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Adolescent Reactions to Maternal Responsiveness and Internalizing Symptomatology: A Daily Diary Investigation

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Abstract

A daily diary methodology was employed to gather teens' perceptions of maternal responsiveness to daily stressful events and teens' reactions to maternal responsiveness in a diverse sample (792 entries from 104 teens; 81% African American, mean age 13.7 years). Additionally, parents and teens completed baseline reports of internalizing symptoms. Diary findings were congruent with prior studies employing self-report measures of global maternal responses to emotion (e.g., higher probability of Accepting reactions to supportive responses, higher probabilities of Attack, Avoid-Withdraw reactions to non-supportive responses). Elevated baseline internalizing symptoms were related to perception of elevated Punish and Magnify responses during the week, and more Avoidant (Avoid-Withdraw and Avoid-Protect) reactions to responsiveness. Results are discussed in the context of reciprocal emotion socialization processes.

Keywords

emotion socialization; adolescence; maternal responsiveness; daily diary; internalizing symptoms

Adolescence is characterized by fluctuations in mood (Larson, Moneta, Richards, & Wilson, 2002), increased conflict with parents (Shanahan, McHale, Osgood, & Crouter, 2007; Steinberg & Morris, 2001), and increased negative affect (Klimes-Dougan & Zeman, 2007, for a discussion). How parents respond to children and adolescents' negative emotions is considered one of the most important methods of direct emotion socialization (Eisenberg, Cumberland, & Spinrad, 1998), and parental responses to negative emotionality have been supported as an important developmental context in adolescence (Klimes-Dougan et al., 2007). Additionally, there is a growing body of research that indicates that emotion socialization practices relate to the development of internalizing symptoms in adolescence

(Klimes-Dougan et al., 2007; O'Neal & Magai, 2005). Important gaps remain, however, in current knowledge about how emotion socialization processes play out on a daily basis for teens with and without elevated internalizing symptomatology. Given that daily stressful events have been identified as a salient context for understanding the development of difficulties during adolescence (Ham & Larson, 1990; Compas, 1987), they are likely an important context for investigating emotion socialization processes. The present study was designed to build on knowledge of family processes by employing a daily diary methodology to investigate parent-adolescent emotion socialization interactions tied to specific, daily stressors.

The specific responses to emotions that parents employ have received notable attention in the literature in part because of their association with an array of youth outcomes (for review see Klimes-Dougan & Zeman, 2007). One validated framework for understanding specific parental responses to emotions includes the supportive strategies of rewarding (i.e., providing comfort, empathizing) and overriding (i.e., distracting), as well as the non-supportive strategies of punishing (i.e., expressing disapproval, mocking), neglecting (i.e., ignoring the expression), and magnifying (i.e., matching the emotion, become more upset) children's emotions (O'Neal & Magai, 2005). Adolescent problem status (i.e., reporting > 90th percentile internalizing or externalizing symptoms) was found to be associated with diminished reward and override responses, as well as increased neglect, punish, and magnify responses as compared to non-problem adolescents (Klimes-Dougan et al., 2007; O'Neal & Magai, 2005). These findings raised hypotheses regarding the impact of parental response styles on the development of psychological difficulties, as well as the impact of teen psychological difficulties (i.e., increased emotional intensity, increased negative affect) on parental response style. Specifically, it has been hypothesized that late childhood and adolescence are particularly salient contexts for understanding the interplay between parental responses and child characteristics and behavior because older youth are "more cognitively and emotionally advanced and therefore more able to influence their own emotional experiences in the family context" (Lunkenheimer, Shields, & Cortina, 2007, p. 246). Yet, relatively little is known about how youth factors relate to how parents respond, as well as how youth react to parental responsiveness (Nelson, O'Brien, Blankson, Calkins, & Keane, 2009).

Recent research has begun to uncover common styles in which adolescents are likely to react to their parents' attempts of responsiveness. Parra, Olsen, Buckholdt, Jobe-Shields, and Davis (2010) identified three broad types of reactions, including Accepting, Avoiding, and Attacking reactions. Accepting reactions include appreciating the help (e.g., feeling better knowing the person is there to help). Accepting reactions were positively correlated with a measure of parent rewarding responses and negatively correlated with parent punishing and neglecting responses. Avoiding reactions included withdrawal behavior (e.g., leaving the situation, laughing off parents' attempts to help), as well as avoidance with a protective motive (e.g., telling the parent "I was fine so they wouldn't worry about me"). The idea that children or teens may engage in caretaking, protecting, and nurturing of a parent, sometimes to the detriment of their own emotional, social, and physical needs being met is also found in the parentification literature and has been associated with negative emotional outcomes (Minuchin, 1974; Peris, Goeke-Morey, Cummings, & Emery, 2008). Finally, Attacking

reactions include critical and sarcastic reactions as well as saying mean things and blaming the parent.

