Brief report

Change in depression across adolescence: The role of early anger socialization and child anger

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ABSTRACT

The purpose of this longitudinal study was to examine the relations of early socialization of anger with change in adolescent depression, and moderation by child anger. Using a sample of low-income, ethnic minority children at familial risk for psychopathology in the United States (n = 92; ages 3–5; 53% female; 65% African American; 27% Latina/o), early anger socialization (i.e., parent response to child anger) was tested as a predictor of change in depression from preadolescence to adolescence [i.e., age 8 ($n = 63$), 11 ($n = 58$), and 13 ($n = 44$)]. A videotaped parent-child interaction was coded for parental socialization of preschooler anger, and psychiatric interviews of depression were conducted three times across preadolescence and adolescence. Major depression diagnoses increased from pre-adolescence to adolescence. Latent growth modeling indicated parent discouragement of child anger was a significant predictor of an increase in the child's later depression from preadolescence to adolescence, and child anger intensity was a significant moderator.
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Given that depression is a persistent yet understudied mental health problem among ethnic minority youth (Williams et al., 2007), research must examine the etiology of minority adolescent depression (Perrino et al., 2015). The effects of early childhood anger and parent response to child anger (i.e., anger socialization) on later ethnic minority adolescent depression have not been examined (Dennis, Buss, & Hastings, 2012). This pilot study[1] included a sample of minority children at high risk for psychopathology (Brotman, Gouley, O'Neal, & Klein, 2004) to consider the role of observed early anger socialization and child anger intensity in the development of youth depression.

Affect theory frames emotion socialization as the parent response to the child's emotions (Tomkins, 1963). Emotion socialization in early childhood has not been examined as a predictor of adolescent depression. Cross-sectional studies, however, have found that punitive responses to anger are associated with adolescent depression (e.g., Katz & Hunter, 2007). Although emotion socialization research has largely been limited to Caucasian samples, some cross-sectional studies of Black and Latina/o families have reported similar findings as reported in majority ethnicity samples – discouragement of negative

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emotions is related to Black and Latina/o internalizing problems in early childhood (Cunningham, Kliewer, & Garner, 2009; McCoy & Raver, 2011) and adolescence (O'Neal & Magai, 2005). Therefore, we expected that more anger discouragement would be associated with worse depression outcomes in our ethnic minority sample, especially compared to other less punitive strategies like anger encouragement and distraction.

We decided to select anger discouragement, encouragement, and "successful anger distraction" as emotion socialization strategies for this paper. There are many parenting socialization strategies in response to children's emotions, including, for instance, distraction, magnification, override, detachment, and punishment (e.g., O'Neal & Magai, 2005). Two umbrella constructs commonly used across a number of specific emotion socialization strategies are encouragement and discouragement of emotions. We chose the strategies of encouragement (i.e., acceptance) and discouragement (i.e., disapproval) in response to emotions because they best capture all of the possible positive and negative responses a parent could have, and they have been used as emotion socialization constructs in some diverse samples (e.g., Cunningham et al., 2009). We also chose anger distraction and operationalized it as "successful anger distraction" (i.e., successful parental distraction when the child became angry) because we thought that the distraction strategy maximized our ability to capture a type of positive parenting that we observed as common across our sample.

Intense child emotions are an evocative situation for parents – a parent may use more discouragement when responding to an angry child, compared to a less angry child (e.g., Spinrad & Stifter, 2002), and anger discouragement has been found to be associated with depression (Sanders, Zeman, Poon, & Miller, 2015). Indeed, the relation of emotion socialization to depression may be dependent on child anger intensity (i.e., strength of anger expression; Magai & McFadden, 1995).

This pilot study expected early anger discouragement to be the strongest predictor of adolescent depression, compared to anger encouragement and distraction. Child anger intensity was hypothesized to moderate the impact of anger discouragement on depression, with a stronger association of discouragement with depression in the context of high child anger intensity than low child anger intensity.

