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Rapp, Amy M
Chavira, Denise A
Sugar, Catherine A
et al.

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Incorporating Family Factors into Treatment Planning for Adolescent Depression: Perceived Parental Criticism Predicts Longitudinal Symptom Trajectory in the Youth Partners in Care Trial

Amy M. Rapp[1,2,3], **Denise A. Chavira**[1], **Catherine A. Sugar**[4,5], **Joan R. Asarnow**[4]

[1]Department of Psychology, University of California, Los Angeles

[2]Department of Psychiatry, Columbia University

[3]New York State Psychiatric Institute

[4]Department of Psychiatry and Biobehavioral Sciences, Jane and Terry Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles

[5]Department of Biostatistics, University of California, Los Angeles

Abstract

Background: This study aimed to clarify the predictive significance of youth perceptions of parental criticism assessed using a brief measure designed to enhance clinical utility. We hypothesized that high perceived parental criticism would be associated with more severe depression over 18-months of follow-up.

Methods: The study involved secondary analyses from the Youth Partners in Care trial, which demonstrated that a quality improvement intervention aimed at increasing access to evidence-based depression treatment in primary care led to improved depression outcomes at post-treatment compared to usual care enhanced by provider education regarding depression evaluation/management. Patients (N=418; ages 13–21) were assessed at four time points: baseline; post-treatment (six-month follow-up); 12- and 18-month follow-ups. The primary analysis estimated the effect of perceived parental criticism on likelihood of severe depression (i.e., Center for Epidemiological Studies-Depression Scale ≥ 24) over post-intervention follow-ups using a repeated-measures logistic regression model. Secondarily, a linear mixed-effects growth model

Corresponding Author: Joan Asarnow, Department of Psychiatry and Biobehavioral Sciences, Jane and Terry Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, 300 Medical Plaza, Los Angeles, CA, 90095-6968, jasarnow@mednet.ucla.edu, Phone: (310) 794-4962, Fax: (310) 267-0378.

Author Statement

Contributors

A.M.R., D.A.C, and J.R.A developed the study concept. Data analysis and interpretation was performed by A.M.R. in consultation with C.A.S. A.M.R. drafted the paper, and D.A.C., C.A.S., and J.R.A provided critical revisions. All authors approved the final version of the paper for submission.

examined symptom trajectories from baseline through 18-months using the Mental Health Index-5, a measure of emotional distress available at all time-points.

Results: High perceived parental criticism emerged as a robust predictor of clinically-elevated depression (*OR*=1.66, *p*=.02) and a more pernicious symptom trajectory over 18-months (β = −1.89, *p*<.0001).

Limitations: The association between the self-report perceived criticism and traditional expressed emotion measures derived from verbal and nonverbal parental behaviors was not evaluated.

Conclusions: Results support perceived parental criticism as a predictor of youth depression outcomes over 18-months. This brief measure can be feasibly integrated within clinical assessment to assist clinicians in optimizing treatment benefits.

Keywords

depression; family criticism; adolescent; trajectory

Depression is a persistent and recurrent disorder (Burcusa & Iacono, 2007; Kiviruusu et al., 2020), with a particularly pernicious course of symptoms associated with onset in youth (Wilson et al., 2014). Although there is a great need to identify baseline prognostic indicators that can be used to personalize treatment (Cohen & DeRubeis, 2018; DeRubeis et al., 2014), research has elucidated few factors that robustly predict longitudinal course of depression (Kovacs et al., 2016).

Modifiable family factors, such as conflict, are well established correlates of youth depression and potentially potent targets for additional study (Yap et al., 2015; Yap & Jorm, 2015). In particular, expressed emotion (EE), viewed as a behavioral indicator of high levels of criticism and to a lesser extent, emotional over-involvement in the family environment, is a putative risk factor for onset of depression and of poorer subsequent outcomes in youth. EE has been shown to be more common among parents of children with depressive disorders compared to other mental health conditions such as Attention-Deficit/Hyperactivity Disorder or schizophrenia spectrum disorders (Asarnow et al., 1994; Asarnow et al., 2001). While there is a large body of research demonstrating that EE in family members (i.e., parents and spouses) and individuals' perceptions of critical family attitudes are strong predictors of symptom trajectory and relapse in adults (Hooley, 2007; Hooley & Teasdale, 1989; Kwon et al., 2006), less research has included youth populations. Although some inconsistent findings exist (Tompson et al., 2015), results from these limited studies in youth samples overall support that EE in the family environment is detrimental for youth experiencing depression. For example, EE has been found to be associated with lower social functioning (e.g., parent-child relationships, academic performance) among youth with depression receiving outpatient care (McCleary & Sanford, 2002). Other research has shown that parental EE was associated with an increased risk of childhood depression among youth with depressed mothers (Tompson et al., 2010) and one small study, conducted with a sample of pre-adolescent children hospitalized for depressive disorders, demonstrated that high EE in parents was associated with increased likelihood of persistent depression or relapse over the course of a one to five year follow-up after hospital discharge (Asarnow et

