Emergent Life Events during Youth Evidence-Based Treatment:

Impact on Future Provider Adherence and Clinical Progress

Abstract

Objective: Emergent life events (ELEs)— unexpected stressors disclosed in psychotherapy that have a significant negative impact on the client—commonly occur in community populations of youth and are associated with decreased provider adherence to evidence-based treatment (EBT) in session. The present study extends previous research by examining longer-term associations of ELEs with: (1) provider adherence to planned EBT practices in subsequent sessions, and (2) clinical progress. ***Method:*** Data were drawn from the modular EBT condition (MATCH) of the Child STEPs California trial conducted with primarily Latino youth, ages 5-15, who were 54% male (Chorpita et al., 2016). Study 1 utilized data from 57 MATCH participants who reported at least one ELE during treatment. Provider adherence was measured by identifying whether planned practices were covered in either the session in which the ELE was reported or the following session using the MATCH Consultation Record. In Study 2, clinical progress for 78 MATCH participants was assessed using weekly youth- and caregiver-ratings of symptomatology (Brief Problem Checklist) and functioning (Top Problems Assessment). ***Results:*** Study 1 revealed that ELEs were associated with reduced adherence to planned practices for at least two sessions. Study 2 demonstrated that each disruptive ELE (i.e., an ELE for which no EBT content was covered) was associated with a 14-20% slower rate of clinical improvement, with greater declines for functioning and externalizing symptoms. ***Conclusions:*** Findings suggest that ELEs can be a major barrier to the effectiveness of an EBT and require further research in order to be addressed effectively.

Keywords: emergent life events, dissemination and implementation, evidence-based treatment, clinical outcomes, youth mental health

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An estimated 20% of children and adolescents suffer from mental disorders in the United States (O'Connell, Boat, & Warner, 2009), and the need for evidence-based care for these populations is a clear public health priority (Department of Health and Human Services, 2007). Yet, despite substantial advances in the development of efficacious treatments for a variety of disorders (e.g., Weisz & Kazdin, 2010), providers in community mental health clinics often do not use evidence-based treatments (EBTs) (Weersing, Weisz, & Donenberg, 2002), and even when they are used, EBTs can fail to achieve equal success in community as compared with laboratory settings (e.g., Barrington, Prior, Richardson, & Allen, 2005; Southam-Gerow et al., 2010). Given that many of the nation's most vulnerable children receive services from community mental health clinics, it is crucial to identify possible reasons why implementation and effectiveness of EBTs has been so challenging in these contexts.

Among the many complex and often multi-systemic challenges raised, one common view is that EBT protocols, designed in structured laboratory settings, are unable to address the more complicated issues experienced by populations treated in community settings. For instance, qualitative research has shown that community practitioners find it challenging to apply EBTs to unexpected crises in their clients' lives (Reding et al., 2016). We refer to such crises as emergent life events (ELEs) - significant, unexpected stressors in a client or family's life (e.g., suspension from school, death in family, job loss). These types of events may occur within any client population, but are likely to be more prevalent in underserved populations. For instance, research indicates that ethnic minorities are more likely than non-Hispanic Whites (NHWs) to experience traumatic or other stressful life events (Hatch & Dohrenwend, 2007; Turner & Lloyd, 2004). An initial study conducted

in diverse, low-income community youth found that over the course of treatment, providers reported that 69% of clients experienced at least one ELE (Chorpita, Korathu-Larson, Knowles, & Guan, 2014). Furthermore, for clients experiencing at least one ELE, multiple ELEs were the norm, with an average of 2.5 ELEs per client. Despite their frequency across clients, ELEs were only reported in 8% of sessions, suggesting that they are unpredictable in any given session.

Additionally, providers' perception that ELEs are challenging to their attempts to implement an EBT (Reding et al., 2016) has been validated by quantitative findings. Results from a controlled study using objective coding of therapy sessions indicated that when faced with an ELE, providers were significantly less likely to deliver an adequate dosage of protocol-consistent treatment content than when an ELE was not reported (Guan et al., 2015). Thus, it appears that ELEs may influence treatment integrity (also referred to as treatment fidelity), the extent to which an intervention is delivered as intended (Perepletchikova & Kazdin, 2006). Specifically, one component of treatment integrity, providers' treatment adherence (i.e., the degree to which treatment providers deliver treatment techniques) was measured in the above study. These results highlight the potential for ELEs to impact provider adherence within the session in which an ELE is reported.

The notion that ELEs may interfere with EBT delivery is not surprising given that few EBTs currently offer explicit guidance for how to deal with these events should they arise. When structured guidance is not available to handle an unexpected or exceptional event, it has been proposed that providers are likely to: (a) ignore the event (e.g., in the case of ELEs, move on to the EBT protocol before the client is ready) or (b) improvise and react (e.g., use protocol-inconsistent methods to address the ELE) (Chorpita & Daleiden, 2014). Respectively, these options fall on opposite ends of a continuum between maintaining treatment integrity (i.e., forging ahead with the protocol) and being responsive to specific client needs. As a middle ground between the two options, a strategy that

maintains treatment integrity while responding to client needs may be to address the ELE using content from the EBT (e.g., applying problem solving skills from the EBT to the current ELE). An initial examination of providers' responses to ELEs, as coded in therapy sessions, found that the most common response was to improvise and react - that is, providers often used protocol-inconsistent responses such as offering empathy and gathering information about the event (Guan et al., 2015). Responses involving either addressing the ELE using EBT content or ignoring the ELE by pushing ahead with the EBT were far less common. However, research has not yet examined which among these responses is most effective in promoting client engagement and outcomes.

The findings from Guan and colleagues (2015) demonstrate that ELEs influence whether EBT providers adhere to treatment in a single session. However, the effects of such responses on the overall course of treatment remains unknown. One could, for example, assume that deviating from the protocol for one session to respond to a crisis would not threaten the overall quality of service. Thus, we were interested to see whether there were possible *enduring* effects of ELEs on treatment integrity, as well as whether ELEs were ultimately associated with poor client outcomes.