1. Method

This sample participated in a pilot study that was a randomized controlled family intervention designed to prevent early childhood conduct problems (Brotman et al., 2008). A large-scale version of this study was planned when this pilot study was conducted, and the large-scale study (e.g., Brotman et al., 2016) was different from this pilot study, including a different sample selection procedure and modified intervention. The pilot study's intervention did not aim to alter depression; indeed, intervention and control groups did not differ on adolescent depression. The family preventive intervention (Brotman et al., 2008) used an adapted version of the Incredible Years program (Webster-Stratton, 1987) with parents and preschool-aged participants, and involved psychoeducation and behavioral methods to prevent child aggression. One of the goals of the intervention was to improve parental management of children's aggressive behavior, but the direct focus of this behavioral intervention was not on child emotions, like anger, but, rather, the intervention had a direct focus on child behavior and parent management of child behavior.

This preschool-aged sample was determined to be at high risk for psychopathology because they were selected due to their being siblings of adjudicated youth; they had parents with high rates of depression among other forms of psychopathology; they experienced or were exposed to a high number of sociocultural, biological, and parenting risks; and, such risk exposure was linked to concurrent social competence and conduct problems (Brotman et al., 2004). Family court records of youths under the age of 16 adjudicated in New York City between 1997 and 2001 were screened for the presence of preschool-aged siblings between 33 and 63 months, and 48% ($n = 92$) agreed to participate; half were randomized to each condition. Caregivers ("parents") included 83% biological mothers, 2% biological fathers, 10% grandmothers, 3% adoptive mothers, and 2% other relatives. Parent mean age was 36.3 years; 59% had household incomes under $15,000. Child mean age was 47.52 months; 53% were girls; 65% were African American, 27% Latina/o, 8% mixed race; and IQ was 83 (SD = 12.9). Of the parents, 35% received a Major Depressive Disorder (MDD) diagnosis.

Anger socialization was assessed at Time 1, prior to intervention; depression outcomes were collected at three time points from preadolescence through adolescence (Times 2–4; Table 1). The original study enrolled five cohorts over five years, but Time 4 data were collected simultaneously, rather than sequentially by cohort. Although there was substantial attrition, there was no difference between those with and without Time 4 data (Table 2).

A diagnostic evaluation of major depression over the past year was conducted from times 2 to 4 by social workers using the Schedule for Affective Disorders and Schizophrenia interview (K-SADS-PL; Kaufman et al., 1997), which has strong test-retest reliability and validity (Kaufman et al., 1997). KSADS major depression symptoms included a set of 8 screening (e.g., "Have you

Table 1
Study time points, sample size, and age range of data collection.

	Time 1	Time 2	Time 3	Time 4
Sample size	92	63	58	44
Years collected	1997–2001	2002–2005	2004–2007	2009
Age mean (SD)	4 (0.75)	8 (0.83)	11 (0.81)	13 (1.5)
Age range	2–5	6–10	8–12	10–16

Table 2
Time 1 Demographics and Key Study Variables for those with (n = 44) and without Time 4 Data (n = 48).

	Present at Time 4	Not Present at Time 4
Control group	41%	56%
Child sex = female	59%	48%
Race = African American	64%	65%
Household gross income	2.98 (1.62)	2.91 (1.91)
Child anger	2.38 (0.41)	2.48 (0.53)
Anger encouragement	2.19 (0.80)	2.39 (0.87)
Anger discouragement	1.61 (0.51)	1.58 (0.45)
Anger distraction	2.75 (1.19)	3.08 (1.11)
Time 2 depression	11.95 (8.28)	8.94 (4.01)
Time 3 depression	11.85 (8.51)	10.62 (7.32)

Note: There were no significant differences on any variables between the two groups.

ever felt sad?") and 11 supplement questions (e.g., "Have you lost any weight since you started feeling sad?"). The intra-class correlation coefficients (ICC) for inter-rater reliability of Time 4 MDD symptom counts were high at 0.95; there was 83% inter-rater agreement on MDD diagnoses. MDD symptom counts were used as outcomes for model testing to maximize variance. At Times 2 and 3, we did not have two raters of the KSADS assessments, so the inter-rater reliabilities of Time 2 and 3 depression were not able to be calculated; however, a senior psychologist with KSADS expertise carefully supervised KSADS diagnostic decisions at Times 2 and 3.