al., 1993). Few studies have focused specifically on the criticism dimension of EE separate from ratings of emotional overinvolvement. One study found that baseline maternal criticism predicted onset of a future depressive episode among children and adolescents (Silk et al., 2009), although some data has challenged the direction of the relationship between parental criticism and youth psychopathology (i.e., potential bidirectional effects versus a parent effect; Nelemans et al., 2014). Given the limited longitudinal evidence in youth samples, further examination is needed to clarify the utility of parental criticism in predicting depression outcomes over time.

Research interest in examining the prognostic value of EE has led to efforts to develop and evaluate indicators of criticism in the family environment. Typically, EE has been measured through coding of a parent's voice tone and critical content when describing their children on the relatively lengthy Camberwell Family Interview (Brown et al., 1972; Brown & Rutter, 1966; Vaughn & Leff, 1976) or a briefer five-minute speech sample (Magaña et al., 1986). These behavioral assessments are time consuming and costly, requiring extensive coder experience and training (Hooley & Miklowitz, 2017). Less administratively demanding measures have been developed in response to this methodological limitation. Adopting the perspective of the individual diagnosed with a psychiatric disorder, the Perceived Criticism Measure (PCM; Hooley & Teasdale, 1989) is a single-item self-report measure of perceived family criticism. This measure demonstrated concurrent validity with the Camberwell Family Interview and predicted treatment response among depressed adults (Hooley & Teasdale, 1989; Masland & Hooley, 2015). Measures like the PCM, which capture the patient's perceptions of criticism rather than obtaining a behavioral measure of criticism are promising tools for understanding the course of youth depression, particularly given their feasibility for use in clinical practice and large scale research surveys.

Although numerous factors can impact perceptions of criticism, including depressive biases, extant research supports that self-reported ratings of perceived criticism are not simply another measure of the individual's psychopathology. These measures appear to be relatively stable, unaffected by changes in mood, and do not vary markedly with depression symptom recovery or in relation to other individual-level factors such as negative mood, neuroticism, and sensitivity to criticism (Gerlsma et al., 2014; Hooley & Teasdale, 1989; Masland et al., 2017; Masland et al., 2015). Although measuring a youth's perception of maladaptive elements of the family environment could meaningfully guide depression treatment, including during care and monitoring following acute treatment, there is limited research examining this construct in relation to clinical course and outcomes (Hooley & Miklowitz, 2017).

To our knowledge, no studies to date have longitudinally evaluated whether perceptions of parental criticism predict treatment response and subsequent symptom trajectories in adolescents. Elucidating the impact of perceived parental criticism on the course of depression in adolescents can help advance efforts to develop strategies for leveraging the family environment to optimize depression treatment and improve long-term outcomes. As such, the aim of this study was to evaluate whether adolescents' perceptions of parental criticism predict response to treatment for depression and the subsequent course of depression symptoms during a one-year follow-up period after receipt of treatment. This

hypothesis was tested in secondary analyses of data collected from the Youth Partners in Care (YPIC) trial (Asarnow et al., 2005). YPIC was the first and largest randomized effectiveness trial to evaluate a quality improvement (QI) intervention for adolescent depression featuring improved access to evidence-based depression treatment (i.e., cognitive-behavior therapy [CBT] and antidepressant medication) using a collaborative care model within primary care clinics. We predicted main effects of perceived parental criticism, treatment condition, and time such that perceived parental criticism would be associated with greater likelihood of severe depression, the QI condition would be associated with better depression outcomes, and depression symptoms would decline over the 18-month observation period.

Methods

This study involved secondary analyses of data from the YPIC randomized controlled effectiveness trial, comparing QI for depression in primary care to enhanced usual care (UC). Institutional review boards of all participating organizations approved the study. As reported previously (Asarnow et al., 2005, 2009a), an advantage for the QI intervention was evident at the post-treatment time point. Relative to UC, the QI intervention led to reduced depressive symptoms, greater likelihood of recovery (defined as an absence of clinically-elevated depression symptoms at post-treatment), and improvements in quality of life and satisfaction with care. However, there was a tendency toward recovery in both groups, with depressive symptoms declining rapidly over the six-month treatment period (baseline to post-treatment) and continuing recovery over 12-months of subsequent follow-up. As detailed descriptions of methods are available elsewhere, we provide an overview of the study emphasizing procedures and measures relevant to the presented analyses (for additional information, see Asarnow et al., 2005, 2009a, 2009b).