The ways in which adolescents react to their parents during emotionally salient events also appears to be related to emotional well-being. Parra and colleagues (2010) discovered that emerging adults who retrospectively reported engaging in accepting strategies when growing up were less likely to report emotion regulation difficulties and depressive symptoms. However, emerging adults who were more likely to retrospectively report engaging in avoidant or attacking strategies in response to their parents' reactions exhibited higher levels of emotion-regulation difficulties and depressive symptoms. This was a cross-sectional study based on self-report measures of general retrospective tendencies, so it was unclear to what extent the identified relations between specific responses and specific reactions existed within specific parent-teen interactions. The present study represents a first-step in the characterization of these interactions across a typical week for teens with and without elevated internalizing symptoms.

Diary methods are particularly suited to investigate such dynamic family processes as they allow for data collection within the natural family environment, and are grounded to specific events therefore decreasing the reliance on retrospection. To date, the majority of published research regarding emotion socialization processes has been conducted using surveys to identify broad patterns of, for example, how parents respond to their children's emotions. These studies have yielded a rich source of information regarding these socialization processes as well as related predictors and outcomes. An important extension of this literature is to begin to study these emotion socialization processes in their natural context and with a smaller gap of time between when they occur and when they are reported (Bolger, Davis, & Rafaeli, 2003; Laurenceau & Bolger, 2005). It is further hypothesized that as our understanding of emotion socialization processes extends into adolescence, it may be particularly important to include methods such as daily diaries that capture interaction patterns as they occur. It is possible that measures of general mood-states and family interactions, although valuable, may not fully characterize the specific fluctuations and patterns present in the daily lives of adolescents and their parents (interestingly, some of the earliest diary investigations involved the emotional experiences of adolescents; Csikszentmihalyi, Larson, & Prescott, 1977). Most importantly, to expand current knowledge related to emotion socialization, the diary method allows for rich information about how frequently parents and teens interact about teens' daily emotional experiences, what specific responses parents employ across a typical week, and how teens react to specific parental responses.

The Present Study

Parental responsiveness to negative affect has received strong support as an important developmental context across childhood and adolescence, and specific parental responses have been linked to adolescent internalizing symptomatology. Additionally, recent research has identified characteristic ways in which adolescents react to parental responsiveness, which similarly correlate with internalizing symptoms. Yet, there is a need in the literature to better understand these socialization processes in relation to one another (i.e., specific

reactions associated with specific parental responses), as well as in relation to internalizing symptomatology. To meet this goal, the present study employed a daily diary methodology designed to capture perceptions of maternal responsiveness and adolescent reactions to responsiveness across a typical week. The first aim of the present study was to evaluate the frequencies of these response-reaction interactions across a typical week, including overall maternal awareness of daily stressors. No specific hypotheses were supported from literature review regarding rates of awareness or responsiveness in general (i.e., how frequently mothers are aware of teens' daily stressors across a typical week). Regarding frequencies of specific responses and reactions, it was hypothesized that rates would be similar to those found in studies using self-report measures, including higher rates of supportive responses and lower rates of non-supportive responses in a community sample (Klimes-Dougan et al., 2007; O'Neal & Magai, 2005). Then, the second aim was to analyze associations between specific maternal responses and specific adolescent reactions during daily parent-teen interactions. It was hypothesized that supportive responses would be associated with accepting reactions, whereas non-supportive responses would be associated with avoidant and attacking reactions (Parra et al., 2010). Finally, the third aim was to compare teens who reported (and whose parents reported) elevated baseline internalizing symptoms and those who did not, on weekly perceptions of parental responsiveness and self-reported reactions to responsiveness. It was hypothesized that teens experiencing internalizing symptoms would report fewer supportive responses and decreased accepting reactions (Klimes-Dougan et al., 2007; Parra et al., 2010).

Method

Participants

Participants were 104 adolescents ages 12 to 18 (mean age = 13.7 years ($SD = 1.11$); 61.9% girls) and their primary female caregivers ($N = 80$). Participants were recruited through flyers sent home to parents at three middle schools (24% of sample) and to parents of children participating in community center summer camps (76% of sample). The majority of teens self-identified as Black or African American (81.0%); 14.3% of teens self-identified as White or Caucasian, and 3.8% as Biracial or Multiracial. Regarding indicators of socioeconomic status, 12.5% of families reported one or both caregivers without a high school diploma or General Educational Development (GED) and 28.8% with one or both caregivers with high school/GED as highest educational attainment. On the other end, 33.7% of families reported one or both parents completing a four-year college degree and 17.3% reported one or both parents completing a masters or doctorate degree. 89% of maternal caregivers were biological mothers, 7% grandmothers, and 4% other (stepmother, adoptive mother). Diversity of family structure was also reported, with 33.6% of participants reporting that their biological parents were married to each other, 15.9% reporting divorced parents, 31.9% reporting parents who were never married (and not still together), and 19.6% reporting other family configurations, including separated parents, remarried parents, and living with grandparents or other caregivers. Significant demographic differences were observed between collection sites (i.e., schools vs. community centers). Participants recruited through middle schools were 46% African American, whereas 95% of participants recruited through community centers described their race as African American.

Additionally, 40% of community center participants reported being raised by their single mother, compared to 25% of middle school participants. Regarding maternal education, 35% of community center participants reported that their mother had completed a high school diploma or less education, compared to 7% of middle school participants. Overall, community centers represented a lower SES sample, and for this reason, collection site was included as a demographic control in analyses.

