcher, 2012), including in the treatment of tobacco addiction (Bricker, Mann, Marek, Liu, & Peterson, 2010; Bricker, Wyszynski, Comstock, & Heffner, 2013; Gifford et al., 2004, 2011). ACT aims to increase psychological flexibility by providing clients with tools to identify their core values and strengthen their ability to experience uncomfortable thoughts, feelings and physical sensations while engaging in values-driven behaviors.

In order to foster psychological flexibility, ACT interventions are designed to include techniques targeted at the following six processes: acceptance, defusion, present moment awareness, self-as-context, values and commitment. Acceptance and defusion techniques are conceptualized as the "openness" component; present moment and self-as-context as the "awareness" component; and finally, values and commitment as the "activation" component. This tripartite categorization has been described as the "open, aware and active" framework (Hayes, Villatte, Levin, & Hildebrandt, 2011). Table 1 includes a brief description of these processes, although a more detailed account of them can be found elsewhere (see, for example, Hayes, Strosahl, & Wilson, 2011).

In a previous issue of this journal, Hesser, Westin, Hayes, and Andersson (2009) examined the content of participants' verbal statements while receiving an Acceptance and Commitment Therapy (ACT) intervention for tinnitus. Participants' statements were coded to examine the degree to which they represented two core processes in ACT: willingness to experience the natural flow of thoughts, feelings and physical sensations (acceptance) and the ability to recognize thoughts and images as just words and pictures (defusion) and not as external events (Hayes, Strosahl, & Wilson, 2011). The authors found that the extent to which participants made acceptance and defusion statements during therapy predicted long term improvements in distress and functional impairment due to tinnitus. As pointed out by Hesser et al. (2009), a key limitation of this study was that it did not account for what elements of the intervention might have influenced those verbal statements, suggesting that future studies should examine the role of counseling techniques as agents of treatment outcome. A second limitation to this study was that it targeted a limited range of ACT processes, since it focused on the openness component but omitted both the awareness (also known as mindfulness) and activation components of ACT.

In summary, although previous work in the MI literature has examined treatment components of behavioral interventions for addiction, there is a gap in the MI and ACT literature on the predictive role of counselor behaviors with regards to smoking cessation outcomes. The current study addresses this gap by examining specific ACT counseling techniques as predictors of between-session smoking cessation. Consistent with ACT's theoretical model, we hypothesize that higher levels of counselor use of openness, awareness and activation components of ACT prospectively predict lower probabilities of smoking at the following counseling session. According to the ACT model these three treatment components should jointly influence treatment outcomes, so we do not hypothesize specific ordering effects of such components. By examining these questions, this study will advance our understanding of the counselor-level processes of change in behavioral interventions for smoking cessation.

Method

Overview of parent trial and participants

The aim of the parent trial was to test the effectiveness of two telephone-delivered interventions for smoking cessation (ACT vs. standard telephone quitline counseling), each delivered in combination with Nicotine Replacement Therapy (NRT), in a two-arm randomized controlled pilot trial. Results of this pilot trial showed that the ACT intervention was feasible, more acceptable and had promising smoking cessation outcomes as compared to standard quitline counseling (Bricker, Bush, Zbikowski, Mercer, & Heffner, 2014). After informed consent, participants were randomized to each treatment condition using a stratified procedure that made assignments based on quit attempts in the past 12 months (yes/no) and smoking within the first 5 min of waking (yes/no). Participants were uninsured callers to the South Carolina State Quitline (SCSQL). Having a sample of uninsured SCSQL callers achieved the study goal of including a significant fraction of African Americans and individuals with lower socio-economic status. Both subgroups are important because of their historically low quit rates. The SCSQL is operated by Alere, a US-based company that provides smoking cessation services for 28 state quitlines.

Inclusion criteria: (a) 18 years of age or older, (b) daily smoking for at least the past 12 months, (c) desire to quit smoking in the following 30 days, (d) able to speak and read in English, (e) medically eligible to receive NRT, (e) not participating in other smoking cessation treatments. Among the 59 participants randomized to the ACT condition, 51 (86%) participated in any calls, and 44 (75%) had more than one call (which was required for this predictive session-to-session analysis). These telephone counseling participation rates are at least as good as those of other quit smoking counseling interventions (Stead, Hartmann-Boyce, Perera, & Lancaster, 2013). All 44 participants with more than one call were eligible for the session-to-session analyses of the study. These participants had a total of 139 calls. Table 2 presents descriptive data for the sample.

Table 1
Description of ACT components and processes.

Components	Processes	Description
Openness	Acceptance	Willingness to experience urges, emotions, and thoughts as they are and without any intent to change them.
	Defusion	Recognizing thoughts, self-judgments, images, and memories as just words and pictures.
Awareness	Present moment	Observation and non-judgmental description of current thoughts, feelings, sensations or other events.
	Self-as-context	A sense of self that is flexible and distinct from the content of one's thoughts, feelings and sensations.
Activation	Values	Chosen life directions that guide actions.
	Commitment	Engagement in activities consistent with chosen values.