Brief Report

Telephone-delivered Acceptance and Commitment Therapy for adult smoking cessation: A feasibility study

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Abstract

Background: Quitline smoking cessation counseling results in a mere 12% success rate. Testing of new telephone-delivered cessation counseling approaches is needed.

Objective: Determine the feasibility of the first telephone-delivered Acceptance and Commitment Therapy (ACT) intervention for smoking cessation.

Design: Fourteen adults (57% racial/ethnic minority, 8/14) in a single-arm study. Counselor proactively delivered a 5-session (90-min total) ACT telephone intervention for smoking cessation. Hypothesized ACT processes were self-reported at baseline and posttreatment. Smoking status was self-reported at baseline, 20-day posttreatment (93% retention, 13/14), and 12-month posttreatment (93% retention, 13/14).

Results: (a) Delivery length and duration: average of 3.5 calls and 81.9-min intervention duration. (b) Receptivity: 100% (14/14) felt respected by the counselor, 86% (12/14) said that intervention was a good fit, and 93% (13/14) said that intervention helped them quit. (c) ACT processes: (i) acceptance of physical cravings, emotions, and thoughts that cue smoking increased from baseline to posttreatment (p = .001, p = .038, and p = .085, respectively) and (ii) commitment to quitting increased from baseline to posttreatment (p = .01). (4) Intent-to-treat cessation outcomes: (i) at 20-day posttreatment, 43% (6/14) had not smoked the day of the survey and 29% (4/14) had not smoked in past 7 days and (ii) at 12-month posttreatment, 29% (4/14) had not smoked at all in past 12 months. These quit rates are over double the 12% quit rates of current standard telephone counseling.

Conclusion: Telephone-delivered ACT shows promise for smoking cessation and warrants future testing in a well-powered randomized trial.

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Introduction

Smoking cessation telephone quitlines are a critical part of the U.S. tobacco control program (Fiore et al., 2008). Advantages include (a) Accessibility: 95% of U.S. households have a telephone (U.S. Census Bureau [USCB], 2006), and 85% of adults have cell phones (Federal Communications Commission, 2009). (b) Reach: All 50 U.S. states, all provinces in Canada, and many countries in the European Union have established quitlines (Fiore et al., 2004). (c) Cost-effectiveness: Quitlines save millions of dollars in medical costs and worker productivity losses (Fiore et al., 2004). (d) Relatively brief: Telephone counseling is delivered in three to seven calls, with an average total intervention length of 90 min (Stead, Perera, & Lancaster, 2006).

Telephone counseling uses the current standard in smoking cessation intervention (Fiore et al., 2008). Counseling focuses on enhancing motivation and social support for quitting, providing basic health information about smoking and quitting, teaching coping skills, and helping smokers set a quit date (Fiore et al., 2008). In randomized trials of telephone counseling, the percentage of participants not smoking in the past 30 days at the 12-month follow-up, among smokers motivated to quit, are well established as 12% and 14% for counseling and for counseling combined with nicotine replacement therapy, respectively (Stead et al., 2006). While these success rates are considerably higher than the 4% success rates of those who try quitting on their own (Fiore et al., 2008), the fact that telephone counseling is not successful at helping 86%–88% of smokers trying to quit is sobering.

To address this problem, acceptance-focused interventions may hold promise. Acceptance-focused interventions are an emerging counseling approach focusing on helping individuals become willing to experience their physical sensations, emotions, and thoughts (Hayes, Hayes, & Hayne, 1988; Hayes, Strosahl, & Wilson, 1999). In particular, a theory-based (Hayes, Barnes-Holmes, Roche, 2001) intervention called Acceptance and
Commitment Therapy (ACT, said as the word “act”) has special prominence (Hayes et al., 1999). Acceptance means allowing intense physical sensations (e.g., urges to smoke), emotions (“e.g., sadness), and thoughts (e.g., “I want a cigarette”) to come and go without acting on them by smoking. Commitment means articulating what is deeply important and meaningful to individuals—that is, their values—and using that knowledge to motivate and guide specific plans of action (e.g., stopping smoking). Over 35 ACT randomized treatment outcome studies have been published for interventions on a wide variety of problems (Ost, 2008; Powers, Zum Vorde Sive Vording, & Emmelkamp, 2009).