The Emotion Socialization Coding System (ESCS; O'Neal, 2010) is a new observational coding system for parent-child interactions based on Affect theory (1963) and empirical work by O'Neal and Magai (2005). Emotion socialization was operationalized as parent response to child emotion intensity. Videotaped 15-min parent-child interactions involved 7 min of free play, 5 min of puzzle task, and 3 min of clean-up. Time 1 interactions were coded on a continuous scale from 1 to 5 by two raters with psychology masters degrees. The ESCS used a moment-to-moment protocol, not a global coding system, in which child emotion type (i.e., sadness, anger, fear, excitement) and intensity were recorded for each emotion expression. The incidence of child sadness and fear was too low to create reliable measures, so we only considered child anger; this study was focused on negative emotions so did not include excitement. Child anger intensity was operationalized as the intensity of frustration, irritability, and direct anger expression. Anger encouragement was operationalized as an anger-acknowledging response indicating child anger acceptance. Anger discouragement was harsh disapproval of the child's anger expression. Successful anger distraction was parent success at using distraction to return the child to a neutral or positive emotional state. ICC's ranged from 0.77 to 0.86. In addition, a Time 1 lifetime parent depression diagnosis was given using the Structured Clinical Interview (SCID-NP) (Spitzer, Williams, Gibbon, & First, 1992); a continuous SCID-NP score was used in model testing ranging from 1 (absent) to 2 (subthreshold) to 3 (threshold).

We tested a latent growth model in Mplus 7.4 (Muthén & Muthén, 1998−2015) including anger discouragement, encouragement, distraction as predictors of change in depression, in addition to child anger intensity as a predictor and an interaction of child anger intensity with anger discouragement (see Fig. 1). We also included the control and moderating factor of treatment status in addition to parental depression as a control. Interaction effects were only considered for child anger and treatment with anger discouragement (and not with anger encouragement or distraction) because there was limited power to do multiple interactions. Therefore, we chose the most necessary and likely interactions to run − child anger interacting with anger discouragement (see Fig. 2) in addition to treatment status with anger discouragement.

There were clearly overdispersed outcomes due to 81% of Time 2, 79% of Time 3, and 50% of Time 4 MDD counts at the minimum of 8. Zero-truncated negative binomial regression is best to use with overdispersed counts when the value zero cannot occur (Hilbe, 2011). Using robust estimation via maximum likelihood robust standard error estimation (MLR), we were able to employ full information maximum likelihood estimation that accommodates missingness and corrects for non-normality (Yuan & Bentler, 2000). Little's MCAR test indicated that our missing data was missing completely at random ($\chi^2 = 72$, $df = 89$, $p = 0.90$). Note that MLR does not impute data but, rather, uses all available data to estimate the model. Multiple imputation would be a worse solution, in our judgment, because it would be based on a limited number of relevant variables and small n.

2. Results

Tables 3 and 4 depict correlations. Time 4 adolescent MDD diagnosis rates were high, with 23% ($n = 11$) MDD diagnoses in our sample compared to 8.2% in the general population (SAMHSA, 2013). During preadolescence, only 3% ($n = 2$) of the sample received a diagnosis of MDD. The increase in MDD diagnoses from preadolescence to adolescence was significant (Estimate = 0.49, $p = 0.005$).