Procedure

All study procedures were approved and carried out in accordance with the University Institutional Review Board. Overall study design included baseline measures completed by the adolescent and primary caregiver followed by training on how to complete the daily diary, which was completed by adolescents only. Diary training was a one-on-one training with a trained graduate student where the paper-and-pencil diary was described in detail. Each diary was bound in a hard-back folder with separate sections labeled for each day (e.g., if baseline was completed Tuesday evening, then pages were labeled as “Wednesday” and so on). Each diary item was first explained and elaborated on, and then the adolescent was asked to complete a diary entry for the current day (or previous day depending on time of interview). This entry was then reviewed and any questions were answered. Adolescents were then sent home with the diary to complete over the following seven nights for a total of eight diary entries.

Families completed baseline measures in one of two ways. For participants recruited through area schools, parents and adolescent dyads came to a laboratory to complete baseline measures and diary training. For participants recruited through community center day camps, interested parents received informed consent forms from camp directors which were then returned to investigators. Those adolescents with parental consent were told more about the study and those who assented completed baseline measures and diary training with investigators during the camp day. Parents were offered the option of completed paper baseline measures sent home with their adolescent or an online version of the measures sent to their email address. Completed packets were returned by 80 of the parents (77% return rate). All participants regardless of recruitment were then sent home with the daily diary to complete for the following seven days. Diaries were then collected at the community centers, schools, or brought back to the university by parents. Diaries were checked for missing data and any questions were clarified with adolescents (e.g., responses that had been crossed out or changed). Adolescents and parents received compensation for their participation (\$15 for adolescent baseline measures, \$15 for parent baseline measures, and \$35 for the completed diary). Adolescents were also entered in a random drawing (3 winners) for \$50 at the end of the study.

Measures

Daily diary—The checklist-style diary gathered information related to family interactions around daily events. Participants were first asked to identify any upsetting events that occurred during the day from a list (*problem with a friend, problem with a boyfriend/girlfriend, problem with a parent, problem with a sibling, problem with school or teacher, parent in bad or sad mood, problem between parents, and other problem*), and then asked to

choose the event which they found most stressful or upsetting. Maternal awareness of the daily stressor, maternal response, and adolescent reaction were all assessed regarding this most-stressful daily event. All questions were limited to a binary response of *yes* or *no*. Then, if they indicated that their mother was aware of the event or their related emotions, they completed process questions regarding how their mother responded to their feelings or stress, and how they reacted to their mother during the exchange.

Maternal responsiveness choices were based on O'Neal and Magai's (2005) conceptualization. Items from each original subscale were collapsed so that each subscale (Reward, Punish, Neglect, Magnify, and Override) represented one maternal response choice. Specific translations of subscales into response choices are presented in Table 1.

Adolescent reactions to parental responsiveness were based on Parra et al.'s (2010) recent findings (i.e., Accepting, Avoiding, and Attacking reactions). Additionally, the construct of Protective Avoidance (referred to as Avoid-Protect) from the parentification literature was included. Because of this inclusion, in the present study, more general Avoiding reactions will be referred to as Avoid-Withdraw reactions. The specific subscales and corresponding diary choices are also presented in Table 1.

Baseline internalizing symptoms—Adolescents completed the Youth Self Report (YSR; Achenbach, 1991), a 112-item measure which assesses for a broad range of psychological symptoms. For the purpose of the present study, the Internalizing scale was used to assess baseline internalizing symptoms. Item examples include “I worry a lot,” “I cry a lot,” and “I feel worthless or inferior.” Participants rated items reflecting behaviors that occurred over the last 6 months on a 3 point scale (0 = not true to 2 = very true/often true). *T*-scores (mean of 50, standard deviation of 10) were calculated using the provided algorithm with higher scores reflecting more internalizing symptoms. The internalizing scale was shown to have adequate internal consistency ($\alpha = .87$). Adolescents with *T*-scores of 60 or greater were classified as experiencing elevated internalizing symptoms (28.9% of the sample).

Similarly, parents completed the Child Behavior Checklist (CBCL), which consists of 113 questions regarding adolescent emotional and behavioral problems. Parents rated items on a three point scale (0 = absent, 1 = occurs sometimes, 2 = occurs often). The internalizing scale was shown to have adequate internal consistency ($\alpha = .90$), and adolescents were similarly classified as experiencing elevated internalizing symptoms if *T*-scores was equal to or greater than 60 according to parent report (18.4% of the sample).

Data Analysis

To investigate Aim 1 (frequencies of perceived maternal responses and adolescent reactions), descriptive statistics were conducted across the completed 792 diary entries. Chi-square tests were conducted to investigate demographic associations (i.e., adolescent sex, age, or collection site) with socialization variables (i.e., maternal awareness, specific responses, and specific reactions). Generalized estimating equations (GEE; Liang & Zeger, 1986) were used to fit models regarding associations between specific maternal responses and adolescent reactions (Aim 2). GEE provided the flexibility to both control for the