Participants

Participants were 418 adolescents (defined broadly as ages 13–21, as adolescent medicine clinics often include youths through age 21) recruited from six primary healthcare sites, including public sector, managed care, and academic health programs located in urban city centers. Youth were eligible for inclusion if they screened positively for probable depression based on the stem items for current (past-month) depressive disorder from the Composite International Diagnostic Interview (CIDI-12; World Health Organization, 1997) and/or scored in the clinical range on the Center for Epidemiological Studies-Depression Scale (CES-D ≥ 24; Radloff, 1977). Exclusion criteria were: (1) medical provider not in study, (2) sibling already enrolled in study, (3) youth not English speaking, and (4) parent not English or Spanish speaking. The majority of the sample was female (78.0%), had at least one parent employed (88.5%), and belonged to a racial/ethnic minority group (87.0%). Overall the sample was predominantly Latinx/Hispanic (56.0%), but individuals also identified as mixed race/ethnicity (13.6%), Black (13.4%), White (12.7%), and Other (3.1%).

Study Design Overview

After completing a baseline assessment, youth were randomly assigned to one of two conditions described below. Participants were assessed at baseline, at the end of the study

intervention period (six months after baseline), and at 12- and 18-month follow-up time points. Youth baseline and follow-up assessments were conducted by interviewers from the Battelle Survey Research Institute who were blind to intervention assignment, using computer assisted telephone interviews.

Enhanced Usual Care (UC)—Usual care was enhanced by providing all primary care clinicians with training and educational materials on depression evaluation and treatment. The training reviewed medication management based on the Texas Medication Algorithms for Major Depressive Disorder, emphasizing certain selective serotonin reuptake inhibitors as the first-line treatment choice (Hughes et al., 1999). UC within the clinics generally involved referral for specialty mental health care which could include medication or referral for psychotherapy. Mental health treatment was rare in the UC condition. Psychotherapy or counseling was reported in 21.2% of youth and psychiatric medication treatment in 16.2% of youth.

Quality Improvement (QI) Intervention—The QI intervention was modeled on the adult Partners in Care study and featured collaborative integrated medical-behavioral healthcare aimed at improving access to evidence-based depression treatment (Asarnow et al. 2017; Wells et al., 2000). Major intervention components included: (1) expert practice leaders at each site who adapted and implemented the intervention, and (2) care managers at the sites who provided manualized CBT for depression and supported primary care clinicians with patient evaluation, education, treatment initiation and follow-up, and linkage to needed services. The study CBT included an introductory session, three four-session modules focused on activities and social skills, cognition, and communication and problem-solving, and a final relapse prevention session. Treatment was available in English or Spanish, depending on the participant's preferences. Care managers were available to follow patients for six months to support youth and their families, coordinate care, provide CBT, and support the primary care clinician with medication treatment when included in the treatment plan (Asarnow et al., 2005). Implementation data indicated that 72% of youth received some treatment; 70% received care manager follow-up in person or by phone; 45% received CBT, with an average of 3.85 CBT sessions (SD = 3.69; range = 1 – 16); and 15.1% received psychiatric medication treatment (Asarnow et al., 2009a, 2009b). Care managers held master's or PhD level degrees in mental health fields (MSW, dual MSW-RN, MFT, MA in Psychology, or PhD in Psychology). The study provided training, written manuals, and consultation to support model fidelity. Time with care managers was paid for by the study and available to participants without co-pay.

Measures

Perceived Parental Criticism—The measure of perceived parental criticism was based on the PCM developed by Hooley and Teasdale (1989) but focused on parents instead of on spouses. Participants completed two items which assessed perceptions of how critical or disapproving the participant's mother/step-mother and father/step-father had been of him or her over the past month. Each item was rated on a 0 ("Never") to 4 ("Often") scale. Scores were generated for each parent to allow participants to indicate when they did not have a relationship with one of their parents (e.g., parents absent by death or other separation). A

portion of youth in the present sample endorsed no contact with their mother (14.0%) or father (25.1%) over the past month. To account for these differences, and provide an index of whether there was elevated perceived criticism in the family, the rating for the parent with the highest value was used (e.g., perceived parental criticism was coded 4 if either perceived maternal criticism or perceived paternal criticism was rated a 4). In line with other research that has used a one-item measure to classify participants as "high" and "low" in perceived criticism (Hooley et al., 2012), this variable was dichotomized based on a median split such that scores greater than or equal to three (indicating a range of perceived criticism occurring "Fairly Often" to "Often") were classified as high perceived parental criticism, and all scores below three (indicating a range of perceived criticism occurring "Never" to "Sometimes") were classified as low perceived parental criticism.