As expected, anger discouragement was the strongest and only significant predictor of an increase in depression, and child anger intensity was a significant moderator of anger discouragement on depression (Table 5). For children low in anger intensity, there was a stronger association of anger discouragement with depression compared to children high in anger intensity, contrary to our expectation of a stronger association among children with high anger intensity.
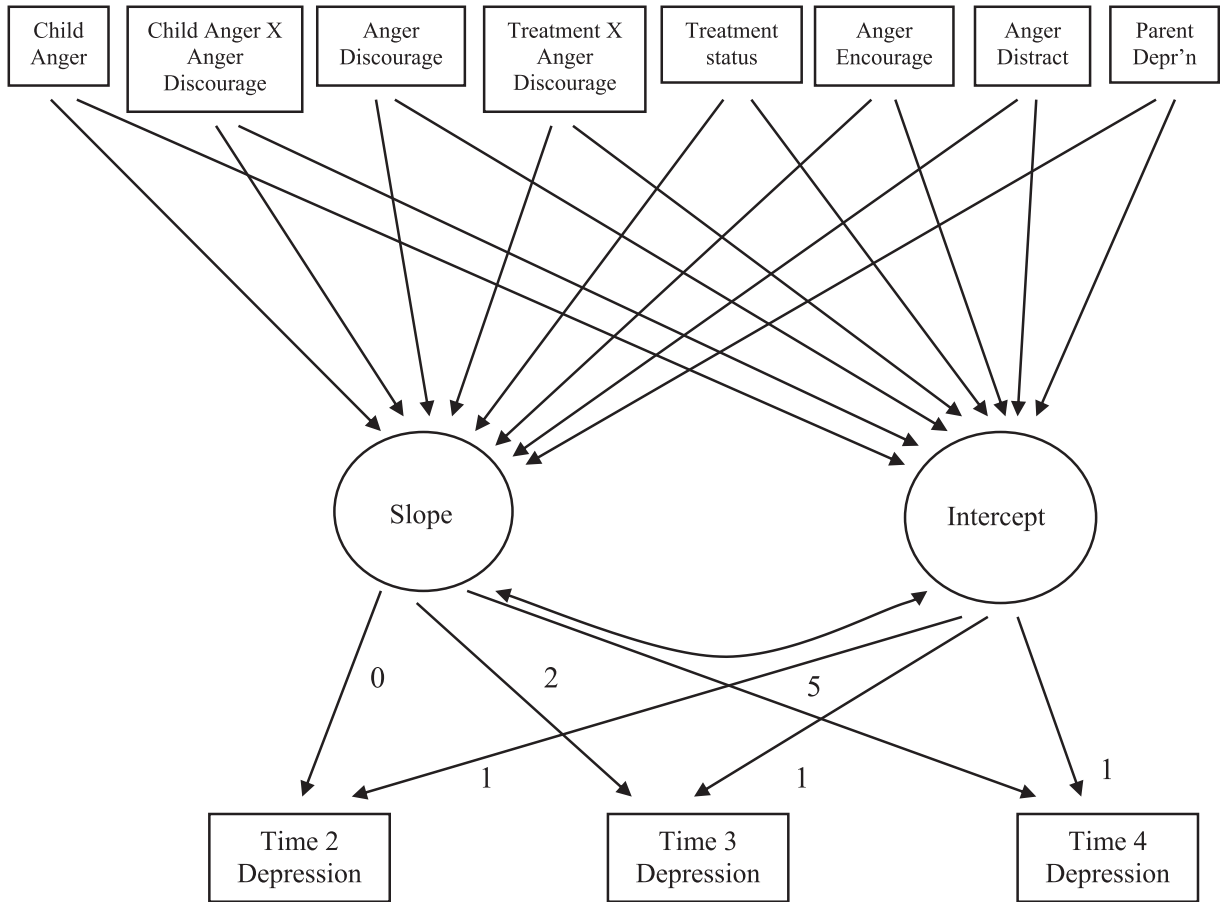
Fig. 1. Child anger and anger socialization prediction of change in major depression symptoms, including the interaction of child anger with anger discouragement in addition to the interaction of treatment status with anger discouragement, and adjusting for treatment and parent depression.
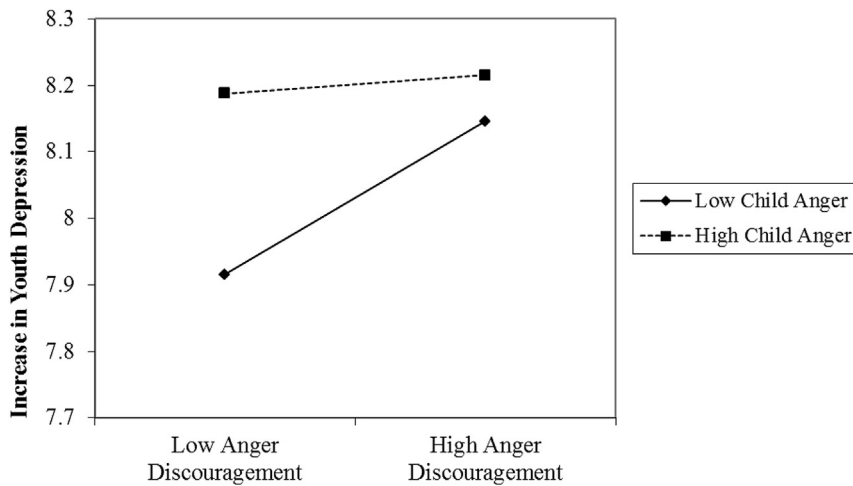
Fig. 2. A plot of the interaction estimate of child anger with anger discouragement on the unit increase in youth major depressive symptom count from Times 2 to 4. The slopes were plotted for the low and high child anger groups. Low child anger = mean − 1SD; high child anger = mean + 1SD.