Three trials of group therapy (Hernandez-Lopez, Luciano, Bricker, Roales-Nieto, & Montesinos, 2009) or individual plus group therapy (Gifford et al., 2004, 2009) ACT for smoking cessation have been conducted to date. The ACT intervention groups obtained promising 30%–35% quit rates at 12-month postintervention. Recruitment was feasible, the ACT intervention was well attended, and participants were receptive to ACT. In addition, ACT interventions for smoking cessation (as well as ACT interventions for other maladaptive behaviors) were mediated by increases in acceptance processes, such as the willingness to experience sensations, emotions, and thoughts associated with smoking (Gifford et al., 2004, 2009; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). But no studies of telephone-delivered ACT have been conducted to date.

This study
To build on ACT research to date and address the great public health need for more effective telephone-delivered smoking cessation interventions, the overall aim of the current study was to use a small single-group design to determine the feasibility of the first telephone-delivered ACT intervention for smoking cessation.

Methods
Recruitment
Participants were recruited from Seattle, WA (2 participants), and Dallas, TX (12 participants), primarily via the following free advertising and news media: Craigslist.com, Backpage.com, The Stranger, and The Dallas Observer. Circulation of this media ranges from about 10,000 to 100,000. The audience for this media is broad and includes a high fraction of low-income individuals.

Inclusion criteria were the following: (a) aged 18 years and older, (b) daily smoker for at least the past 30 days, (c) have smoked at least 100 cigarettes in one’s lifetime, (d) interested in quitting in the next 30 days, (e) willing and able to speak and read in English, (f) currently reside in the United States and expected to continue for at least 12 months, (g) not presently incarcerated/ in prison, (h) not currently participating in other smoking cessation interventions, and (i) have regular access to a telephone.

Seventy-four individuals responded to the study advertisement. (The primary reason why 74 prospective participants responded was that, other than small token incentives for survey completing [e.g., $10], individuals were not paid to participate in the study.) Of these 74 participants, there were 38 who completed a screening survey, of whom 24 were eligible, of whom 14 consented and were scheduled for their first telephone counseling call. These 14 consented individuals comprised the study population for this feasibility study. (The 46 advertisement respondents who either did not complete a screening survey [36 individuals] or did not consent to the study [10 individuals] cited lack of compensation [aside from token incentives for surveys] as their primary reason for not proceeding with the study.)

Sample
Our aim was to sample a broad and inclusive population of adult smokers. Thus, the sample of 14 smokers included both those at or below Federal poverty level (64%; 9/14; USCB, 2005) and those above Federal poverty level (36%; 5/14), both racial/ethnic minority (57%; 8 African American) and non-minority (43%; 6/14), and both those with (i.e., 43% screened as depressed [6/14]; 64% screened as anxious [9/14]; Means-Christensen, Sherbourne, Roy-Byrne, Craske, & Stein, 2006) and without psychiatric co-morbidities (i.e., 57% screened as non-depressed [8/14]; 36% screened as non-anxious [5/14]). In addition, the sample was 43% (6/14) female, median age of 49 years (range 27–62 years), 36% (5/14) currently married, and 29% (4/14) with no more than a high school education (or general education development diploma). At baseline, 64% (9/14) reported smoking over a half pack a day.

ACT intervention
Adapted from ACT for smoking cessation protocols (Gifford et al., 2004; Hernandez-Lopez et al., 2009), the “ACT Now” telephone-based smoking cessation intervention for adult smokers provided up to five scheduled counseling sessions (average of 30 min for the first and average of 15 min for all subsequent calls). The intervention was delivered by a licensed psychologist with expertise in ACT. The acceptance components taught skills in (a) increasing one’s willingness to experience urges that have historically been associated with smoking, (b) changing the function of smoking urges, and (c) responding differently to smoking urges (e.g., noticing and not acting on urges). The commitment components focused on helping individuals articulate the values guiding quitting (e.g., the love of one’s children) and taking actions to quit guided by those values. Counseling was delivered for a 3-month period. No pharmacotherapy was provided.

Baseline and end of treatment ACT process surveys
A process survey was administered to examine changes in ACT-hypothesized acceptance and commitment processes of smoking cessation (Gifford et al., 2004). The survey procedure was designed to mimic automated interactive voice response (IVR) surveys (Toll, Cooney, McKee, & O’Malley, 2005). IVR-style surveys were used to (a) reduce recall bias by capturing, in near real time, data on internal experiences (e.g., urges) historically associated with smoking; (b) sample multiple internal experiences throughout the day; and (c) provide IVR feasibility data. On each of 7 days, both prior to the start and at the end of the ACT telephone counseling intervention eligibility period (i.e., 3 months later), each study participant received a standardized 2-min survey script telephone call from a research assistant at four scheduled times throughout the day (between the hours of 9 a.m. and 9 p.m.) and were given modest monetary incentives (Toll et al., 2005). Survey participation rates were 59% at base-
line and 42% at end of treatment. Finally, while measurement of mediators at baseline and during treatment has certain advantages (Murphy, Cooper, Hollon, & Fairburn, 2009), the current study’s baseline-to-end-of-treatment process measures design was selected for the following reasons: (a) End of treatment is when we expected these intermediate processes to have their greatest potency and to be most likely to be detected and (b) this design is comparable with those of past ACT for smoking cessation intervention studies (Gifford et al., 2004, 2009) as well as past smoking cessation trials of other treatments (Stanton, Lloyd-Richardson, Papandonatos, de Dios, & Niaura, 2009; Vidrine, Arduino, & Gritz, 2006)—thereby allowing a clearer comparison of these findings.