Depression—The CES-D (Radloff , 1977) is a 20-item self-report measure rating depression symptoms during the past week with strong internal consistency in the present sample (Cronbach's α = .89 to .90, across all three follow-up time points). CES-D scores were available at post-treatment (six months from baseline), 12-month follow-up, and 18-month follow-up. Consistent with prior reports on the YPIC trial (Asarnow et al., 2009a), continuous CES-D scores were dichotomized using established criteria such that CES-D scores ≥ 24 were considered to represent severe depression (Roberts et al., 1991). This was the primary outcome for the present study.

Distress—The Mental Health Index-5 (MHI-5; Berwick et al., 1991; Ware et al., 1992; Ware & Sherbourne, 1992; Stewart et al.,1989) is an established measure consisting of the five items that best reproduced the summary score for the 38-item Mental Health Inventory used in the Medical Outcomes Study. The five items ask about the frequency with which the youth feels: calm and peaceful; downhearted and blue; very nervous; happy; and so down in the dumps that nothing can cheer them up. Items are rated on a scale from 1 ("All of the Time") to 6 ("None of the Time"), resulting in lower scores reflecting greater emotional distress and higher scores reflecting greater levels of emotional well-being. As expected, given that three of the five items assess depressive symptoms, the MHI-5 and CES-D scores were highly correlated in the present sample (r = −.73 to −.79, $p < 0.001$, across all three follow-up time points). The MHI-5 was administered at all study time points and demonstrated strong internal consistency in the present sample (α = .77 to .80, across all four time points [baseline and three follow-up assessments]).

Data Analysis

A repeated-measures logistic regression analysis with subject-level random intercepts to account for within-person correlations, conducted in SAS 9.4, was used to estimate the effect of perceived parental criticism on treatment response and the likelihood of continued severe depression (i.e., CES-D ≥ 24) over the 18-month observation period. The primary predictors were treatment condition, perceived parental criticism, time (treated as linear), and all their two- and three-way interactions. Covariates were selected for conceptual and statistical reasons and included age, gender, and baseline MHI-5. Specifically, an adolescent's experience of parental criticism was presumed to vary as they become older and more independent, and gender and baseline MHI-5 were found in this sample to be

associated with higher depression scores. Note that a three-way interaction would imply differential trajectories over the follow-up period, moderated by perceived parental criticism, while a two-way interaction of criticism with group but not with time would imply moderation of the initial treatment effect, with subsequent maintenance. A sole two-way interaction of perceived criticism with time would imply that those with high and low perceived criticism had differential longitudinal trajectories but that the effect was comparable across treatment groups.

As a sensitivity analysis to examine symptom trajectories over all four time points (baseline, post-treatment [six-month follow-up], 12-month follow-up, 18-month follow-up), we fit a linear mixed-effects growth model with subject-level random intercepts. Because we were interested in the complete trajectory of symptom severity, including over the acute treatment period, we used MHI-5 as the outcome variable. This measures was available at all time points, viewed as an indicator of overall distress, and was highly correlated with CES-D total symptom scores ($r = -.73$ to $-.79$, $p < 0.001$, across all three follow-up time points). Although the CES-D was administered during the screening assessment to determine eligibility, it was not re-administered at the baseline time point. Due to high variability in the time (measured in days) between screening and study enrollment (*M(SD)* = 42.1(51.5), range: 1 – 319), the screening CES-D was not considered an accurate indicator of baseline depression. As in the primary analyses, the primary predictors were treatment condition, perceived parental criticism, time, and their two- and three-way interactions, along with age and gender. Time was parameterized as piecewise linear, allowing for a change in slope following the acute treatment period since improvements were anticipated to level off or continue at a slower rate over follow-up.

As done in prior papers on the YPIC study (Asarnow et al., 2005; 2009a), we used nonresponse weighting in the primary model to address missing data for the 9% of study participants who completed no follow-up assessments (Brick & Kalton, 1996). Nonresponse weights were constructed for each individual by fitting a logistic regression model to predict follow-up from relevant clinical and demographic variables, with separate models for each intervention group. Analyses were conducted with and without nonresponse weights and yielded similar results with no change in conclusions. Unweighted analyses are reported. Sensitivity analyses used a mixed model which handles missingness using all available data to produce maximum likelihood estimates (Allison, 2012).

