Psychopathology and Short-term Emotion: The Balance of Affects

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In this study, the relationship between short-term emotion expressions and dimensional ratings of internalizing and externalizing symptomatology was examined. Short-term emotions, defined as facial or vocal displays of emotion generally lasting less than 10 seconds and elicited by a specific and proximal event, were observed during recess in 71 children from diverse socioeconomic backgrounds, who were between 4 and 8 years old. Internalizing and externalizing symptomatology was assessed through parent and teacher questionnaire. Sociometric ratings were obtained from peers on children's anger and aggression. It was hypothesized following Tomkins (1979) and others that one affect becomes predominant in the emotional experience of the individual. Different operationalizations of this concept were examined. Using regression analyses, externalizing symptomatology was found to be predicted by higher levels of anger, lower levels of happiness, and lower levels of sadness. Internalizing symptomatology was found to be predicted by higher levels of sadness and lower levels of anger. It was concluded on the basis of these data that the relationship between short-term emotion and internalizing and externalizing psychopathology is best understood as the balance between different short-term emotions. Results are discussed in the context of theories of emotion and their functions.

Keywords: Emotions, psychopathology, children, externalizing, internalizing.

Introduction

It has been argued that short-term emotions and certain types of psychopathology can be conceptualized on a continuum of emotional experience (Oatley & Jenkins, 1996). The aim of this study was to examine the relationship between short-term emotion expressions and dimensional ratings of internalizing and externalizing symptomatology.

We use the term short-term emotional expressions to refer to emotional experiences that are elicited by a specific and proximal event and last for a few seconds. An emotion is usually experienced as a distinctive type of mental state, accompanied or followed by bodily changes, expressions, and actions. It has been suggested that short-term emotions occur as a person evaluates the proximal event as being relevant to a goal (Campos, Mumme, Kermoian, & Campos, 1994; Frijda, 1986; Oatley & Johnson-Laird, 1995).

Another aspect of emotional experience is that seen in certain types of psychopathology. Someone suffering from depression experiences a mood of sadness at a high level of intensity for an extended period of time (American Psychiatric Association, 1994). Someone who experiences conduct disorder engages in behaviors that would lead one to suspect that the person feels angry, over a long period of time. Conditions such as conduct disorder, depression, and anxiety have emotions as major components of their presentation. A disorder, however, is not just an extreme emotion. It is a much more complex state involving behavior and physiological states that may or may not arise out of emotional phenomena or be related to these. In spite of the fact that emotions figure prominently in descriptions of some psychiatric disorders in children and adults (Oatley & Jenkins, 1996; Thoits, 1985), there have been very few investigations in which the relationship between short-term facial and vocal displays of emotion and psychopathology has been examined.

Oatley and Jenkins (1996) conceptualized the relationship between different aspects of emotional phenomena on a continuum. The organizing features of this continuum are (a) whether the emotion is elicited by a specific event (the proximal elicitor) and (b) the length of time that the emotional experience lasts. At one end of the continuum are short-term emotional experiences. Measurements at this end of the continuum include microanalytic systems for the coding of facial expressions, ratings that combine facial expression, voice tone, and posture (Lewis & Michalson, 1983; Stern et al., 1992), and physiological measures of autonomic changes (Cacioppo & Tassinary, 1990). At the opposite end of the continuum to short-term emotions are personality and psychiatric disorders involving emotional components that last for long periods of time: between weeks and years. Although life events or chronic environmental adversity may have some etiological (or eliciting) role in these disorders (Brown & Harris, 1993; Goodyear, 1988), these do not occur with the same contiguity in time as the elicitor emotion relationship that can be seen at the other end of the continuum. Emotional states that are experienced as part of personality and psychopathology are likely to involve complex combinations of basic emotions. Although we assume links between different levels of emotional experience, we have very little empirical work on the relationship between basic processes in emotion and the much more complex organization of emotions.
and behavior that constitute some psychological disorders. In this paper our interest is in the relationship between emotions and internalizing and externalizing symptomatology in children.

The extent to which people are consciously aware of emotional experience is another dimension differentiating emotional phenomena at different points on the continuum. The relationship between self-reported emotion and other indices of emotion is, however, very complicated along the entire continuum of emotional experience. Facial expressions of emotion and autonomic changes may not be accompanied by any conscious awareness of the occurrence of an emotional state (Rosenberg & Ekman, 1994). At the other end of the continuum with regard to psychopathology there is also no one-to-one relationship between self-reported emotion and the measurement of psychopathology. For instance, people who are depressed usually report depressed mood. It is, however, not necessarily true that children with conduct disorder are aware of high levels of angry affect. Our focus in the present study has been on expression of emotion rather than conscious experience, an issue that we return to in the discussion.

Tomkins (1979) and others (Izard, 1991; Lazarus, 1991; Malatesta & Wilson, 1988) have suggested that one emotion may come to predominate in the emotional experience of the individual. This notion has been used to explain the emotional components of psychopathology. The suggestion is that personality or psychopathology will be characterized by a predominance of one kind of short-term emotional expression. Thus the hypothesis is that internalizing disorders are based on frequent experiences of sadness and/or anxiety depending on the type of internalizing disorder. Externalizing disorders in children may represent an affective organization in which anger predominates, such that these children experience short-term anger more than others (Cole & Zahn-Waxler, 1992; Lemerise & Dodge, 1993). Keltner, Moffitt, and Stouthamer-Loeber (1995) examined facial expressions of emotions while boys were doing an IQ test. Boys who were showing externalizing disorders showed higher levels of anger and those who showed internalizing disorders showed high levels of fear. The present study provided an opportunity to extend the work of these authors by examining more detailed hypotheses about the emotional organization of children showing psychopathology. How do we operationalize this notion of one emotion experience being predominant in the emotional experience of the individual? Several alternatives are possible.