A key aim of acceptance in ACT therapy was to help break the link between urges (or emotions or thoughts) and smoking. The process of acceptance was measured using an adaptation of the Avoidance and Inflexibility Scale (study sample α = .93 at baseline and α = .90 at end of treatment; Gifford et al., 2004). For example, in asking participants about physical sensations (e.g., urges) associated with smoking, a sample item was “To what degree did you allow yourself to have these sensations?” Responses ranged from 1 (not at all) to 5 (very much). A key aim of commitment in ACT therapy was to help increase one’s overall commitment to quitting even in the presence of challenges (e.g., urges) they may experience. The process of commitment to quitting was measured using an adaptation of the Commitment to Quitting Scale (study sample α = .84 at baseline and α = .89 at end of treatment; Kahler et al., 2007). Sample item: “No matter how much I crave a cigarette, I am going to resist the urge to smoke.” Responses ranged from 1 (completely disagree) to 5 (completely agree).

Outcome surveys: 20-day and 12-month posttreatments
About 20-day posttreatment, a survey of treatment receptivity and smoking status was administered via mail or telephone by supervised research assistants. The advance letter for the survey included a $5 prepaid token cash incentive. The telephone survey administration offered a $20 promised cash incentive beginning with the third phone call attempt. Thirteen individuals participated in the survey (93% retention). At this timepoint, the two smoking abstinence outcomes were (a) no smoking on the day of the posttreatment survey and (b) 7-day point prevalence abstinence (Hughes et al., 2003). (Although biochemical confirmation of abstinence would have been ideal, there are concerns about biochemical confirmation in non-face-to-face [e.g., telephone-based] smoking cessation interventions [For a discussion, see Society for Research on Nicotine and Tobacco Subcommittee on Biochemical Verification, 2002].)

At 12-month posttreatment, a smoking status survey was administered via mail or telephone by supervised data collectors. The advance letter for the survey included a $10 prepaid token cash incentive. The telephone survey administration offered a $10 promised cash incentive. Thirteen individuals participated in the survey (93% retention). At this timepoint, the two smoking abstinence outcomes were 12-month prolonged abstinence (primary outcome; Hughes et al., 2003) and 30-day point prevalence abstinence (secondary outcome), which provides a ready comparison with other telephone intervention studies (Stead et al., 2006).

At both follow-up points, all participants reported not having participated in any other smoking cessation program since the start of the study. All study procedures were approved by the Fred Hutchinson Cancer Research Center’s Institutional Review Board.

Statistical analyses
Data on intervention total length and per call duration, participant receptivity, and smoking cessation/progress were examined with descriptive statistics. Given the baseline-to-end-of-treatment process measures design and the small sample size of this study, changes in hypothesized acceptance and commitment processes of smoking cessation were examined with a paired t test. The prediction of 12-month prolonged abstinence by baseline-to-end-of-treatment changes in acceptance and commitment was examined with logistic regression. All analyses were conducted in SPSS version 18.

Results

Intervention total length and per call duration
The mean (SD) of the number of counseling calls per participant was 3.5 (1.3), with 33.3% of participants completing all five calls, and the mean (SD) duration of all telephone counseling contacts was 81.9 (33.1) min.

Participant receptivity
At 20-day posttreatment, (a) 100% (14/14) of participants reported that they felt respected by the counselor, (b) 86% (12/14) said that the intervention was a good fit for them, and (c) 93% (13/14) said that the intervention helped them in their quit attempt. Participants rated 79%–93% (M_rating = 86%) of the telephone intervention exercises as useful during the quitting process.