expected within-person correlations associated with the hierarchical structure of the data as well as the ability to predict binary dependent variables (adolescent reactions) with binary independent variables (parental responses). Analyses were conducted using the GEDMOD procedure in SAS Version 9.1 using the logit link function with a binomial distribution indicated, which are both considered best practice for use with binary outcomes (Ballinger, 2004). An exchangeable working correlation structure was specified because observations were clustered within person but were not considered time-series data (i.e., order was not considered, such as comparing day 1 to day 2; Horton & Lipsitz, 1999). For analyzing associations between maternal responses and reactions, only events that adolescents indicated that their mothers knew about were included, which brought the sample down to 95 participants as nine participants reported that their mothers knew about none of their eight diary events. Maternal responsiveness categories are binary representations of whether or not the adolescent reported that particular response type for each event. Adolescent reactions are categorical representations of the four reaction types. Five models were specified representing each maternal response type, and *estimate* statements were used to investigate specific comparisons among adolescent reactions in the context of each maternal response type. All models included demographic predictors of adolescent sex, age (entered in raw form as a continuous variable), and collection site (community center or school). In simple logistic form, models are represented as $\text{logit}(\text{response}_{it}) = \beta_0 + \beta_1(\text{sex})_i + \beta_2(\text{age})_i + \beta_3(\text{collection})_i + \beta_4(\text{reaction})_i$; where t = occasion (i.e., diary entry) and i = subject. Odds ratios reported for all associations between maternal responses and adolescent reactions are based on GEE models, which account for clustering within individuals and demographic variables. Conditional probabilities are also reported in Table 2, which do not take into account clustering or demographic variables, but represent the simple probability of each reaction given each response: $P(\text{reaction}|\text{response})$.

Results

Frequencies of Event Types and Daily Socialization Processes

The first aim of the present study was to describe frequencies of maternal response events, as well as relative frequencies of specific responses and reactions and any related demographic variations. Out of a total of 792 diary entries, maternal awareness was reported for 50.3% (398 entries) of daily most-stressful events. Regarding event types considered most stressful by adolescents, across all 792 entries, 23% of events were considered a *problem with a friend*, 13% *problem with a boyfriend/girlfriend*, 13% *problem with a parent*, 13% *problem with a sibling*, 7% *problem with school or teacher*, 7% *parent in bad or sad mood*, 3% *problem between parents*, and 21% *other problem*.

There was significant variability between teens regarding perceptions of maternal awareness across the week. The modal number of weekly events that teens perceived their parents as knowing about was three (out of the possible eight events), with 19.2% of the sample reporting that their mothers knew about none or one of their weekly events, 26.9% reporting two or three events, 25.0% reporting four or five events, 26.0% six or seven events, and 2.9% reporting that their mothers knew about all eight events. Chi-square tests were computed to identify any demographic associations. No sex differences emerged regarding

perceptions of mothers knowing about the event, but participants at community centers reported that their mothers were less likely to know about their daily stressful event ($\chi^2 = 8.80, p < .01$).

Frequencies of specific response types and reaction types were also investigated, both within participants (i.e., out of 8 diary entries) and across participants (i.e., out of 310 diary events characterized by some maternal response). Out of the 310 events characterized by some maternal response, Reward was the most frequent response (45.8% of response events), followed by Override (24.2%). Less frequent were responses of Neglect (11.3% of response events), Magnify (10.3%) and Punish (8.4%). Within participants, the number of Reward events reported across the week ranged from 0 – 7 ($M = 1.56$); Override events ranged from 0 – 7 ($M = 1.05$); Neglect events ranged from 0 – 8 ($M = .54$); Punish events ranged from 0 – 4 ($M = .33$); and Magnify events ranged from 0 – 3 ($M = .37$). One sex difference emerged for Punish, with boys reported perceiving more frequent Punish responses ($\chi^2 = 3.68, p = .05$). Participants at community centers reported more frequent Reward responses ($\chi^2 = 3.97, p < .05$).

Regarding adolescent reactions to maternal responsiveness, Accepting reactions were most frequent (46.4%), followed by Avoiding-Protective (23.4%), Avoiding-Withdrawal (15.6%), and Attacking (5.1%). Interestingly, the remaining 9.5% of events were reported as “Other” responses. Although a place was provided for participants to write in a description of these “Other” reactions, few participants wrote in descriptors and therefore, these reactions were not analyzed further. Within participants, the number of Accept events reported across the week ranged from 0 – 8 ($M = 1.79$); Avoid-Protect events ranged from 0 – 6 ($M = 1.14$); Avoid-Withdraw events ranged from 0 – 5 ($M = .64$); Attack events ranged from 0 – 6 ($M = .21$). There were no significant sex differences regarding adolescent reactions to maternal responsiveness. Community center participants reported more frequent Avoid-Protective reactions ($\chi^2 = 6.94, p < .01$). T-test results indicated that, on average, events characterized by Avoidant-Withdrawal events were reported by slightly younger teens (13.0 years compared to 13.5 years; $t = 1.85, p = .06$) but this association was only marginally significant.