Previous research on treatment integrity in relation to clinical outcomes does not provide a clear hypothesis as to whether ELE-induced reductions in EBT adherence are detrimental to overall client progress. Evidence has been mixed regarding the association between treatment integrity to EBTs and clinical outcomes, in general. Some studies have found that provider adherence to an EBT protocol predicted improved youth outcomes (Hukkelberg & Ogden, 2013; Schoenwald, Carter, Chapman, & Sheidow, 2008). However, a meta-analysis of 36 studies investigating treatment integrity in relation to clinical outcomes found that average effect sizes were close to zero across studies, with significant heterogeneity in effect sizes across studies (Webb, DeRubeis, & Barber, 2010). Other research has found that although greater adherence predicts greater improvement for

some outcomes, there is a curvilinear relationship between integrity and outcome for others, with intermediate levels of adherence predicting better outcomes than low or high levels of adherence (Hogue et al., 2008).

To our knowledge, only one study has somewhat examined the integrity-outcome question with regard to ELEs. Clients in a trial of modified cognitive processing therapy (MCPT) for PTSD were offered the choice of a "stressor" session during treatment - that is, if an ELE arose, clients could choose to remain on-protocol with the treatment or focus the session on the ELE. Clients who chose to use a single stressor session over the course of treatment did not differ from those who did not use a stressor session in number of trauma-focused sessions or post-treatment symptoms (Galovski, Blain, Mott, Elwood, & Houle, 2012), which indicates that a single ELE-disrupted session may not be associated with worse outcomes. However, it is worth noting that when clients chose to use a stressor session, the session focused on "providing support *and applying current CPT skills to the issue at hand,*" (p. 973) - that is, addressing the ELE using EBT content. Thus, it appears that these stressor sessions may not have been full deviations from the protocol but rather structured adaptations that maintained some degree of treatment adherence. It is possible that full deviations would have resulted in a greater impact on outcomes. Additionally, use of more than one stressor session may have also reduced clinical improvement. Galovski and colleagues' study therefore raises further questions as to whether ELEs that provoke protocol-inconsistent provider responses are detrimental to clinical improvement, as well as whether multiple ELE-induced disruptions can affect treatment outcomes.

The Current Studies

Over the course of two studies, we therefore sought to: (1) to examine whether ELEs were associated with reduced provider treatment adherence beyond the session in which they were

reported, and if so, how adherence was affected (i.e., breadth or depth of practices), and (2) to examine whether a greater number of ELEs that were followed by provider non-adherence to the EBT (i.e., "disruptive" ELEs) was associated with worse client progress in treatment. Data were drawn from the modular EBT condition (MATCH; Chorpita & Weisz, 2009) of a clinical effectiveness trial for youth served in community mental health agencies (Chorpita et al., 2016). In this trial, youth in the MATCH condition demonstrated significantly faster rates of clinical and functional improvement relative to a variety of community-implemented EBTs. Thus the present study examined ELEs within the context of a broadly effective treatment.

In Study 1, we hypothesized that ELEs would be associated with reduced provider adherence for more than one session, given the significant severity required to qualify events as ELEs. For instance, a job loss would be expected to have ongoing effects in a family's life beyond a single week, which may cause the provider to continue to use protocol-inconsistent strategies. Furthermore, given findings suggesting reduced intensity of treatment coverage in the face of an ELE (Guan et al., 2015), we hypothesized that both breadth (number of practices) and depth (intensity of a single practice) of adherence would be affected by ELEs.

In Study 2, we hypothesized that clinical improvement would be attenuated for clients who experienced disruptive ELEs, even when controlling for baseline client functioning. Although the adherence-outcome literature is mixed, our hypothesis was based on findings that this particular EBT, MATCH, outperformed usual care in previous research, suggesting that delivering the EBT is more beneficial for outcomes than not delivering it (Weisz et al., 2012). Exploring the questions asked in this study will be an important next step towards understanding whether ELEs pose a significant concern for EBT delivery in the community, and if so, how EBTs may be improved to accommodate such events.

Study 1: Associations between ELEs and Future Session Adherence

Method

Participants

Participants were selected from the MATCH condition (Chorpita & Weisz, 2009) of a randomized effectiveness trial conducted within three large community mental health agencies in an urban environment (Chorpita et al., 2016). MATCH (i.e., the Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, or Conduct Problems) is a collection of 33 treatment modules that are organized according to five coordinating decision flowcharts. Within the protocol, providers focus on an initial problem area by following a flowchart of suggested treatment modules. If interference arises, for instance in the form of an emergent comorbid problem area, providers can address the interference by systematically employing other treatment modules. See Chorpita and colleagues (2016) for further details about the protocol.

All study procedures were approved by the IRB of the University of California, Los Angeles as well as by the IRBs of participating service agencies that requested independent reviews.

Inclusion and exclusion criteria. Youth between the ages of 5 and 15 referred to their local public mental health agency were included if their primary clinical concerns involved anxiety, depression, disruptive behavior, or traumatic stress ($N = 138$) determined using the Top Problems Assessment procedure (Weisz et al., 2011) and showed corresponding clinical elevations in any of these areas (see Chorpita et al., 2016 for further details). Youth were excluded if: (a) they had evidence of mental retardation, autism, or psychosis as identified in the initial assessment procedures; (b) they were 14 or older and had current juvenile justice system involvement; (c) they reported an attempted suicide within the past 3 months; or (d) they scored 38 or higher on the PTSD-RI and had

a primary clinical focus of traumatic stress. The flow of youth into the study according to CONSORT guidelines is reported in the main outcome paper (Chorpita et al., 2016).

Youth and caregiver participants. Because the aim of Study 1 was to explore associations between ELEs and treatment adherence, we included 57 participating youth from the MATCH condition who had at least one ELE over the course of treatment that was not followed by an ELE in the subsequent session (representing 95% of MATCH clients with at least one ELE; 70% of all MATCH clients) according to provider-report of session content. These youth were 54% male and averaged 9.97 years of age (*SD* = 2.75) at the time of the intake assessment. Their reported race/ethnicity was 83% Latino/Hispanic, 11% Black/African American, 4% Mixed Race/Ethnicity, and 2% Caucasian. Based on an initial assessment by study personnel, youths' primary problem areas prior to treatment were categorized as 42% disruptive behavior, 30% depression, 26% anxiety, and 2% traumatic stress.