Results

Sample Description

Over 90% of enrolled youths ($n = 383$) completed at least one follow-up assessment, with post-treatment (six-month follow-up) data available for 359 participants (86%), 12-month follow-up data available for 327 youths (78%), and 18-month follow-up data available for 322 youths (77%). Female youth endorsed more depression and distress relative to male counterparts at post-treatment (CES-D: $F(1,353) = 13.4$, $p < .001$; MHI-5: $F(1,353) = 14.09$, $p < .001$) and 12-month follow-up (CES-D: $F(1, 324) = 4.50$, $p = .03$; MHI-5: $F(1, 324) = 4.55$, $p = .03$). Descriptive statistics for the full sample are summarized in Table 1.

Longitudinal Course of Depression

Primary Model: Continued Severe Depression as Outcome—Estimates of fixed effects from the repeated-measures logistic regression model are summarized in Table 2. The three-way interaction of treatment condition, perceived parental criticism, and time, as well as all lower-order two-way interactions were non-significant. These parameters were therefore removed from the model to reduce collinearity and maximize the available degrees of freedom, thereby increasing the precision and stability of the main effect estimates. In the reduced model, being in the QI condition was associated with lower likelihood of continued severe depression relative to UC (OR = .60, p = .02), and youth who endorsed high perceived parental criticism were more likely to experience continued severe depression relative to those who endorsed low perceived parental criticism (OR = 1.66, p = .02). Marginal effects of time suggested a trend such that youth were less likely to experience continued severe depression over time (OR = .80, p = .06).

Sensitivity Analyses—Estimates of fixed effects from the linear mixed-effects growth model are summarized in Table 3. This model was fit using MHI-5 as the continuous outcome, as MHI-5 was available at all time points. The three-way interaction of treatment condition, perceived parental criticism, and time, as well as all lower-order two-way interactions were non-significant and therefore removed from the model. Perceived parental criticism demonstrated a significant main effect on longitudinal symptom trajectory (β = −1.89, p < .0001). As illustrated in Figure 1, MHI-5 scores were on average nearly two points lower in the high criticism group than in the low criticism group (with lower MHI-5 scores representing greater distress). Main effects of time demonstrated that MHI-5 scores improved over the acute treatment period in both groups (gain of β = 2.01 points per six-months, p < .0001), followed by a change in slope during the follow-up period such that patients continued to show improvements in terms of severity of distress but at a slower rate (change in slope β = −1.33, p = .0004, indicating a net rate of improvement of .68 points per six-months).

Discussion

The present results add to the research literature supporting the prognostic significance of measures of the family environment in adolescent depression. This study focused on perceived parental criticism, a construct that could have important implications for treatment planning. To our knowledge, this is the first study to demonstrate that a self-report measure of perceived parental criticism can predict the clinical course of adolescent depression over an 18-month observation period, including a six-month treatment period and follow-up over another 12 months. Specifically, we found that youth who viewed their parents as highly critical were more likely to experience clinically-elevated depression over time, an effect that was not moderated by treatment condition. This finding was corroborated by secondary analyses examining symptom trajectories over all four time points which showed an association between high perceived parental criticism and higher levels of emotional distress.

Measuring perceived parental criticism at baseline could inform treatment planning. A major difficulty in treating depression, particularly when it has an onset before adulthood, is the chronicity and recurrence of symptoms (Birmaher et al., 2000; Curry et al., 2011; Kovacs et al., 2016). Findings are in line with other research supporting perceived criticism as a predictor of relapse in mood disorders in adults (Scott et al., 2012) and could inform how clinicians monitor and manage long-term outcomes. Given the association of perceived parental criticism with a greater likelihood of continued severe depression found in this study, a positive screen for high perceived parental criticism at baseline could indicate the possible value of treatment strategies that build family support and/or strengthen a youth's ability to cope with perceptions of parental criticism (Asarnow et al., 2015; Diamond et al., 2015; Mehlum et al., 2014; Mufson et al., 2004).

Although the perceived criticism measure used in this study requires additional psychometric evaluation, the clinical application of the present results is enhanced by the practicality of using a brief, two-item self-report. Modeled after the PCM (Hooley & Teasdale, 1989) developed for adults, this measure can be administered easily within clinical settings, requires little time and training to score and interpret, and is more likely to be adopted than the lengthier and costly measures traditionally used to assess criticism in the family environment (i.e., interview or speech sample). The availability of brief feasible screening tools is particularly important in primary care services where clinicians are asked to screen for and manage a broad set of health and mental/behavioral health conditions, within an average visit of 12–15 minutes in the United States (Asarnow et al., 2017).