Associations between Maternal Responses and Adolescent Reactions

Reactions to supportive responses—Conditional probabilities for adolescent reactions in the context of each perceived maternal response are presented in Table 2 and odds ratios and significance testing for all associations between maternal responses and adolescent reactions can be found in Table 3. Reward response events refer to events that teens perceived their mothers as comforting them, helping them deal with the problem, talking about their feelings, and/or taking time to focus on them. Intraclass correlation (ICC) for Reward model was .22, indicating notable clustering of Reward responses within individuals. GEE results indicated that after controlling for within subject correlations (i.e., clustering effect), adolescent sex, age, and collection site, events characterized by maternal Reward response (now referred to as Reward events) were about two times more likely to be met with an Accepting adolescent reaction than an Avoid-Protect reaction ($OR = 2.18$). Additionally, Reward events were significantly more likely to be characterized by an

Accepting reaction than an Avoid-Withdraw reaction (OR = 3.03). Finally, Reward events were significantly more likely to be met with an Accepting reaction than an Attack reaction (OR = 9.83). Override events refer to events when teens perceived their mothers as telling them to cheer up, that everything will be fine, or that it's 'no big deal.' ICC for Override model was .26, indicating notable clustering of Override responses within individuals. Attack reaction comparisons were removed from this specific GEE model as there were no observations of events with perceived maternal Override and adolescent Attack. In the context of maternal Override events, after controlling for adolescent sex, age, collection site, and clustering within subjects, adolescents were significantly more likely to report Accept reactions than Avoid-Withdraw reactions (OR = 3.99). Additionally, adolescents were significantly more likely to report an Avoid-Protect reaction than an Avoid-Withdraw reaction (OR = 6.00).

Reactions to non-supportive responses—As can be seen in Table 3, significant negative associations (i.e., ORs less than one) were observed across non-supportive responses. For this reason, these specific equations were remodeled to contrast pairs of reactions in the opposite order presented in Table 3 (e.g., Avoid-Withdraw vs. Accept as opposed to Accept vs. Avoid-Withdraw), and these inverse ORs are reported below in text. Neglect events are those events teens perceived their mothers as not paying attention to them or their feelings. For Neglect responses, it is important to emphasize that these analyses still only include events that adolescents reported that their mothers knew about. In other words, Neglect events are events that adolescents perceived that their mothers did know about but did not respond to them or how they were feeling. ICC for Neglect model was .08. In the context of perceived maternal Neglect, after controlling for clustering within individuals, adolescent sex, age, and collection site, adolescents were significantly more likely to Avoid-Withdraw than to Accept (OR = 14.39), and significantly more likely to Avoid-Withdraw than Avoid-Protect (OR = 4.21). Additionally, in the context of perceived maternal Neglect, adolescents were significantly more likely to report Attacking reactions than Accepting reactions (OR = 42.17), and significantly more likely to report Attacking reactions than Avoid-Protect reactions (OR = 12.34).

Maternal responses of Magnify refer to when adolescents perceived their mothers as becoming even more upset than the adolescent, or showing the teen that they felt very upset. ICC for Magnify model was .06. In the context of perceived maternal Magnify, after controlling for clustering within individuals, adolescent sex, age, and collection site, adolescents were significantly more likely to report an Avoid-Withdraw reaction than an Accept reaction (OR = 8.15), and significantly more likely to report an Avoid-Withdraw reaction than an Avoid-Protect reaction (OR = 9.17). In the context of perceived maternal Magnify, adolescents were significantly more likely to report an Attack reaction than an Accept reaction (OR = 10.49), and significantly more likely to report an Attack reaction than an Avoid-Protect reaction (OR = 11.81).

Punish events refer to events adolescents perceived their mothers as telling them to stop feeling upset or not approving of them feeling upset. ICC for Punish model was .08. No statistically significant differences emerged between adolescent reactions in the context of

perceived maternal Punish response. Across GEE analyses, no statistically significant sex, collection site, or age trends emerged.

Responses/Reactions by Baseline Internalizing Problem Status

The third aim of the present study was to compare adolescent perceptions of maternal responses and reactions to responsiveness between adolescents with and without elevated internalizing difficulties (i.e., YSR and CBCL T -score > 60 ; see Methods for more details). To account for maternal awareness in representation of each response and reaction type, ratios were calculated (e.g., Reward ratio = number of days reporting reward response divided by number of days that mother knew about the day's most stressful event). Because ratios were derived using count data, as well as inflated zeros on some response/reaction types, non-normal distributions were suspected and confirmed through interpretation of histograms for response and reaction types. For that reason, non-parametric Wilcoxon-Mann-Whitney tests were used to investigate group differences.

Problem status comparisons were made based on teen-report (YSR T score > 60 ; total $N = 95$; 28.9% > 60) and parent-report (CBCL T score > 60 ; total $N = 80$; 18.4% > 60). The correlation between parent and teen total internalizing T scores was not statistically significant ($r = .12$); teen and parent report were analyzed separately. For teen report, only one statistically significant difference in perceptions of maternal responses emerged between internalizing problem status groups-- teens with internalizing difficulties perceived their mothers as using more Punish responses; $Z = 1.69$, $p < .05$. Differences in adolescent reactions were found between internalizing problem status groups; adolescents with elevated internalizing difficulties reported significantly more Avoid-Withdraw reactions ($Z = 1.80$, $p < .05$) and Avoid-Protect reactions ($Z = 1.95$, $p < .05$) during the week. For problem status classifications based on parent-report (CBCL), statistically significant differences emerged between internalizing problem status groups for perceptions of maternal Magnify responses; when parents perceived their teens as experiencing elevated internalizing difficulties, those adolescents reported more Magnify responses during the week ($Z = 1.69$, $p < .05$).