Participating caregivers of the 57 youth in the current sample were predominantly female (83%) with an average age of 35.89 years (*SD* = 9.03, *range* = 24-70). Caregivers reported their marital status as 25% never married, 25% married, 21% separated, 11% divorced, 16% living with partner, and 4% not reported. The highest level of education completed by caregivers ranged widely, with 42% reporting less than a high school diploma or GED, 16% a high school diploma or GED, 35% at least one year of college or a college degree, and 2% a graduate/professional degree, with the remaining 5% not reported. The majority of families (72%) reported their household income to be in the range of $0 - $19,000, with 19% in the $20,000 - $39,000 range and 4% in the $40,000 - $59,000 range.

Provider participants. The 28 providers included in the present study were 93% female and averaged 32.18 years of age (*SD* = 4.04, *range* = 25-42). Providers reported their race/ethnicity as

47% Latino/Hispanic, 29% Caucasian, 11% Mixed Race/Ethnicity, 11% Asian, and 4% Black/African-American. The vast majority (89%) of providers reported their highest degree completed as a master's degree, with the remaining 11% having completed a doctoral degree. On average, providers had 3.14 years of therapeutic experience (*SD* = 2.56) following the completion of their highest degree. Regarding theoretical orientation, 39% of providers identified as eclectic, 32% as cognitive-behavioral, 11% as family systems, 11% as humanistic/client centered, and 7% as other.

Measures

Consultation Record. The Consultation Record (CR; Ward et al., 2012) was employed to document the content and strategies implemented during clients' treatment sessions. This measure utilized a matrix of checkboxes in which rows listed practices corresponding to MATCH practices and columns listed strategies associated with their implementation (e.g., content was *fully* covered, content was *partially* covered) and consultation (e.g., content planned for the next session). A *fully* covered practice was checked if a provider covered roughly 80% of the prescribed content, whereas a *partially* covered practice was checked if a provider covered less than 80% of the prescribed content or if the provider stated that s/he planned to return to the content in the next session due to not covering everything planned. For instance, full coverage of psychoeducation for anxiety with the youth would be indicated on the CR by checking the box corresponding to the row "Psychoeducation for anxiety with youth" and the column "Covered full." An "Other" option was also included in the list of practices in the event that providers delivered content outside of the MATCH protocol (e.g., quarterly clinic assessment, case management). The measure was completed following each treatment session by postdoctoral study consultants during weekly consultation meetings with providers. To complete the CR, consultants were directed to ask open-ended, validating questions in a semi-structured format to clarify and confirm the provider's report of the session. Although CRs

were collected by study staff following completion, providers were encouraged to take notes on the practices recommended by the consultant for the upcoming session, and providers adhered to consultant recommendations for the majority of sessions (Regan, Park, & Chorpita, 2016). The CR has demonstrated strong agreement between provider report and coder observation of audio- and video-recordings of treatment sessions (Ward et al., 2012).

Emergent life events. The present study used data from the "crisis" section of the CR, which required consultants to interview providers regarding the occurrence of an emergent life event (ELE), defined as an unexpected event of a serious nature, disclosed during the treatment session, that was identified as distressing by the client and/or family and potentially warranted clinical attention during the session. Symptoms of psychopathology that were not related to a serious event were not considered ELEs. For example, suicidal ideation by itself did not qualify as an ELE, but a major breakup resulting in suicidal ideation or suicidal ideation resulting in a hospitalization qualified as an ELE. Thus, although there could be overlap between the two, ELEs differed from clinical symptoms in their unexpected nature as well as the presence of an acute stressful event.

Because this study intended to capture ELEs as they naturally occurred, and by nature ELEs are unexpected events, providers did not routinely ask clients about possible ELEs in session. However, consultants made the ultimate clinical judgment as to whether an event qualified as an ELE (e.g., if a provider reported an event that did not fit the given definition of a serious and significantly distressing event, it would not be recorded on the CR). In order to standardize ELE reporting, consultants received ongoing training and feedback in identification of ELEs from the principal investigator at the beginning of the effectiveness trial. Examples of ELEs provided to consultants included major family- or peer-related problems or losses (e.g., death of close family or friend, domestic conflict, parental separation or divorce, major illnesses and/or hospitalizations, loss of

parent job, change of living situation), major emergencies such as natural disasters or major weather problems (e.g., storms, earthquakes), major national or local emergencies (e.g., 9/11, war, terroristic threats), and other major problems in the environment (e.g., fires, car accidents, witnessing of community violence, suspension or expulsion from school, suicide risk, child abuse).

The ELE variable in this study was created as follows: as zero was assigned to sessions in which an ELE was not reported (i.e., control sessions), and a one was assigned to sessions in which an ELE was reported (i.e., ELE sessions). In previous research, provider report of ELEs on the CR demonstrated acceptable agreement with observational coding of ELEs in session recordings (κ = .53; Guan et al., 2015).

Providers in the effectiveness trial did not receive any a priori training with regard to how to respond to ELEs. In the consultation session following report of an ELE from the previous treatment session, consultants made recommendations for how to proceed with future sessions of treatment on a case by case basis.

Average provider treatment adherence in non-ELE sessions. Given the possibility that providers who have lower typical treatment adherence may provide greater opportunity in session for clients to report an ELE, we controlled for providers' average treatment adherence in non-ELE sessions when predicting adherence from ELEs. This enabled us to better tease apart the directionality between ELEs and treatment adherence. We used CR data to calculate a client-level variable representing providers' average treatment adherence for each client. Specifically, for all sessions in which an ELE was not reported, a score of one was assigned to sessions in which at least one planned practice from the preceding consultation session was covered in any depth (i.e., either *fully* or *partially*) and a score of zero was assigned to sessions in which no planned practices were covered. These scores were then averaged across each client. Sessions for which no practices were

planned, such as when a provider and his/her consultant were unable to meet before a given session, were excluded from this calculation.