Primary care settings are increasingly recognized as valuable services for detecting and treating depression through integrating medical and behavioral health care and patient-centered medical homes (Asarnow et al., 2017). As most youth report at least one primary care visit each year, integrating care for depression and other mental/behavioral health concerns within primary care services is one route for increasing access to needed mental/behavioral health services (Asarnow et al., 2017). The YPIC trial provides one example of this approach. By making evidence-based depression care available through care managers trained to deliver CBT and support primary care clinicians in the evaluation and management of depression, rates of care were increased with an associated improvement in youth depression outcomes (Asarnow et al., 2005; Asarnow et al., 2009a). While family treatments delivered in primary care have shown promise for younger children (Leslie et al., 2016), a key issue for future research is when and how to address family risk and protective processes within integrated medical-behavioral healthcare models for adolescents. Primary care settings provide particular challenges for family treatments given that parents do not typically participate in their children's visits, which often can include discussion of sensitive issues (e.g., pregnancy prevention). This challenge was apparent in the YPIC study where although the importance of parent outreach was emphasized in training and manuals for the QI intervention, only 28 of 211 (13.27%) participants in the QI condition received any parent sessions, a factor that could have contributed to the lack of treatment response differences in youth endorsing low versus high perceived parental criticism. Future research is needed to identify and develop approaches for addressing family risk and protective processes that can be feasibly delivered in primary care. For example, evidence suggesting that parental depression literacy (e.g., accurate knowledge of depression causes, symptoms,

and treatment) was associated with reduced parental criticism (Johnco & Rapee, 2018) points to the potential utility of brief psychoeducational interventions for parents.

Results from the present study can also be considered within the growing literature supporting the value of family-focused and family centered treatments for youth mood disorders (Asarnow et al., 2019; Connell et al., 2008; Connell & Dishion, 2008; Diamond et al., 2002, 2003; Israel & Diamond, 2013; Miklowitz & Goldstein, 1997; Miklowitz et al., 2020; O'Donnell et al., 2020; Shaw et al., 2009; Tompson et al., 2017; Tompson et al., this issue; Zisk et al., 2019), as well as more individually focused treatments that address parent-child relationships (Mufson et al., 2004; Young & Mufson, 2003). These treatments focus on intervention strategies such as enhancing family support, decreasing family conflict, improving family communication and problem-solving, enhancing parenting skills, and increasing parent motivation to engage in treatment. Some attention to family processes is included across most treatment models for youth depression. This can range from individual treatments augmented with family psychoeducation to family treatments that focus explicitly on the quality of family relationships as the central change mechanism. Treatments for youth that emphasize strengthening protective processes within the family often involve time spent with youth and parents individually to set the stage for successful family interactions (Asarnow et al., 2015; Beardslee et al. 2003; Diamond et al., 2013, 2015; Esposito-Smythers et al., 2011).

Cognitive strategies may also be helpful for addressing perceptions of parental criticism, particularly as these perceptions may be related to biases in the way in which youth perceive parent interactions. Perceptions of parental criticism could also contribute to tensions in family relationships and interactions. Treatments that help youth to identify unhelpful negative thoughts and generate coping thoughts about family interactions could be useful for responding to and recovering from perceptions of parent criticism. For example, if a youth has the thoughts "my parents always criticize me, nothing I do is good enough," the therapist might support the youth in "describing the facts" of what the parent had actually said and considering other ways of interpreting the event. This approach could help the youth to reframe their perceptions of parental criticism with thoughts such as "my parents do tend to be critical at times. This is hard, and at the same time, I can only do the best I can. Perhaps I have to accept that I can't please my parents all the time. There are times when my mom says she is proud of me, and I believe her."

While accumulating research supports the value of family treatments (Tompson et al, this issue; for review, Diamond & Josephson, 2005), it is also important to note that there have been negative results where family treatments performed poorly or added little to CBT or other approaches (Brent et al., 1997; Clarke et al., 1999; for review, Cottrell & Boston, 2002). However, the need for attention to family processes in treating depressed youth is underscored by recognition that youth generally live within families and family risk factors such as perceived parental criticism predict a more pernicious symptom course, as found in this study. Further research is needed to clarify strategies for tailoring and personalizing family interventions to optimize treatment for youth depression.