Table 3
Predictor time 1 correlations and descriptives (n = 92).

	1	2	3	4	5	M	SD
1. Anger encouragement	—	−0.37**	0.35**	−0.04	−0.00	2.29	0.82
2. Anger discouragement		—	−0.12	0.22*	−0.09	1.59	0.48
3. Anger distraction			—	−0.07	−0.17	2.90	1.16
4. Child anger				—	−0.07	2.43	0.47
5. Parent depression					—	1.63	0.92

$^*p < 0.05$; $^{**}p < 0.01$.

Table 4
Correlations between emotion socialization and later depression.

	MDD Time 2	MDD Time 3	MDD Time 4
Anger encouragement	−0.02	−0.22	0.08
Anger discouragement	−0.22	−0.06	0.31*
Anger distraction	−0.09	−0.04	0.24
Child anger	−0.25	−0.15	−0.21
MDD mean (SD)	11.08 (7.40)	11.51 (8.05)	17.61 (13.74)
MDD n	n = 63	n = 58	n = 44

Note. MDD = Major Depressive Disorder past year symptom count. All anger socialization and anger variables were measured at Time 1 (mean child age 4 years). Range of *n* is 42–57.
$^*p < 0.05$.

Table 5
Latent growth modeling of early emotion socialization prediction of youth major depression symptoms over three time points.

Predictors	Estimate	S.E.	Estimate/S.E.	Two-tailed P-Value
Slope on Child anger	0.319	0.179	1.783	0.075
Interaction of child anger with anger discouragement	−0.230	0.099	−2.318	0.020
Anger discouragement	0.706	0.329	2.144	0.032
Interaction of treatment status with anger discouragement	0.024	0.086	0.273	0.784
Anger encouragement	0.040	0.030	1.331	0.183
Anger distraction	0.038	0.020	1.876	0.061
Treatment status	−0.014	0.163	−0.084	0.933
Parental depression	0.015	0.025	0.595	0.552
Intercept on Child anger	−0.856	0.378	−2.264	0.024
Interaction of child anger with anger discouragement	0.390	0.189	2.066	0.039
Anger discouragement	−1.621	0.704	−2.303	0.021
Interaction of treatment status with anger discouragement	0.201	0.168	1.194	0.233
Anger encouragement	−0.115	0.091	−1.264	0.206
Anger distraction	−0.036	0.060	−0.603	0.547
Treatment status	−0.427	0.334	−1.277	0.202
Parental depression	−0.024	0.064	−0.380	0.704

Note: This model used a zero-truncated negative binomial distribution for the dispersed count outcomes.