Provider treatment adherence in ELE and subsequent sessions. Treatment adherence was operationally defined as the extent to which planned treatment practices for the session were covered in the same session (i.e., the ELE or control session sampled), the next session, or neither. In order to investigate the effects of ELE occurrence on multiple levels of treatment adherence, we examined treatment adherence according to four different, binary metrics: (a) whether any planned practices were covered in any depth (i.e., *partially* or *fully*; referred to hereafter as "any" coverage), (b) whether all planned practices were covered in any depth (referred to hereafter as "breadth" of coverage), (c) whether at least one planned practice was covered fully (referred to hereafter as "depth" of coverage), and (d) whether all planned practices were covered fully. Because the base rates of covering all planned practices fully in the same or next session were quite low across both ELE and control sessions (i.e., 16% and 26%, respectively), results are not reported for this fourth metric. Each session was therefore assigned a zero or one for "any coverage," "breadth" and "depth." For example, a score of one for depth meant at that least one planned practice was covered fully in that session.

Procedure

Using CRs, we obtained data on the session content (i.e., which practices were delivered?) and level of coverage (i.e., was the practice covered *partially* or *fully*?) of each treatment session as well as the treatment plan for those sessions, as determined by providers and consultants in the preceding consultation meeting. Given that ELEs tended to recur within cases (i.e., 86% of clients with at least 1 ELE reported at least one more over the course of treatment), to isolate the effects of a single ELE on subsequent treatment adherence, we sampled all pairs of sessions in which an ELE

was reported on the CR but was not followed by an ELE in the next session. In choosing a control group of sessions, we strove to minimize the possibility that baseline differences (e.g., symptom severity) between clients with and without ELEs would contribute to differences in treatment adherence across the ELE and control groups. Thus, a control group of session pairs without a reported ELE in either session was randomly selected from the same set of clients (n = 57) who reported at least one ELE. To ensure independent groups of sessions for analysis, there was no overlap between ELE and control pairs of sessions (e.g., the second session of an ELE pair could not be also selected as the first session of a control pair of sessions). Because the present study focused on disruption of ELEs to an EBT plan, sessions with no session plan (n = 4 pairs of ELE sessions) and no MATCH practices planned (i.e., exclusively "other" practices planned; n = 2 pairs of ELE sessions, 1 pair of control sessions) were excluded from the sample. The final sample included 125 ELE session pairs and 122 control session pairs.

Analyses

Two sets of analyses were conducted. First, we examined frequencies of maintaining treatment adherence across time for ELE and control sessions. Second, we employed binary logistic regression to examine associations between ELE occurrence and likelihood of covering the treatment plan across sessions. To determine the need for multilevel models, intraclass correlation coefficients (*ICC*s) for all binary outcomes were computed using a threshold model with a set Level-1 variance of 3.29. *ICC*s revealed that for all outcomes, a three-level model was needed account for the clustering of sessions (Level 1) within clients (Level 2) within therapists (Level 3) when calculating standard errors and statistical significance. We used the HLM 7 program to conduct two sets of multilevel binary logistic regression analyses. The first set of analyses examined ELE occurrence as a predictor of covering the planned treatment (with any, breadth, and depth of coverage, respectively) in the

same session, whereas the second set examined ELE occurrence as a predictor of the three measures of treatment adherence in the same or next session. Given that the observed variance for each outcome variable was significantly greater than the expected variance, an overdispersion parameter was modeled within each analysis.

Results

Frequencies of Maintaining Treatment Adherence over Time across ELE and Control Sessions

Descriptive analyses of providers' coverage of the treatment plan in ELE versus control sessions and future sessions is presented in Table 1. As demonstrated in the third column of Table 1, row a, the presence of an ELE was associated with a higher likelihood of no part of the treatment plan being covered in either the sampled (i.e., "same") or the following session (29% of ELE versus 13% of control sessions). Consistent with previous research, much of this effect was attributable to the fact that when an ELE was reported, coverage of any part of the treatment plan was significantly less likely to occur in the same session (43% of ELE versus 79% of control sessions; Table 1, row a, column 1). Additionally, the frequency of covering any part of the treatment plan in the next session was higher in ELE than in control sessions (28% versus 8%, respectively), indicating that compared to when an ELE was not present, providers faced with an ELE more frequently covered the original treatment plan in the following session. A similar pattern of results was found for covering breadth of practices (i.e., all planned practices) (Table 1, row b) and covering depth of practices (i.e., at least one planned practice fully) (Table 1, row c).

Do ELEs Predict Whether the Treatment Plan Is Covered in the Same Session?

To confirm the above descriptive findings, we used inferential analyses to investigate ELEs as a predictor of the same session's treatment adherence. Three-level analyses examined coverage of the treatment plan in the same session across ELE and control groups (i.e., comparing the "same

session" column to the combined "next session" and "not same or next session" columns in Table 1), controlling for client-level average treatment adherence in non-ELE sessions. Results revealed that over and above the significant effects of average adherence, ELE occurrence was associated with a 5.90-fold decrease in the likelihood of providers covering any part of the plan in the same session (1/0.17 = 5.90; $OR = 0.17$, $p < .001$). ELE occurrence also significantly predicted reduced breadth of treatment coverage within the same session, such that over and above the significant effects of average adherence, ELE occurrence was associated with a 2.70-fold decrease in the odds of providers covering all planned practices within the ELE session (1/0.37 = 2.70; $OR = 0.37$, $p < .001$). Additionally, ELEs significantly predicted reduced depth of coverage within the same session; the occurrence of an ELE in session was associated with a 2.63-fold decrease in the likelihood of providers covering at least one planned practice fully in that session (1/0.38 = 2.63; $OR = 0.38$, $p = .012$), while average adherence was not a significant predictor. Results are presented in Table 2.

Do ELEs Predict Whether the Treatment Plan Is Covered in the Same or Next Session?

Finally, to examine ELEs as predictors of treatment adherence in future sessions, we compared coverage of the treatment plan in the same or next session as opposed to neither across ELE and control groups (i.e., comparing the combined "same session" and "next session" columns to the "not covered in same or next session" column in Table 1), controlling for client-level average treatment adherence in non-ELE sessions. Results from three-level binary logistic regression analyses revealed that over and above the significant effects of average adherence, when an ELE occurred, the odds of a provider covering any of the plan in either the same or next session decreased by 2.94-fold as compared with when an ELE did not occur (1/0.34 = 2.94; $OR = 0.34$, $p = .007$). No significant differences were found between ELE and control sessions in coverage of all planned practices (breadth) or coverage of at least one planned practice fully (depth) in the same or next

session, although average adherence was a significant predictor of breadth. Results are depicted in Table 3.

