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Sudden gains as a long-term predictor of treatment improvement among children in community mental health organizations

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ABSTRACT

Objective: Sudden gains have been described as rapid, sizeable changes observed between treatment sessions and have been associated with improved treatment outcome in adults. The current study examined weekly sudden gains among children seeking treatment in the community mental health setting.
Method: Participants were 161 children (age $M = 10.58$, $SD = 1.73$; 69.6% male; 47.8% Caucasian) and their parents who were randomized to one of three treatment modalities and were administered weekly and quarterly assessments throughout treatment.
Results: When idiographic (youth- and parent-identified "top problems") and nomothetic measures (standardized checklists) were used to calculate sudden gains (i.e., gain must be large: in absolute terms, relative to prior session, and relative to changes in prior and subsequent sessions), 20–42% of participants experienced at least one sudden gain during treatment. Most sudden gains occurred early in treatment, and session content of relaxation was associated with sudden gain presence. Using a modified Bonferonni correction, sudden gains predicted overall symptom levels at final assessment (i.e., last assessment obtained following post-treatment) even after controlling for pre-treatment symptom levels and magnitude of the overall gain from pre- to post-treatment.
Conclusions: Suddenness of gains may have a direct effect on long-term treatment outcome among children in the community.

A common method of treatment trajectory analysis is examination of sudden gains. Sudden gains are defined as sudden, rapid improvement evidenced between treatment sessions (Tang & DeRubeis, 1999). Early work in this field began in the late 1990s by Tang and DeRubeis (1999), who examined sudden gains during cognitive behavioral therapy for adult depression. They found that nearly half of participants experienced sudden and rapid improvement in symptoms that accounted for most of post-treatment change. These sudden gains occurred early in treatment and were associated with significantly greater improvement at post-treatment and six-month follow-up.

Replication of these findings indicated that sudden gains are a replicable phenomenon across diverse groups of participants and treatment settings. Most studies have examined sudden gains among participants with adult depression who were treated in controlled treatment settings with some form of cognitive therapy (e.g., Tang, Derubeis, Hollon, Amsterdam, & Shelton, 2007). Fewer studies have examined sudden gains among anxiety patients with panic disorder (Clerkin, Teachman, & Smith-Janik, 2008), generalized anxiety disorder (Present et al., 2008), social anxiety disorder (Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006), obsessive-compulsive disorder (Aderka et al., 2012), and posttraumatic stress disorder (e.g., Doane, Feeny, & Zoellner, 2010); most of these studies found similar results to those among adults with depression (Aderka, Nickerson, Boe, & Hofmann, 2012). The effect of sudden gains has been tested across diverse treatment modalities including cognitive-behavioral therapy (e.g., Tang & DeRubeis, 1999), group cognitive-behavioral therapy (e.g., Norton, Klenck, & Barrera, 2010), family therapy (e.g., Gaynor et al., 2003), supportive therapy (Gaynor et al., 2003), interpersonal psychotherapy (Kelly, Cyranowski, & Frank, 2007), and couples therapy (Doss, Rowe, Carhart, Madsen, & Georgia, 2011). Further, some studies have

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moved into the community to examine sudden gains across a range of modalities and mental health concerns (e.g., Drymalski & Washburn, 2011).

Advances in understanding the effect of sudden gains on treatment outcome nevertheless are restricted by several important limitations. First, only one study to date has examined the sudden gain effect in treatment for children. Given that Aderka, Appelbaum-Namdar, Shafran, & Gilboa-Schechtman (2011) examined youth between the ages of eight and eighteen, understanding of the sudden gain effect among young children is limited. Further, no studies have examined parent-identified sudden gains. Parents are better informants of their children's externalizing symptoms (Grills & Ollendick, 2002), and thus, parent-identified sudden gains may be a better predictor than child-identified.

Second, although studies have examined the effect of sudden gains on treatments for internalizing problems, to date, we know of no study that has examined the effect of sudden gains on externalizing problems. Cognitive changes are a suggested mechanism of sudden gains in adult depression treatment (e.g., Tang & DeRubeis, 1999). Given that most treatments for externalizing problems utilize parent-based behavioral strategies over cognitive strategies, sudden gains may not be present in such treatments. Still, "break-through" moments in parenting may occur during treatment of externalizing problems.

