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Defined symptom-change trajectories during acute-phase cognitive therapy for depression predict better longitudinal outcomes

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ABSTRACT

Background: Acute-phase cognitive therapy (CT) is an efficacious treatment for major depressive disorder (MDD), but responders experience varying post-acute outcomes (e.g., relapse vs. recovery). Responders' symptom-change trajectories during response to acute-phase CT may predict longer term outcomes.
Method: We studied adult outpatients ($N = 220$) with recurrent MDD who responded to CT but had residual symptoms. Responders with linear (steady improvement), log-linear (quicker improvement earlier and slower later), one-step (a single, relatively large, stable improvement between adjacent assessments), or undefined (not linear, log-linear, or one-step) symptom trajectories were assessed every 4 months for 32 additional months.
Results: Defined (linear, log-linear, one-step) versus undefined acute-phase trajectories predicted lower depressive symptoms ($d = 0.36$), lower weekly probability of being in a major depressive episode (OR = 0.46), higher weekly probabilities of remission (OR = 1.93) and recovery (OR = 2.35), less hopelessness ($d = 0.41$), fewer dysfunctional attitudes ($d = 0.31$), and better social adjustment ($d = 0.32$) for 32 months after acute-phase CT. Differences among defined trajectory groups were nonsignificant.
Conclusions: Responding to acute-phase CT with a defined trajectory (orderly pattern) of symptom reduction predicts better longer term outcomes, but which defined trajectory (linear, log-linear, or one-step) appears unimportant. Frequent measurement of depressive symptoms to identify un/defined CT response trajectories may clarify need for continued clinical monitoring and treatment.

1. Introduction

Mood disorder researchers continue to search for predictors, moderators, and mechanisms of change that influence illness trajectories before, during, and after treatment (Oquendo, McGrath, & Weissman, 2014; Shoham & Insel, 2011). Acute-phase cognitive therapy's (CT; Beck, Rush, Shaw, & Emery, 1979) effect on major depressive disorder (MDD) is comparable to pharmacotherapy and superior to pill placebo (Cuijpers et al., 2013). Nonetheless, many acute-phase CT responders, and even more pharmacotherapy responders, experience relapse and recurrence after acute-phase treatments end (Biesheuvel-Leliefeld et al., 2015; Vittengl & Jarrett, 2014). Continuation treatments decrease relapse and residual symptoms among responders (Biesheuvel-Leliefeld et al., 2015; Jarrett, Minhajuddin, Gershenfeld, Friedmanm, Thase, 2013; Vittengl, Clark, Thase, & Jarrett, 2014) but may be more efficacious (and cost-effective) when provided to higher risk patients (Vittengl & Jarrett, 2014). The purpose of the current report was to test whether symptom-change trajectories during response to acute-phase CT predicted longer term outcomes. In particular, we compared 32-month outcomes among responders who showed linear (small, steady decreases in symptoms), log-linear (larger decreases earlier and smaller later), one-step (a single, relatively large, stable drop in symptoms), or undefined (not clearly linear, log-linear, or one-step) trajectories during acute-phase CT (Vittengl, Clark, Thase, & Jarrett, 2013). We analyzed responders judged to be at higher risk for relapse (due to substantial residual symptoms during the final weeks of CT), randomized to 8 months of continuation CT, fluoxetine, or pill placebo and followed 24

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additional months (Jarrett, Minhajuddin, Gershenfeld, et al., 2013). We aimed to clarify higher risk CT responders' prognoses or longer term outcomes based on their acute-phase response trajectories.

Psychotherapy dose-response curves (symptom levels plotted against treatment time or sessions; e.g., see Fig. 1) are symptom-change trajectories that may vary by treatments, diagnoses, and individuals. The field has speculated about what different patterns of change suggest about treatment processes or mechanisms. For example, patients and clinicians may expect linear changes with steady, roughly equal decreases in symptoms across treatment sessions or time, although nonlinear patterns (e.g., log-linear, quadratic, cubic) also occur and should be studied (Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007). Indeed, linear changes are common (Barkham, Stiles, & Shapiro, 1993; Percevic, Lambert, & Kordy, 2006) and may reflect incremental learning, application, and generalization of skills learned in psychotherapy. In contrast, decelerating log-linear changes with more improvement earlier, and less later, may reflect initial restoration of hope ("remoralization") followed by learning and practicing skills ("remediation" and "rehabilitation"; Howard, Lueger, Maling, & Martinovich, 1993; Lutz, Martinovich, Howard, & Leon, 2002). In CT specifically, early sessions focus on quicker symptom reduction (e.g., via behavioral activation), whereas later sessions focus on relapse prevention (Beck et al., 1979). Finally, "insight" may produce abrupt drops in symptom scores (Caspar & Berger, 2007), including patients grasping key CT concepts such as "thoughts can be changed to improve mood" (Grosse Holtforth et al., 2007). Patients with rapid early response (e.g., Hayes, et al., 2007) or "sudden gains" (e.g., Tang & DeRubeis, 1999) may demonstrate such processes and have been hypothesized to have better outcomes at the end of acute-phase treatment than do patients without instances of rapid improvement.