Study 2: Associations between ELEs and Clinical Progress

Method

Participants

The aim of Study 2 was to examine associations between ELEs and clinical progress in all youth, including those who did and did not experience an ELE over the course of treatment. Thus, although Study 1 examined only youth who experienced at least one ELE, all youth from the MATCH condition of the same effectiveness trial as in Study 1 (n = 78; Chorpita et al., 2016) were included in analyses for Study 2.

Youth and caregiver participants. The 78 participating youth from the MATCH condition were 54% male and averaged 9.73 years of age (SD = 2.84) at the time of the intake assessment. Their reported race/ethnicity was 81% Latino/Hispanic, 9% Black/African American, 5% Mixed Race/Ethnicity, 3% Caucasian, and 3% not reported. Youth were treated for the following primary problem areas assessed at intake: 40% disruptive behavior, 32% anxiety, 27% depression, and 1% traumatic stress.

Participating caregivers in the present sample were predominantly female (87%) with an average age of 35.43 years (SD = 8.47, *range* = 24-70). Caregivers reported their marital status as 26% married, 23% separated, 22% never married, 13% divorced, 13% living with partner, 1% widowed, and 3% not reported. The highest level of education completed was 42% less than a high school diploma or GED, 18% a high school diploma or GED, 26% at least one year of college, 5% college degree, and 5% graduate/professional degree, with the remaining 4% not reported. The

majority of families (73%) reported their household income to be in the range of $0 - $19,000, with 18% in the $20,000 - $39,000 range, 4% in the $40,000 - $59,000 range, and 5% not reported.

Provider participants. Providers included in the present study (*n* = 29) were 97% female and averaged 32.21 years of age (*SD* = 3.80, *range* = 25-42). Providers reported their race/ethnicity as 38% Latino/Hispanic, 38% Caucasian, 10% Mixed Race/Ethnicity, 10% Asian, and 3% Black/African-American. The majority (83%) of providers reported their highest degree completed as a master's degree, with the remaining 17% having completed a doctoral degree. On average, providers had 2.83 years of therapeutic experience (*SD* = 2.00) following the completion of their highest degree. Regarding theoretical orientation, 41% of providers identified as eclectic, 35% as cognitive-behavioral, 10% as family systems, 7% as humanistic/client centered, and 7% as other.

Measures

Consultation Record (CR). The emergent life event (ELE) section of this measure (Ward et al., 2012), described in Study 1, was used to identify the number of ELEs reported by providers across each client's treatment episode, while the sections on session content were used to determine "disruptive" ELEs, defined as ELEs for which no MATCH strategies were covered in that session. Thus, the disruptive ELEs variable was a client-level variable consisting of the number of ELEs reported on the CR for which no MATCH practices were covered in session.

Within this sample, the average number of total ELEs reported per client was 2.19 (*SD* = 2.27), while the average number of disruptive ELEs was 0.97 (*SD* =1.26). Examples of ELEs reported in the sample included death of a grandparent, violent fights between family members, youth suspension from school, and academic failure. A more thorough description of categories of ELEs experienced by clients in the same trial is reported elsewhere (see Chorpita et al., 2014). An unconditional multilevel model with clients nested within providers revealed that there was

significant variance across providers in the number disruptive ELEs reported per client (*ICC* for provider-level variance = .11). However, given that each provider had very few clients (M = 2.00, SD = 1.00, *median* = 1, *range* = 1-5), it is difficult to separate provider and client-level differences in number of ELEs. In addition, results of a multilevel model revealed that the primary problem area for which clients received treatment (i.e., disruptive behavior, anxiety, depression, or traumatic stress) was not a significant predictor of the number of disruptive ELEs reported [$F(3,73) = 1.08$, $p = .362$].

Brief Impairment Scale (BIS). We controlled for baseline client functioning as a predictor of clinical progress, as it is possible that independent of ELEs and their associated reductions in treatment adherence, there is a direct effect between lower baseline functioning and reduced clinical progress. Thus, analyses included each client's total score on the BIS (Bird et al., 2005) as a predictor. The BIS is a 23-item measure that assesses caregivers' report of youth functioning across three domains: interpersonal relations, school/work, and self-care/self-fulfillment functioning. This measure was completed at study intake, and a total score was computed by summing all 23 items. Internal consistency within the current sample was good ($\alpha = .86$). Psychometric testing in clinical and community samples of children indicates sound test-retest reliability as well as high convergent and concurrent validity (Bird et al., 2005).

Brief Problem Checklist (BPC). The BPC is a 12-item interview measuring symptoms of psychopathology in youth. Separate youth and caregiver forms were administered weekly to participants via telephone. The BPC was derived using item response theory and factor analysis with data from the Youth Self-Report and Child Behavior Checklist (YSR and CBCL; Achenbach & Rescorla, 2001) in a sample of 2,332 youth (Chorpita et al., 2010). This brief measure was designed to be administered to assess change over time, using a frequent assessment schedule, with administration time averaging less than one minute. The BPC produces three scales that are summed

from their component items: Internalizing Problems (6 items), Externalizing Problems (6 items), and Total Problems (all 12 items); all three scales were employed as progress measures in the current study, with higher scores indicating more severe symptomatology. Chorpita and colleagues' (2010) study of 184 children found that the BPC yielded good test-retest reliability and convergent validity with the YSR, CBCL, and diagnoses obtained from a structured diagnostic interview. Longitudinal data gathered over 6 months of treatment demonstrated that the BPC significantly predicted change on related measures of child symptoms. Baseline internal consistency in the overall effectiveness trial was acceptable across all three scales (Chorpita et al., 2016).

Top Problems Assessment (TPA). The TPA (Weisz et al., 2011) was also administered weekly to youth and caregivers via telephone. It consists of youth and caregiver severity ratings of the top three problems independently identified by youth and caregiver as most important to them in separate structured pre-treatment interviews. Problems are rated on a scale of 0 to 10 with higher ratings indicating greater impairment. The TPA has demonstrated strong reliability, validity, and sensitivity to change during treatment (Weisz et al., 2011). In the effectiveness trial, internal consistency was acceptable (Chorpita et al., 2016). Concerns reported on the TPA range in their correspondence to clinical symptoms scales (correspond 38-80% of the time, depending on scales and informants), suggesting that the TPA may capture client-relevant functioning independent of symptomatology (Weisz et al., 2011).