3. Discussion

This pilot study suggested that early anger discouragement predicted an increase in major depressive symptoms from preadolescence to adolescence, and child anger intensity was a moderator. Indeed, this research advanced the field via observational methodology, moderation by child anger intensity, and a prospective design including early childhood and adolescence. The anger discouragement and depression relation in this study builds on previous adolescence research linking punitive parenting with depression (Wang & Kenny, 2014). This study suggested that anger discouragement, in particular, may be a toxic process at an early age, especially for children with low anger intensity, which may lead to adolescent depression (Magai & McFadden, 1995). Parenting strategies, such as punishment, and how a parent responds to a child's negative emotions early in life have been theorized to influence emotion regulation and the development of psychopathology, such as depression and aggression (e.g., Eisenberg et al., 2001). Similarly, Affect theory posits that negative parenting strategies in response to children's different emotions, like anger, can lead a child to develop "emotion biases" or "ideoaffective organizations" which can result in psychopathology, such as developing a tendency towards anger or sadness which are at the heart of depression (Tomkins, 1963). These results are similar to previous research on Black and Latina/o children and youth indicating that emotion discouragement is associated with internalizing problems (e.g., Cunningham et al., 2009). Future research needs to test if familial anger expression and management leads to depression across cultural contexts (Ogbu, 1981).

Moderation results suggested better depression outcomes when parents used less anger discouragement with children low in anger intensity. Contrary to adolescence research suggesting that worse parent response to intense child anger results

in worse depression (e.g., Schwartz et al., 2011), there was a stronger relation of discouragement with depression in the context of low child anger than high child anger. What is novel about these moderation results is that a parent discouraging their child's mild anger may be atypical and part of a larger, longer coercive process that leads to later sharper increases in depression, compared to parents who are less likely to discourage mild anger. It is, perhaps, an unpredictable and worrying experience for a child to get a harsh parental response when the child has not provoked the parent with anger; the child may feel worried or unsettled inside but later mirror back anger to the parent, thus, contributing to an angry coercive cycle leading to depression.

These moderation findings may be more likely to be found in this sample because they have faced more social, biological, and environmental risk factors than most other young children (Brotman et al., 2004). Perhaps, this unique sample is more vulnerable to the negative mental health effects of atypical harsh parenting in response to low child anger intensity, compared to those who have faced fewer risks. Or, it could simply be that any young children experiencing harsh parenting in response to the child's minimal anger intensity would suffer long-term mental health consequences. We suggest examining a large sample with a wide range of risk levels in order to determine for whom parent discouragement of low child anger intensity impacts later adolescent mental health problems.

Although a small sample size may make it harder to detect significant results, it does not make the significant results of this study less significant, even in a model with many predictors (Hancock, 2016). Given substantial attrition, however, the strongest limitation of this study was the generalizability of the results. The attrition may be the consequence of one of this pilot study's strengths − a sample facing multiple demographic and psychopathology risks (e.g., Lemerise, 2016) − which can make recruitment and retention difficult, despite our extensive use of retention tools like relationship-building, repeated outreach, and a private investigator to help us find the original sample over time. Also, it is possible that the low IQ of the child sample limits the generalizability of the results, and the low IQ may have had an impact on these findings; future research is needed to test potential IQ impact on these longitudinal relations. Another limitation is that the parent-child interaction task may not have been suitable for the evocation and assessment of child sadness and fear.

This pilot study advanced the adolescent depression field by highlighting the potential role of early anger and anger discouragement in the development of adolescent depression. Future research should examine the early emotional context, familial processes, and the development of adolescent depression across diverse samples (Lemerise, 2016).

Funding

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