Third, no studies have examined the effect of sudden gains on treatment outcome beyond the effects of overall treatment improvement. Having any gain during treatment (whether sudden or not) increases the likelihood of having better treatment outcomes (i.e., better overall treatment improvement) than absence of these gains. Those with sudden gains by current definition (e.g., gain must be large: in absolute terms, relative to prior session, and relative to changes in prior and subsequent sessions) have an inherent advantage in demonstrating better overall outcomes than those without such gains. Thus, the sudden gain effect demonstrated in prior studies may be an artifact of the gain itself rather than a result of its suddenness. The question remains, does the *suddenness* of these sudden gains have a unique effect on treatment outcomes? That is, do sudden gains have an effect on treatment outcome beyond the overall magnitude of treatment improvement?

Fourth, the effect of sudden gains on longer-term outcomes is not well understood. Research suggests that sudden gains predicts improvement of depression, as well as anxiety, at 6, 12, and/or 18 months following treatment termination, with results from a meta-analysis demonstrating medium effect sizes (Aderka, Nickerson, et al., 2012). However, other studies suggest that effects are not maintained at follow-up (e.g., Doss, et al., 2011), and that individuals with sudden gains may even demonstrate worse outcomes in the long-term (Vittengl, Clark, & Jarrett, 2005).

Fifth, we know of only one study that examined sudden gains with weekly idiographic measures; however, this was in the context of couples therapy (Doss et al., 2011). Idiographic measures are advantageous because they can be individualized to symptoms and potentially more sensitive to treatment progression. Sixth, very few studies have examined sudden gains in the community mental health setting – a necessary area of research for generalizability of this phenomenon to community treatment settings.

Finally, few studies have examined session content preceding sudden gains, and nearly all studies that have done so have examined presence of cognitive content only (e.g., Tang & DeRubeis, 1999). Analysis of session content is a precursor to understanding how to capitalize on these gains. Discovery of session content predicting sudden gains may identify potential mechanisms and treatment-enhancing strategies.

The current study attempts to strengthen understanding of sudden gains using families treated for internalizing and externalizing problems in a multi-site community randomized trial (Weisz et al., 2012). Crucially, this study features idiographic and nomothetic weekly assessments measuring treatment improvement in internalizing and externalizing symptoms according to parent and child reports. Further, analyses uniquely examine the effect of *suddenness* of weekly gains on longer-term outcomes by controlling for magnitude of overall treatment change from pre- to post-assessment.

The current study had several aims to examine: (a) the effect of suddenness of weekly gains on longer-term outcomes among all participants and within internalizing and externalizing domains among independent groups of children with anxiety, depression, and conduct disorder; (b) whether sudden gain effects analyzed independently for each measure (nomothetic, idiographic) and informant (child, parent) would be differentially associated with outcome; (c) whether sudden gains occurring early in treatment predicted improved outcome; and (d) whether certain participant or treatment characteristics (e.g., treatment duration, session content) were associated with sudden gains. Evidence suggests that sudden gains have an effect on adult internalizing problems using nomothetic measures; thus, it was hypothesized that presence of sudden gains—as identified by nomothetic weekly assessment—would be associated with internalizing symptom improvement among children in the community mental health setting. Analyses examining externalizing and internalizing outcomes using an idiographic measure and analyses examining informant differential effects on any outcome were exploratory.

Method

Participants

Participants were 161 children and their caregivers who were treated in a multi-site randomized effectiveness trial (Weisz et al., 2012). As outlined in Weisz et al. (2012), children who had elevated problems in anxiety, depression, or conduct-disruptive disorder and were between the ages of 7–13 participated in the study. Exclusion criteria were having pervasive developmental or psychotic symptoms, primary bipolar disorder, or primary inattention or hyperactivity.

Of the 500 children/families that were screened, 203 were allocated to a treatment group after meeting inclusion criteria, and of these remaining participants, 174 received treatment (e.g., Weisz, et al., 2012). However, given that session dates were a necessary piece of information for analysis of sudden gains, participants were excluded from the current analyses if they were missing information on their session dates. Thus, 161 participants and their caregivers were included in the current analyses.

Participants were approximately 70% male and 50% minority status (see Table 1). Ages ranged from 7 to 13 ($M = 10.58$, $SD = 1.73$). There was nearly equal representation of internalizing and externalizing disorders. Further, the percentage of those with more than one disorder was 80.7.

Design

Data were obtained from a recently completed multi-site randomized effectiveness trial (Weisz et al., 2012) that compared symptom, problem, and diagnostic outcomes across three treatment modalities (modular treatment, standard manual treatment, and usual care). Participating community clinics were recruited across two states – Massachusetts and Hawaii. Eighty-four clinicians were recruited and randomized to one of three treatment