Analyses

Analyses were run to assess for the association between "disruptive" ELEs and clinical progress on the BPC (Internalizing, Externalizing, and Total) and TPA while controlling for baseline youth functioning on the BIS. Youth outcomes on the BPC and TPA were evaluated longitudinally (i.e., measuring rate of change over time), given that treatment did not have a fixed length, thus

rendering pre-post analyses difficult to interpret. We estimated multilevel regression models (Raudenbush & Bryk, 2002) with the following predictors: intercept, BIS, ELE, time (days since intake), BIS by time, and ELE by time; ELE by time was the primary predictor of interest. The modeled nesting structure was three-level: repeated measures within informant (youth or caregiver) within case. Intercept and time were modeled as random effects at the informant level; the intercept only was modeled as random at the case level, and ELE and BIS were modeled as fixed at the case level. Additional models designed to explore higher levels of nesting showed that the variance accounted for in clinical progress by provider or agencies was near zero and thus the modeling of higher level random effects was not necessary.

Given that youth ages 5 and 6 were unable to provide self-report data for the study, our preference was to estimate models using all available data for each participant when possible. Thus we explicitly tested whether youth and caregiver information was empirically distinguishable (Kenny, Kashy, & Cook, 2006, p. 7) in terms of (1) fixed effects, and (2) variance components at the informant level. Specifically, for fixed effects, we examined interactions between a binary informant predictor (caregiver = 0, youth = 1) and BIS, ELE, time, BIS by time, and ELE by time, retaining any statistically significant interactions and the necessary lower-order effects to support them. Once we determined which fixed effects could be combined across informants, we conducted likelihood ratio tests to compare nested models that estimated either a single set of variance components at the informant level or separate sets of variance components for caregivers and youth, retaining the latter only if it resulted in a significant improvement in model fit. Thus, our preference was to use all data in a single model with informant as a predictor when this approach fit the data best.

Results

Associations between ELEs and Progress on Symptoms

Internalizing Symptoms. We first examined disruptive ELEs as predictors of BPC Internalizing scores. No significant interactions with informant emerged in initial models, nor were there significant differences in variance components across informants. Results of the final model revealed that there was no significant effect of the ELE by time interaction when controlling for baseline BIS score, indicating that rate of clinical progress in the internalizing domain did not differ as a function of the number of disruptive ELEs. Results are presented in the first section of Table 4.

Externalizing Symptoms. We next examined disruptive ELEs as predictors of BPC Externalizing scores. The model for this outcome included a significant informant by ELE interaction ($p = .004$), such that the effect of ELEs on Externalizing scores was greater for caregiver than for youth-reported outcomes. It also included a significant informant by BIS interaction ($p = .049$), such that the effect of baseline functioning on Externalizing scores was greater for youth than for caregiver-reported outcomes. Additionally, the model estimated separate sets of variance components for caregivers and youth, given that preliminary analyses revealed this model to have a better fit than one with combined variance components, $\chi^2(1) = 4.60$, $p = .019$. Results revealed a significant ELE by time interaction; when controlling for all other effects including baseline client functioning on the BIS, each disruptive ELE was associated with a 19.9% decrease in rate of improvement on Externalizing scores (percent decline calculated by dividing the ELE x time coefficient by the time coefficient; $p = .016$). Results are presented in the middle section of Table 4.

Total Symptoms. We then investigated associations between disruptive ELEs and BPC Total scores. Initial models revealed no significant interactions with informant and no significant differences in variance components across informants. Results indicated a marginally significant ELE by time interaction; when controlling for all other effects including baseline client functioning on the BIS, each disruptive ELE was associated with a 13.6% decrease in rate of improvement on total

internalizing and externalizing symptoms (p = .100). Results are presented in the third section of Table 4.

Associations between ELEs and Progress on Functioning

Finally, we examined disruptive ELEs as a predictor of youth functioning on the TPA. Preliminary models indicated that there were no significant interactions with informant. However, we estimated separate sets of variance components for caregivers and youth given this model's improved fit as compared with the combined variance components model, $\chi^2(1) = 15.20$, $p < .001$. Results revealed a significant ELE by time interaction; when controlling for all other effects including baseline client functioning on the BIS, each disruptive ELE was associated with a 20.3% reduction in rate of improvement on TPA scores (p = .001). Results are presented in Table 5.

Discussion

The two studies included in the present paper investigated long-term associations between stressful emergent life events reported during youth EBT and (1) subsequent provider treatment adherence and (2) clinical progress. Consistent with hypotheses, we found that ELEs were associated with lack of coverage of planned treatment practices in at least two sessions following their occurrence. Perhaps most importantly, disruptive ELEs (i.e., those for which no EBT content was covered) were associated with significantly reduced rates of clinical improvement in an otherwise effective EBT, with rates ranging from 14-20% slower per disruptive ELE depending on the progress measure assessed. Given previous findings that clients tend to experience multiple ELEs over the course of treatment (Chorpita et al., 2014), the significant negative impact on provider adherence and clinical outcomes found in this study are likely to be compounded each time an ELE is reported, suggesting that ELEs pose a substantial barrier to successful implementation of EBTs in populations who experience them. Furthermore, the present findings occurred within the context of a randomized

effectiveness trial, in which consultants were strongly biased to recommend that providers maintain treatment adherence in the face of an ELE. Thus, the negative impact of ELEs on provider adherence and clinical progress may be even greater in the context of routine care.

Results from Study 1 extend previous findings that ELEs are associated with reduced adherence to EBT content within a single session (Guan et al., 2015). In the current study, we obtained further information that even when some planned practices were covered in the ELE session, providers were less likely to cover all planned practices (i.e., breadth of practices) and to cover practices fully (i.e., depth of practices) as compared with sessions in which ELEs were not reported. These findings suggest that ELEs have the possibility to interfere with EBT implementation in multiple ways. Furthermore, the disruptive effects of ELEs on treatment adherence may extend beyond the session in which they are first reported. Although the recurrence of ELEs within clients prevented us from being able to examine treatment adherence beyond the current and next session, our results indicate that ELEs were associated with the most severe type of disruption - not covering any of the planned practices - across at least two sessions.