Limitations

Results should be considered in light of study limitations. First, the CES-D was not obtained at the baseline time point, limiting our ability to examine the trajectory of depression severity using the CES-D across the entire 18-month observation period. To overcome this limitation, we conducted secondary analyses using MHI-5 scores, viewed as an indicator of emotional distress, across all four study time-points. MHI-5 and CES-D scores were highly correlated, likely driven partly by MHI-5 items assessing depressive symptoms. Therefore, while the results of our primary and secondary analyses are consistent, they do not provide distinct support for the importance of perceived parental criticism. Next, our criticism measure was based on youth perceptions of criticism rather than from parent speech samples or other behavioral measures, as is often used in research on critical-EE. The self-report format of our measure allowed for testing of a feasible measure for use in clinical settings and large-scale survey research, although results might have differed with alternative measures (e.g., Camberwell Family Interview, Five Minute Speech Sample) and the study measure requires further evaluation. Additionally, the perceived criticism measure was administered at the baseline assessment time point only; this precluded us from examining shifts in perceived criticism over time. This measure also emphasized parents, did not consider perceived criticism in non-parental primary caregivers, and consistent with the approach adopted in EE research, was based on the highest level of parent criticism the youth perceived. Future research is needed to evaluate moderating effects of parental gender, the influence of gender discrepancies in caregiver-child dyads (e.g., mother-daughter versus mother-son), and associations among diverse indicators of the quality of the intra-familial environment (e.g., criticism, conflict, support). Additionally, results might have differed had the study evaluated a treatment that specifically targeted family criticism or was family-focused. Finally, while the YPIC trial is the largest extant trial evaluating collaborative integrated medical-behavioral care for adolescent depression, and included a diverse multi-site sample, results may not generalize to other settings and populations. Additional evaluation of the prognostic utility of the perceived criticism measure in clinical practice is required.

Conclusions

The present results indicate that a brief self-report measure of perceived parental criticism is a strong predictor of diminished recovery and a more pernicious long-term course of depression symptoms. This is a novel finding with clinical utility, given the ease with which this construct can be assessed. These results are consistent with other research that has identified an association between related family factors (e.g., parental EE, family conflict) and depression outcomes (Asarnow et al., 1993; Asarnow et al., 2001; Belden et al., 2007; Birmaher et al., 2000; McCleary & Sanford, 2002; Sheeber et al., 2001; Silk et al., 2009). Our findings also highlight the importance of evaluating and considering adolescent perceptions of parental criticism during clinical care, both acutely and throughout monitoring. Results have implications for clinicians treating adolescent depression, particularly in settings where extensive assessment is not feasible, and could be leveraged to help clinicians take a personalized approach to effectively select and sequence treatment strategies to optimize patient response.

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Highlights

- Perceived parental criticism predicted long-term depression outcomes for teens
- A brief self-report measure makes assessment feasible in a clinical setting
- High perceived parental criticism could indicate family-focused treatment is needed