Changes in hypothesized acceptance and commitment processes of smoking cessation
From baseline to end of treatment, there was an increase in mean scores on acceptance of physical cravings (M_change = 1.076, 95% confidence interval [CI] = 0.184–1.968, p = .001), emotions (M_change = 0.973, 95% CI = 0.009–1.937, p = .038), and thoughts (M_change = 0.811, 95% CI = −0.113 to 1.736, p = .085) that are associated with smoking. From baseline to end of treatment, there was an increase in mean scores on commitment to quitting (M_change = 0.984, 95% CI = 0.514–1.454, p = .01). In addition, there was nearly conclusive evidence that increased baseline-to-end-of-treatment (a) acceptance of physical cravings (odds ratio [OR] = 4.66, 95% CI = 0.922–23.576, p = .063), emotions (OR = 7.37, 95% CI = 0.860–63.198, p = .068), and thoughts (OR = 4.49, 95% CI = 0.918–21.967, p = .064) and (b) commitment to quitting (OR = 19.12, 95% CI = 0.555–658.354, p = .102) prospectively predicted 12 months of prolonged abstinence.
Smoking cessation/progress at 20-day and 12-month posttreatments

In the intent-to-treat analysis (where all with missing data were coded as smokers) of the 20-day posttreatment survey, (a) 43% (6/14) of participants had not smoked the day of the posttreatment survey, (b) 29% (4/14) had not smoked in the past 7 days or more, (c) 71% (10/14) had quit smoking for at least 24 hr one or more times since the start of counseling, and (d) 64% (9/14) reduced from daily to less-than-daily (including quitting) smoking.

In the intent-to-treat analysis of the 12-month posttreatment survey, the 12-month and 30-day abstinence rates were each 29% (4/14). Using the respondent-only data (n = 13), the 12-month and 30-day abstinence rates were each 31% (4/13).

Discussion

Evaluation of feasibility, receptivity, and ACT smoking cessation processes

ACT for smoking cessation can be successfully delivered via telephone as a relatively brief intervention. The intervention length and duration were similar to established telephone counseling smoking cessation interventions (El-Bastawissi et al., 2003; Hollis et al., 2007). Participants were highly receptive to the intervention. Despite the small sample size, acceptance and commitment processes changed in the hypothesized (Hayes et al., 2001) direction and showed suggestive evidence of predicting 12-month abstinence. These process results also provide new evidence on the potential role of ACT in increasing commitment to quitting.

Evaluation of smoking cessation/progress outcomes

The smoking cessation/progress outcomes are encouraging. First, the cessation outcomes are nearly equivalent to the end-of-treatment 24-hr abstinence and 12-month posttreatment outcomes observed in prior studies of face-to-face ACT (Gifford et al., 2004: 35% abstinence at posttreatment and 35% abstinence at 12-month posttreatment and Hernandez-Lopez et al., 2009: 42% abstinence at posttreatment and 30% abstinence at 12-month posttreatment). Second, this study’s 12-month prolonged abstinence cessation outcomes of 29% are more than double to the 12-month posttreatment cessation outcomes of 12% observed in trials of telephone-based counseling offered without pharmacotherapy (Stead et al., 2006).

Third, these outcomes were attained from a primarily low-income and racial/ethnic minority individuals. Low-income and minority smokers make use of quitlines (Macalister et al., 2004; Zhu et al., 2002). For example, of the 70,000 callers enrolled in 2007 by Free & Clear, the nation’s largest quitline provider, 21% (~14,700), were Medicaid recipients (Free & Clear’s definition of low income; Susan Zbikowski, personal communication). However, the current sample characteristics had a higher overall fraction of low-income and minority participants compared with state quitline smoking cessation interventions (e.g., McAfee et al., 2008; Rabius, Pike, Hunter, Wiatrek, & McAlistier, 2007). Given that low-income and minority individuals have lower smoking cessation rates than those who are not low income or minority (Centers for Disease Control and Prevention, 2008), it is possible that the results may underestimate the potential treatment effects of ACT for smoking cessation delivered in a fully representative sample of quitline callers.

Limitations to be addressed in future research

First, as a feasibility study, this study had a small sample size and no control group. Therefore, a well-powered randomized trial with an active treatment control group would be needed to determine telephone-based ACT’s efficacy. Moreover, such a trial design would also allow for testing of the extent to which smoking cessation outcomes are mediated by acceptance and commitment processes. Second, pharmacotherapy would be valuable in a future trial. Third, recruiting through an existing quitline would increase enrollment of individuals who are ready, willing, and eligible to participate in a treatment effectiveness study. Fourth, while IVR-style surveys show promise (Toll et al., 2005), experience from this study suggests that they be administered less often (e.g., once a day).

Conclusion

Telephone-delivered ACT shows promise for smoking cessation and changing processes of smoking cessation, was well accepted by participants, and warrants future testing in a well-powered randomized trial.

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Declaration of Interests

None declared.

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References