Importantly, analyses of ELEs as predictors of reduced treatment adherence in the future controlled for providers' typical level of adherence in sessions without ELEs. These results provide support for the directionality of ELEs in predicting reduced adherence, rather than vice versa - that is, less adherent providers offering less structure in session, thereby giving clients greater opportunity to report ELEs. From the current study, it seems that reductions in providers' adherence in ELE sessions are attributable to more than their average tendencies to adhere to treatment for a particular client; rather, ELEs may be disruptive to adherence for most providers, even those who are typically adherent. The directionality of ELEs in further reducing treatment adherence is also supported by our findings that adherence is affected for more than one session when controlling for average adherence,

as these analyses enabled us to look at ELEs as prospective predictors of later adherence. Finally, a strength of Study 1 was that it examined treatment adherence to practices recommended by the consultant, rather than adherence to the EBT manual. As such, the treatment plan was likely to be more tailored to individual client needs than an approach strictly using sequencing and guidelines from the manual (see Regan et al., 2016 for further details on how consultant recommendations differed from the manual in this sample). However, even this more flexible treatment plan did not appear to be immune to the disruptive effects of ELEs on provider adherence.

Findings from Study 2 are noteworthy in several ways. Although clients in the MATCH condition of the effectiveness trial significantly improved on symptoms and functioning over time, for each ELE for which MATCH content was not covered in session, clients' rate of improvement substantially decreased on externalizing symptoms and functioning as indexed by client-nominated top concerns. There are multiple ways in which the ELE by time interaction may have impacted clinical progress. It is possible that each disruptive ELE resulted in a severe worsening of progress immediately following the ELE with a gradual recovery afterwards; alternatively, each ELE may have resulted in steady worsening of progress over time. Although a close examination of the nature of this disruption was outside of the scope of the current study, future research should investigate these questions as they are likely to shed light on when and how to address ELEs. It would also be important to examine whether clients who experienced disruptive ELEs required a longer duration of treatment than those who did not in order to achieve clinical improvement. Another area for further investigation relates to the mechanisms through which disruptive ELEs limit treatment progress. It is likely, for instance, that clients experiencing significant stressors have less time and energy to devote to practicing treatment skills outside of session, which may in turn limit their treatment gains.

Alternatively, clients undergoing very severe ELEs may have reduced attendance in therapy overall, and this attenuated dosage of treatment may negatively impact outcomes.

Additionally, it is interesting that internalizing symptoms appeared to be less impacted by disruptive ELEs. Given the caregiver-mediated nature of treatment for externalizing problems in the MATCH protocol, as well as our finding that the effect of ELEs on externalizing outcomes was greater for caregiver than for youth-reported outcomes, it is possible that treatment with caregivers is more negatively impacted by ELEs than treatment with youth. Furthermore, although we were unable to examine this question with the current data, there may be greater correspondence between the types of ELEs reported in this study (e.g., school suspension, youth arguments with family) and externalizing as opposed to internalizing symptoms, resulting in greater effects of ELEs on externalizing progress. These possibilities should be considered in future research on ELEs.

Our clinical progress findings are strengthened by the fact that they controlled for baseline client functioning on the BIS, such that disruptive ELEs predicted reduced clinical progress over and above clients' initial severity. In fact, when the ELE by time interaction was in the model, there was no significant effect of BIS by time, indicating that ELEs had a stronger effect on clinical progress than baseline client functioning. Although these results point to a strong association between disruptive ELEs and clinical progress, the current study was unable to examine the reasons why providers chose not to use the protocol when faced with an ELE. For example, it is possible that providers felt that the ELE was not addressable by any content from the EBT, or that the client's elevated distress in session required an extensive supportive response. These ideas have yet to be investigated, but a closer examination of the factors that influence providers' decisions to respond to ELEs is needed to develop structured guidelines for handling these events in a sensitive yet effective manner.

Furthermore, the current study only examined associations between one type of response to an ELE - not utilizing EBT content - with client outcomes. This type of unstructured response can include many different strategies, with some of the most common being provision of support/empathy and information gathering regarding the event and its impact (Guan et al., 2015). Although our findings suggest that use of these unstructured responses at the expense of EBT content may be detrimental to outcomes, it is likely that some degree of these types of responses is needed to maintain the therapeutic alliance and better understand the event in order to intervene. Furthermore, there are different ways of responding to an ELE using EBT content that may also have differential effects on client progress. Ignoring the ELE while forging ahead with non-relevant EBT strategies may negatively affect client engagement and outcomes, whereas applying appropriate EBT strategies to the ELE may improve outcomes. With regard to the latter, previous research in which providers were instructed to "provide support and apply current CPT skills to the [ELE] at hand" (p. 973, Galovski et al., 2012) demonstrated that using this strategy within a single session was not associated with reduced clinical progress. Thus, future research should examine specific provider responses and their dosage in relation to treatment engagement and clinical progress, with the goal of informing the development of training for effectively responding to ELEs.

Limitations

Although both studies highlight the potential for ELEs to interfere with planned EBT delivery, several limitations should be noted. First, we were unable to randomly assign ELEs to clients; rather, both studies assessed associations between ELEs, treatment adherence and clinical progress within a larger effectiveness trial. In light of this, although we attempted to control for confounding influences, it is not possible to infer a causal relationship between ELEs and outcomes. Thus, results should be interpreted as associative rather than causal relationships. Second, our

measures of treatment integrity focused only on adherence; additional measures of provider competence in ELE sessions would provide a more comprehensive picture of relationships between ELEs and multiple aspects of provider behavior. Third, both studies utilized provider-consultant report of ELEs, which has demonstrated fair but imperfect agreement with observational coding of ELEs (Guan et al., 2015). Observational coding of ELEs would offer more objective measurement of this construct, as well as provide opportunities to gather more detailed information regarding characteristics of ELEs and their associated provider responses.