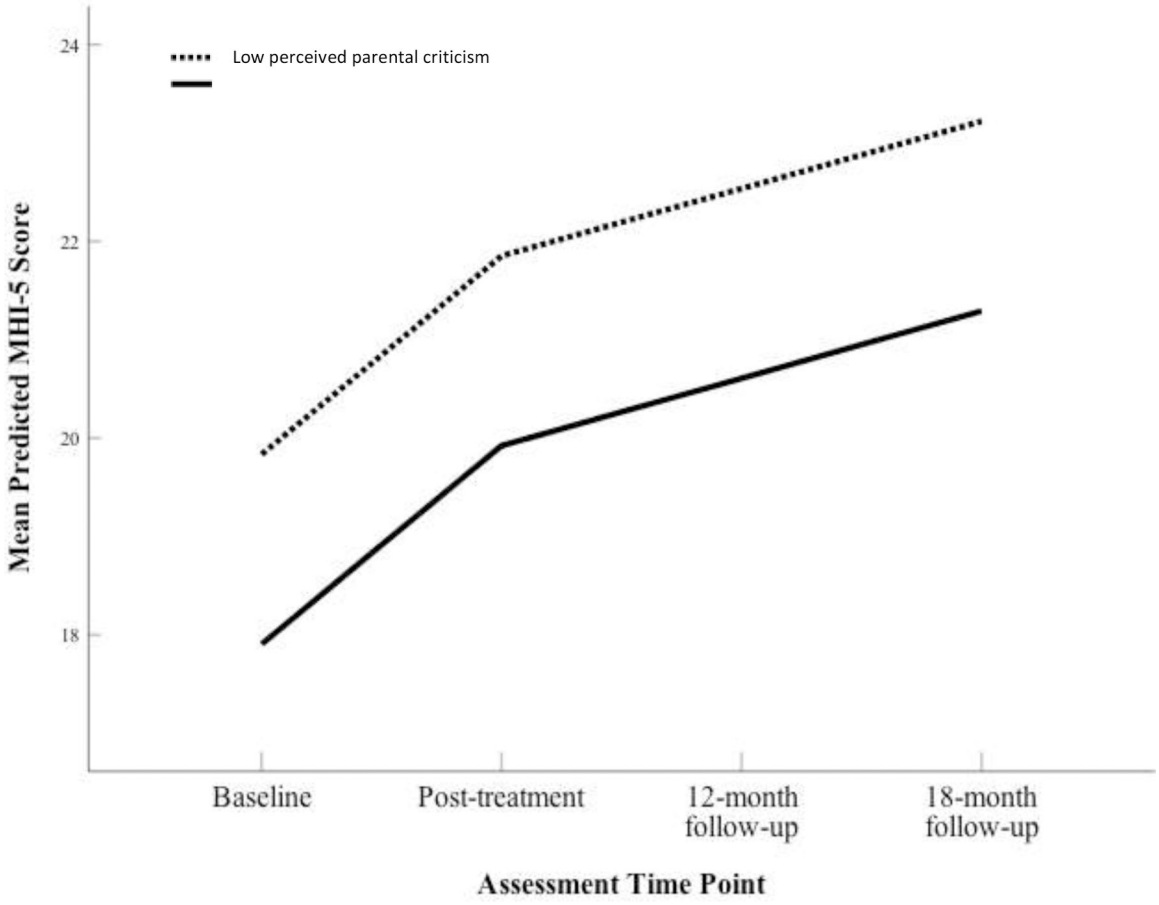

Figure 1.

Sensitivity analysis depicting trajectories of MHI-5 ratings for adolescents endorsing low and high perceived parental criticism. MHI-5 scores reflect predicted values after covarying for age, gender, and treatment condition. Higher MHI-5 scores indicate less severe distress.

Table 1

Descriptive statistics

	Baseline		Post-treatment (6-months)		12-month follow-up		18-month follow-up	
	M(SD)	(%)	M(SD)	(%)	M(SD)	(%)	M(SD)	(%)
Age	17.1 (2.1)	--	--	--	--	--	--	--
Female	--	78.4	--	--	--	--	--	--
Severe depression (dichotomized CES-D)	--	--	--	35.0	--	28.7	--	24.2
MHI-5	19.2 (4.8)	--	21.2 (4.9)	--	22.0 (4.9)	--	22.4 (4.8)	--

Note: M= Mean; SD= Standard deviation; CES-D= Center for Epidemiologic Studies Depression Scale; MHI-5= Mental Health Index-5

Table 2

Fixed effects estimates from repeated-measures logistic regression model

	OR	p-value	95% CI	
			LL	UL
Age	1.04	.49	.93	1.15
Gender	1.43	.19	.84	2.45
Baseline MHI-5	**.65**	**<.0001**	**.62**	**.69**
Treatment condition	**.60**	**.02**	**.40**	**.91**
Perceived parental criticism	**1.66**	**.02**	**1.07**	**2.56**
Time	.80	.06	.63	1.02

Note: OR= Odds ratio; CI= Confidence interval; LL= Lower limit; UL= upper limit; MHI-5= Mental Health Index – 5; bold indicates significant effect

Table 3

Fixed effects estimates from linear mixed-effects model predicting MHI-5

	β	SE	p-value	95% CI	
				LL	UL
Intercept	**26.25**	**1.50**	**<.0001**	**23.31**	**29.20**
Age	**−.31**	**.09**	**.0003**	**−.48**	**−.14**
Gender	**−1.49**	**.43**	**.0005**	**−2.32**	**−.65**
Treatment condition	.17	.35	.63	−.52	.89
Perceived parental criticism	**−1.89**	**.37**	**<.0001**	**−2.63**	**−1.14**
Treatment period time slope	**2.01**	**.28**	**<.0001**	**1.47**	**2.56**
Change in time slope during follow-up period	**−1.33**	**.38**	**.0004**	**−2.07**	**−.59**

Note: SE= Standard error; CI= Confidence interval; LL= Lower limit; UL= Upper limit; MHI-5= Mental Health Index – 5; MHI-5 is coded such that higher scores represent less severe distress; bold indicates significant effect