Discussion

The present study aimed to investigate the association between parental responsiveness and adolescent reactions to responsiveness using a daily diary methodology, as well as the association between these aspects of daily emotion socialization and internalizing symptomatology. By using a daily diary methodology, it was possible to investigate these constructs grounded to specific, daily stressful events, as well as identify links between specific parental responses and specific adolescent reactions in the context of daily events. Results shed light on the relative frequency of mother-teen interactions about teens' most-stressful daily events, relative frequencies of maternal response types and adolescent reaction types, and associations between responses and reactions within the same daily interactions. Teens reported that many stressors they faced were interpersonal in nature, highlighting that navigating relationship issues with parents, friends, siblings, and teachers are daily challenges for many teens. As hypothesized, differences in reports of response and

reaction types emerged between teens experiencing elevated internalizing problems and those who were not.

Maternal awareness of daily stress has been supported as important for adolescent outcomes (Hartos & Power, 2000), yet it is understudied in the context of emotion socialization processes (Jobe-Shields, Parra, & Buckholdt, 2013). Additionally, research has indicated that parents are more discouraging of emotional expression as their children age, yet it is unclear if awareness or emotional disclosure plays a role in these findings (Dix, 1991). Results indicated that teens perceived their mothers as being aware of approximately half of the daily events they experienced as most stressful. Yet, significant variability was observed, with approximately 20% of teens reporting that their mothers knew about none or only one of their weekly stressors. Interestingly, most studies of parental responsiveness do not take into account rates of parental awareness; yet, this finding implies that precursors to parental responses (e.g., teens bringing up events to their parents, parents otherwise finding out about the event, noticing their teen's mood) may be important areas for further study. Demographic differences also emerged regarding awareness, with community center participants reporting significantly less awareness. Although the study did not include exact measures of socioeconomic status, the constellation of indicators included in the present study suggest the possibility that lower awareness was associated with diminished socioeconomic resources. Parenting is known to be influenced by socioeconomic and neighborhood contexts, however, little is known about the mechanisms of this influence (Ceballo & McLoyd, 2002). It is possible that when parents are overworked and stressed themselves, their ability to monitor can be compromised. It would be hypothesized that rates of awareness decrease from childhood to adolescence, and overall, mothers were reportedly unaware of many weekly stressful events. Although no age effects were found in the present study, the age range was limited. It may be important to include assessment of awareness alongside traditional measures of parental responsiveness when investigating responses during adolescence or across different developmental periods. Additionally, it is important to note that different stressors may be more or less likely to come to the attention of parents. For example, mothers may be aware of family-related stressors (i.e., problem with parent or sibling), but may be less aware of how the stressor impacts the teen.

A second benefit of the diary methodology was the ability to investigate rates of specific response and reaction types, and findings were similar to those reported in studies using survey methods (O'Neal & Magai, 2005; Klimes-Dougan et al., 2007). Based on descriptive statistics, Reward was reported most frequently, followed by Override. Punish, Neglect, and Magnify were reported less frequently than Reward and Override. The similarity of rates between the diary method and rates published from studies using surveys provides cross-validation regarding validity of the use of a daily diary to assess responses and reactions associated with specific, daily stressors, as well as the ability of parents and teens to recall the frequency of responses when answering questionnaires. Regarding adolescent reactions, Accepting reactions were reported most frequently. Interestingly, community center participants reported significantly more Reward responses and more Avoidant-Protective reactions as compared to the middle school participants. Taken together with the lower incidence of perceived maternal awareness of stressors, these findings could indicate that in the context of socioeconomic disadvantage, adolescents do not want to "bother" their

mothers with their daily stressors. Future research would do well to include more diverse participants to better understand cultural differences in these emotion socialization processes, as the present study was not designed to specifically compare and contrast these processes across racial groups or socioeconomic status.

The second aim of the present study was to investigate associations between specific maternal responses and specific adolescent reactions tied to the same daily stressor. Indeed, results linking parental responses to adolescent reactions (Parra et al., 2010) were upheld when investigated at the *event* level. The use of GEE made it possible to look at the relation between specific responses and specific reactions, and statistically significant, identifiable patterns emerged. Although Override was originally conceptualized as minimizing or dismissing towards emotional expression (O'Neal & Magai, 2005), it is generally considered a supportive socialization strategy (Klimes-Dougan et al., 2007) and is positively correlated with Reward responses (Buckholdt, Parra, & Jobe-Shields, 2009). Theoretically, Rewarding responses may elicit more discussion and more opportunities for emotion coaching than telling a teen “everything will be fine” or “not to worry.” Indeed, slight differences emerged between reactions to Reward and reactions to Override. Whereas Accepting reactions were more likely than all other reactions after maternal Reward, Accepting and Avoid-Protect were both more likely than Avoid-Withdraw after maternal Override. Additionally, Accept was not more likely to occur than Avoid-Protect after maternal Override. This link between maternal Override and adolescent Avoid-Protect may indicate that with Override, although it represents a positive response (and was not associated with Attack or Avoid-Withdraw reactions), teens may feel less comfortable sharing more about the situation or may even suppress their emotions in order to not bother their mother. This pattern of results does indicate that there may be important differences between Reward and Override responses, as opposed to them both being broadly positive responses without specificity.