Even though underlying mechanisms are unclear, differences in symptom change trajectories may contain valuable prognostic information. A recent study showed differences in longer term outcomes based on MDD patients' initial symptom trajectories in primary care (Wardenaar, Conradi, & de Jonge, 2014). The first year of assessment clarified patients' trajectories, and 2 subsequent years' data allowed outcome comparisons among trajectory groups: Patients with a "chronic" trajectory showed small improvements (year 1) but maintained elevated symptoms (year 2); "early remission" patients showed relatively quick and large symptom reductions (especially during the first 9 months of year 1) and maintained their improvements (year 2); "remission + recurrence" patients showed improvements but then deterioration (both during year 1) and elevated symptoms thereafter (year 2); and "late remission" patients showed slower improvements than early remission patients (year 1) that were largely maintained (year 2). However, differences among trajectory groups were not significant during year 3. This study suggested that initial trajectories of symptom change in primary care predicted patients' subsequent functioning and so informed our hypotheses regarding longer term outcomes of acute-phase CT responders.

The longer term outcomes of MDD patients with different acute-phase symptom trajectories in CT are largely unknown or restricted to broad contrasts. For example, patients with rapid early response, and the closely related phenomena of sudden gains, often have better outcomes at end of acute-phase CT (e.g., Aderka, Nickerson, Bøe, & Hofmann, 2012; Hayes, et al. 2007; Ilardi & Craighead, 1994) and pharmacotherapy (e.g., Henkel et al., 2009; Vermeiden, Kamperman, Vulink, van den Broek, & Birkenhäger, 2015; Vittengl, Clark, & Jarrett, 2005). However, longer term outcomes after sudden gains in CT for depression have been mixed (Vittengl, Clark, Thase, & Jarrett, 2015a), perhaps because researchers have contrasted sudden-gainers with other patients altogether (e.g., without differentiating patients with other trajectories such as linear, log-linear, and undefined trajectories). The current analyses contrasted longer term outcomes across better differentiated acute-phase CT response trajectories.

Recently, Vittengl et al. (2013) estimated the frequency of linear, log-linear, and one-step trajectories among adult outpatients with recurrent MDD receiving acute-phase CT. Across 14 approximately weekly assessments, most patients showed a defined (more orderly) pattern of change in depressive symptoms. Specifically, 20% of patients showed linear (i.e., steady decreases in symptoms), 30% log-linear (i.e., larger decreases in symptoms earlier and smaller decreases later in acute-phase CT), and 16% one-step (i.e., a single, relatively large and stable, drop in

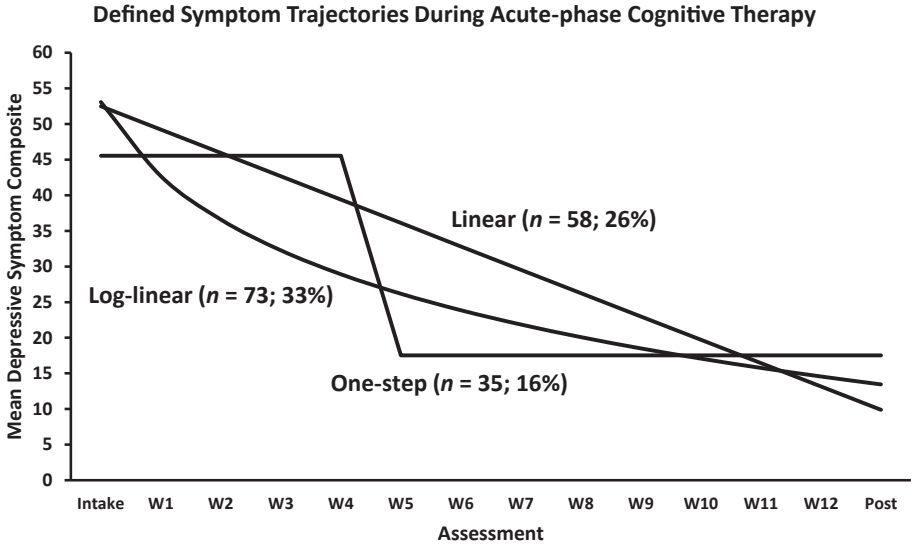

Fig. 1. Lines represent mean symptom-change functions of 220 higher risk responders to acute-phase cognitive therapy (CT) fitting a defined (linear, log-linear, or one-step) trajectory (median fit correlation = 0.94, range 0.87–0.99). The drop in symptom scores between W4 and W5 is the median timing for the 35 one-step patients. An additional 54 higher risk responders (not shown; 25%) did not have a significant fit to a linear, log-linear, or one-step pattern and were classified as following an undefined trajectory. Intake = first assessment before CT; W1-12 = assessment at CT Weeks 1–12; post = first assessment after CT.