Conclusion

Although impressive progress has been made in developing efficacious psychosocial treatments for youth, findings from the present study suggest that ELEs may pose a serious threat to the delivery of these treatments. In the vulnerable population examined within this study, ELEs were associated with significantly reduced EBT implementation across multiple sessions as well as reduced clinical progress. Given that ELEs occur in the majority of cases in an underserved sample (69%; Chorpita et al., 2014), findings from the present study are particularly concerning, as they suggest that ELEs may have an enduring negative impact on the effectiveness of EBT for many youth. Further research is needed to effectively address ELEs as they occur in sessions, so that youth can receive optimal benefits from our existing EBTs.

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Table 1

Number of Sessions Covered According to Three Provider Adherence Metrics for Emergent Life Event and Control Sessions over Time

Provider Adherence Metric	Same Session	Next Session	Not Same or Next Session
a) Any Part of Plan Covered			
ELE (*n* = 125)	54 (43%)	35 (28%)	36 (29%)
Control (*n* = 122)	96 (79%)	10 (8%)	16 (13%)
b) All Planned Practices Covered (Breadth)			
ELE (*n* = 125)	42 (34%)	26 (21%)	57 (46%)
Control (*n* = 122)	68 (56%)	3 (3%)	51 (42%)
c) At Least 1 Planned Practice Covered Fully (Depth)			
ELE (*n* = 125)	17 (14%)	18 (14%)	90 (72%)
Control (*n* = 122)	35 (29%)	14 (12%)	73 (60%)

Note. ELE = emergent life event. Percentages represent row percentages computed within each group (i.e., ELE or control).

Table 2

Emergent Life Events as A Predictor of Provider Treatment Adherence in the Same Session

Outcome:	Any Coverage				Breadth of Coverage				Depth of Coverage			
	b	*SE*	*OR*	95% CI	*b*	*SE*	*OR*	95% CI	*b*	*SE*	*OR*	95% CI
Predictor												
Intercept	-1.00	0.60	0.37	[0.11, 1.28]	-1.95	0.79	0.14*	[0.03, 0.72]	-2.09	0.84	0.12*	[0.02, 0.69]
Average adherence	3.28	0.71	26.56***	[6.22, 113.41]	2.92	0.94	18.51**	[2.71, 126.67]	1.52	0.98	4.58	[0.61, 34.17]
ELE	-1.77	0.29	0.17***	[0.10, 0.30]	-1.01	0.25	0.37***	[0.22, 0.60]	-0.96	0.38	0.38*	[0.18, 0.81]

Note. Any coverage = any planned practices covered in any depth (*partially* or *fully*); breadth of coverage = all planned practices covered in any depth; depth of coverage = at least one planned practice covered fully. Average adherence = average treatment adherence for each client in non-ELE sessions. *SE* = standard error of the *b* coefficient; *OR* = odds ratio; CI = confidence interval.

*$p < .05$, **$p < .01$,***$p < .001$.

Table 3

Emergent Life Events as Predictors of Provider Treatment Adherence in the Same or Next Session

Outcome:	Any Coverage				Breadth of Coverage				Depth of Coverage			
Predictor	*b*	*SE*	*OR*	95% CI	*b*	*SE*	*OR*	95% CI	*b*	*SE*	*OR*	95% CI
Intercept	-0.20	0.78	0.82	[0.17, 4.00]	-2.00	0.85	0.14*	[0.02, 0.78]	-1.28	0.92	0.28	[0.04, 1.83]
Average adherence	2.92	0.78	18.50***	[3.72, 90.91]	3.11	0.97	22.49**	[3.10, 166.67]	1.05	1.05	2.86	[0.33, 24.39]
ELE	-1.08	0.39	0.34**	[0.16, 0.74]	-0.19	0.30	0.82	[0.45, 1.50]	-0.52	0.32	0.59	[0.32, 1.11]

Note. Any coverage = any planned practices covered in any depth (*partially* or *fully*); breadth of coverage = all planned practices covered in any depth; depth of coverage = at least one planned practice covered fully. Average adherence = average treatment adherence for each client in non-ELE sessions. *SE* = standard error of the *b* coefficient; *OR* = odds ratio; CI = confidence interval.

*$p < .05$, **$p < .01$,***$p < .001$.

Table 4

Disruptive Emergent Life Events As A Predictor of Symptom Progress over Time

Outcome:	BPC Internalizing			BPC Externalizing			BPC Total		
Predictor	*b*	*SE*	*t*	*b*	*SE*	*t*	*b*	*SE*	*t*
Intercept	2.72170	0.60510	4.50***	1.46380	0.53070	2.76**	5.12940	0.91720	5.59***
Time	-0.00904	0.00274	-3.30**	-0.00777	0.00200	-3.88***	-0.01676	0.00428	-3.92***
BIS	0.06327	0.02927	2.16*	0.05209	0.02615	1.99	0.15670	0.04448	3.52***
ELE	0.28640	0.21120	1.36	0.57610	0.18430	3.13**	0.43250	0.32000	1.35
BIS x Time	0.00002	0.00013	0.16	-0.00004	0.00009	-0.39	-0.00006	0.00020	-0.29
ELE x Time	0.00049	0.00088	0.56	0.00155	0.00063	2.47*	0.00228	0.00136	1.67^
Informant				1.82880	0.67200	2.72**			
BIS x Informant				0.06599	0.03283	2.01*			
ELE x Informant				-0.70070	0.23380	-3.00**			

Note. BPC = Brief Problem Checklist; BIS = Brief Impairment Scale; ELE = number of emergent life events per case for which no MATCH practices were covered in session; time = days since intake; informant = caregiver (0) or youth (1) report. *SE* = standard error of the *b* coefficient.

^$p < .10$, *$p < .05$, **$p < .01$,***$p < .001$.

Table 5

Disruptive Emergent Life Events As A Predictor of Progress on Functioning over Time

Outcome:	Top Problems Assessment		
	b	*SE*	*t*
Predictor			
Intercept	5.07830	0.41760	12.16***
Time	-0.01499	0.00281	-5.34***
BIS	0.06697	0.01990	3.37**
ELE	-0.02342	0.14270	-0.16
BIS x Time	-0.00007	0.00013	-0.51
ELE x Time	0.00304	0.00089	3.43**

Note. BIS = Brief Impairment Scale; ELE = number of emergent life events per case for which no MATCH practices were covered in session; time = days since intake. *SE* = standard error of the *b* coefficient.

$p < .01$,*$p < .001$.