Neglect and Magnify responses, although less frequent, were associated with similar patterns of adolescent reactions. Accepting and Avoid-Protect reactions were both less likely than Avoid-Withdraw and Attack reactions in the context of both Neglect and Magnify responses. This is an interesting finding, because, although both Neglect and Magnify are considered negative maternal responses, they are conceptually different. In the context of family interactions, neglect could be considered to be on one end of the spectrum of interpersonal engagement (ignoring, giving no response), whereas magnify might be near the opposite end of the engagement spectrum (becoming very upset, crying, becoming angry). Yet, in the present study, they were both associated with teen Withdrawal and Attacking. These negative interactions (e.g., Neglect – Attack, Neglect – Avoid-Withdraw, Magnify – Attack, Magnify – Avoid-Withdraw), between parents and their teens may be most important in furthering our understanding of families presenting for family treatment, as it is not uncommon to have a family with a teenager presenting for treatment reporting that their teen is “attacking” or “withdrawn” in family interactions.

Finally, the components of these identified interaction patterns were found to be linked to baseline internalizing symptoms (Aim 3). Broadly, baseline internalizing symptoms were related specifically to Avoidant reactions during the following week (Avoid-Withdraw and Avoid-Protect). Additionally, baseline internalizing symptoms appeared to elicit particular

parental responses—Punish responses (based on teen report) and Magnify responses (based on parent report of internalizing symptoms). Teen perceptions of increased Punish responses during the week could be interpreted as a potential contributory factor to mood difficulties (i.e., if emotions have historically been punished, risk for depression could increase), or a reflection of the impact of symptoms of depression and anxiety on perceived social interactions (i.e., heightened perception of being punished by parents). Similarly, it is unclear to what extent maternal magnification of emotions could potentially contribute to internalizing symptomatology (e.g., magnification and modeling of intense sadness; potential impact of maternal internalizing symptoms), or simply a reflection of the family distress which accompanies adolescent mood difficulties (i.e., if a child's expression of sadness is extreme or uncontrollable, parents may be more likely to become very sad themselves). It will be necessary for future, longitudinal research to add to the knowledge regarding the transaction between parent-teen interaction patterns and teen mood symptoms.

More research is needed to extend these findings into the context of clinical, family-based interventions. Because rates of the responses and reactions linked to internalizing symptoms were lower than facilitative responses and accepting reactions, more information about these patterns may best be gained from investigations of clinical samples of adolescents and their families. The low rates of these responses and reactions are reflected in the wide confidence intervals observed. Identifying patterns of behavior present between parents and adolescents regarding emotional events will ultimately allow for the development of empirically-supported techniques to identify and alter such patterns. Future research could shed light on these interactions by employing diary methodologies with clinical samples. Interestingly, despite demographic associations regarding frequency of responses and reactions (Reward and Avoid-Protect), collection site did not emerge as a significant predictor when investigating the links between parent responses and adolescent reactions. This finding further bolsters support for the microsocial perspective and the idea that specific parent interactions are associated with specific adolescent reactions.

In addition to the contributions of the present study, there were also important limitations that must be remembered when interpreting and using the reported findings. First, although parent report was gathered for baseline internalizing symptoms, diaries were only completed by adolescents and therefore represent adolescent perceptions of these parent-teen interactions. As parent and teen reports of internalizing symptoms were not highly correlated, it is likely that there are similar differences in how mothers and teens view these daily interactions. It will be important for future research to include parents as reporters of weekly interactions, as the self-report bias can lead to inflated associations. Relatedly, maternal data were missing at a higher rate than teen data (likely due to the collection on-site during summer camps), which decreased power for CBCL analyses. Additionally, only maternal caregivers were reported on in the present study, and an important extension will be to understand these processes between teens and paternal caregivers. Although the diary methodology was a strength of the study, there are more sophisticated methods which would have yielded even more ecologically-valid data. For example, diaries that captured all stressful daily events at the time of the events (as opposed to daily most stressful event, reported at the end of the day) would provide much richer data. Electronic and internet-enabled devices would have allowed data to be clearly time-stamped to increase participant

adherence. In the present study, even when teens were adherent, diaries were completed at the end of the day, which may have been hours after the stressful event, and for events characterized by perceived maternal response, after the parent-teen interaction was over. It should be noted that teens experiencing mood and internalizing symptoms would be expected to interpret interactions with their parents as more negative, and for that reason it is important to consider the results of the present study not as causal (i.e., that response-reaction patterns caused mood disturbances or that mood disturbances caused response-reaction patterns) but as correlational (i.e., that response-reaction patterns and mood disturbances are associated with one another). As mentioned, the type of event may be important for future research to consider, and whether events were family-related or not. In the present study, 20% of events were considered “other” events, prohibiting further classification of events as “family-related” or not to investigate this construct further. Finally, when tying parental responses to specific daily events, the interpretation of Neglect responses is difficult. It will be important in the future to better identify and assess the differences between parental unawareness of stressful events, parental unawareness of emotions, and parental neglect of emotions. It may have been hard for teens to identify their reactions to their parents when their parents did not respond. Naturalistic observations of family interactions regarding emotional experiences would be one method to better understand these processes, in addition to more specific diary questions or a different set of questions in the context of neglect responses. Relatedly, it is interesting that 10% of reactions were considered to be Other reactions. It is unclear how to interpret this finding, and it is important to note that there was no Other option for the parental response item (it was included regarding adolescent reactions due to the nascent nature of the measure). Yet, it may suggest that there is more to be understood regarding the ways teens react (or perceive themselves as reacting) in the context of their parents’ responsiveness.

In light of these shortcomings and the importance of additional research to extend these findings, the present study adds to the body of emotion socialization literature by replicating findings from more general survey methodologies regarding associations between maternal responsiveness and adolescent reactions, as well as associations between responsiveness, reactions, and internalizing symptoms. Further, key contributions of the present study include estimates of maternal awareness of daily most-stressful events and emotion socialization interactions between parents and teens across a typical week in adolescence, as well as the association between responses and reactions tied to the same event. Additional differences between response-reaction patterns salient for teens with and without elevated internalizing symptomatology were also identified. As our understanding of emotion socialization processes grows more complex, knowledge is advanced by the incorporation of multiple methodologies, including those at the microsocial level to capture the nuances of these interaction patterns.

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Table 1

Daily Diary Adaptations of Maternal Responses and Adolescent Reactions

Original	Diary Adaptation
Maternal Response	
<i>Reward</i>	"She <i>comforted</i> me, <i>helped</i> me deal with the issue, <i>talked</i> about my feelings, or took time to <i>focus on me</i> ."
<i>Override</i>	"She told me to <i>cheer up</i> , it's <i>no big deal</i> , or that <i>everything will be fine</i> ."
<i>Punish</i>	"She told me to <i>stop</i> feeling that way, and <i>didn't approve</i> of it."
<i>Magnify</i>	"She showed me that she felt <i>even more</i> upset than I did, she got VERY upset."
<i>Neglect</i>	"She <i>did not pay attention</i> to me or my feelings."
Adolescent Reaction	
<i>Accepting</i>	"I showed her I appreciated (was thankful for) the help."
<i>Avoidant-Protective</i>	"I told her I was fine so she wouldn't worry about me."
<i>Avoidant-Withdrawal</i>	"I tried to get away from her or avoid the conversation."
<i>Attacking</i>	"I criticized her, became mean and insulting, or asked why she bothered caring now."

Note. Original maternal responses were drawn from O'Neal and Magai (2005), original adolescent reactions drawn from Parra et al. (2010).

Table 2
 Conditional Probabilities for Response-Reaction Configurations (Adolescent Reaction | Maternal Response)

	Reward	Override	Neglect	Magnify	Punish
Accept	46.44%	47.89%	8.00%	23.33%	36.36%
Avoid-Protect	23.39%	35.21%	12.00%	10.00%	22.73%
Avoid-Withdraw	15.59%	5.63%	32.00%	40.00%	27.27%
Attack	5.08%	0.00%	20.00%	13.33%	9.09%
Other	9.49%	11.27%	28.00%	13.33%	4.55%

Note. Across 310 diary entries characterized by some perceived maternal response.

Table 3

GEE Associations Between Maternal Responses and Adolescent Reactions

	Reward	Override	Neglect	Magnify	Punish
Intercept b_0 (SE)	2.87 (2.22)	-2.47(2.68)	.26 (.52)	7.41 (3.78)	-4.64 (5.21)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<u>Accept</u>					
Avoid-Protect	2.18 (1.02 – 4.63) *	.66 (.28 – 1.59)	.29 (.05 – 1.79)	1.13 (.24 – 5.31)	.85 (.27 – 2.69)
Avoid-Withdraw	3.03 (1.28 – 7.13) *	3.99(1.15 – 13.75) *	.07 (.02 – .30) ***	.12 (.04 – .38) ***	.48 (.15 – 1.51)
Attack	9.83 (1.12 – 86.12) *	--	.02 (.00 – .17) ***	.10 (.02 – .54) **	.23 (.03 – 1.58)
<u>Avoid-Protect</u>					
Avoid-Withdraw	1.39 (.52 – 3.74)	6.00 (1.31 – 27.43) *	.24 (.06 – .91) *	.11 (.03 – .45) **	.57 (.12 – 2.80)
Attack	4.51 (.44 – 45.88)	--	.08 (.01 – .51) **	.08 (.01 – .60) *	.27 (.04 – 2.06)
<u>Avoid-Withdraw</u>					
Attack	3.25 (.41 – 26.01)	--	.34 (.06 – 1.87)	.78 (.14 – 4.29)	.48 (.05 – 4.53)

Note. OR = odds ratio. CI = confidence interval. Odds ratios represent odds of underlined Adolescent Reaction vs. subsequent listed Adolescent Reactions. Odds ratios less than 1 represent negative associations; italics indicate a significant negative association. See text for inverse interpretation.

* $p < .05$.

** $p < .01$.

*** $p < .001$.