**Predominant Affect within the Individual**

One interpretation is that an emotion such as anger will be experienced much more frequently than any other emotion within the individual. We can examine this by comparing rates of different basic emotions within the individual. Does the child with higher levels of externalizing symptomatology show anger more than any other emotion?

**Predominant Affect When Compared to Other Individuals**

Another possibility is that children do not show one emotion more than another within themselves but that in comparison to other children they show that emotion expression more frequently. In a child who shows higher levels of externalizing symptomatology this would mean that the child would show anger more frequently than children with low levels of externalizing symptomatology, but they would still show anger less often than they would show happiness, sadness, etc.

**Balance of Affects**

A third possibility is that psychopathology is related to the balance of emotions within the individual. This was suggested by Cole, Michel, and O’Donnell-Teti (1994) in their theoretical article on the relationship between short-term emotion and psychopathology. Taking the example above, not only does the child who shows high levels of externalizing symptomatology show a predominant affect—i.e. more anger than other children—but he or she also shows less sadness. The primary affect is frequently experienced or expressed, and other affects are infrequently experienced. If the balance hypothesis is correct we would expect the child to readily default to anger (the hypothesized primary affect in externalizing disorder) and to experience other emotions such as sadness or happiness less frequently.

**Elicitor-emotion Discrepancy Hypothesis**

Cole et al. (1994) also suggested the possibility that children with psychopathology may react to events in the world with unusual emotions. When most children react with one kind of emotional reaction, perhaps children with psychopathology react with a different emotional reaction. This makes the children seem deviant. If we operationalize this empirically, we can document how most children respond to an elicitor and we can code deviations from the “normal” pattern of response to that elicitor. This was examined in the present study by determining the emotional reactions shown by the majority of children to specific elicitors. When children showed an emotional response that was unusual, their reaction was counted as deviant. Further, deviant reactions may occur in relation to one emotion more than others. A child might always react with anger to events that elicit a variety of emotions in other children.

Understanding basic processes in emotion that contribute to psychopathology is not just of theoretical interest. It may also have implications for the treatment of externalizing and internalizing symptomatology. For instance, if externalizing symptomatology is associated with high levels of anger, but not associated with any other emotions, then anger experience and expression would be the likely focus of intervention. We can then think about (a) the types of events that elicit anger in children, (b) temperament-environment interactions specifically relevant to increases of anger expression, not relevant to other emotions, and (c) the patterns of appraisal that make anger more likely to be expressed than any other emotion. These aspects of emotion functioning would be targeted for intervention. If, on the other hand, high levels of externalizing symptomatology are also associated with low levels of sadness and happiness, then interventions that focus on helping children with the regulation of anger only address part of the issue. It is also important to encourage the experience and expression of the emotions of happiness and sadness.
This might involve analyzing the environment to determine the frequency of elicitors for happiness, sadness, and anger. It might involve trying to help children develop an appraisal system in which appraisals of events that lead to happiness and sadness are more frequent than those that lead to anger. Appraisals that lead to happiness have been found to involve assessments of plans going well, and others being affiliative. Appraisals that lead to sadness rather than anger involve the perception that goals cannot be reinstated and that the self is responsible for the negative elicitor (Levine, 1995).

We examined the hypotheses outlined above using data collected for the primary purpose of investigating the relationship between anger-based marital conflict, children’s anger expressions, and aggression (see Jenkins, in press). Short-term emotions were assessed by an observer coding facial expression, gesture, and voice tone during children’s free play at recess, parents and teachers providing ratings of internalizing and externalizing symptomatology, and sociometric ratings of anger and aggression being obtained from peers.

Sample and Procedures

Children and parents were recruited from Senior Kindergarten, Grade 1, and Grade 2 from three public schools and one private school in the downtown area of a Canadian city. Letters were sent out to parents. The study was described to families as a study about how families solve problems or conflicts that emerge in daily life. Parents who returned forms were telephoned and the study was explained in more detail. The public schools were in multiracial communities, with a high proportion of new immigrants within the schools. It was not possible to accurately determine the response rate in these schools. If administrative school staff thought that parents could speak enough English, a letter was sent home, but such judgements were haphazard. In order to be eligible for participation both parents had to be living in the home for the previous year and the mother had to speak enough English to complete the interview. This sample represents the parents and children who were able to understand the letter that was sent to them, meet the selection criteria, and volunteer for the study. It is a sample of nonidentified children and families that is occupationally, racially, and educationally diverse (see below).

The sample included 41 boys and 30 girls between 4 and 8 years old. Twenty-two per cent of mothers had not completed high school, 13% completed high school but no other education, 16% had some college, 25% completed college, and a further 24% had some post-college education. Information about language spoken at home was collected by interviewers, but information about race was not collected for reasons of sensitivity. English was spoken in the home in 83% of families. The remainder of the families spoke Chinese, French, Indian, Greek, Portuguese, or another language at home. Fathers’ and mothers’ occupations were coded using the Blishen scheme (Blishen, Carroll, & Moore, 1987). This has been widely used in Canada for the analysis of census data. Many more mothers (38%) than fathers (11%) were not employed outside the home. Therefore fathers’ occupation gives a better indication of family SES and is reported here. Ratings for fathers’ occupations ranged from 23.76 (forklift truck operator) to 101 (physician), with a mean of $4.55$, $SD = 18.29$. No coding for unemployment is used in this scheme. In order not to exclude data from these families unemployment was given a code of 20.00, which was just below the lowest occupation code given in this sample.

Children were observed during recess at school. Mothers gave their consent for teachers to complete a questionnaire about the child’s internalizing and externalizing symptomatology at school. Seven further children and their parents were also interviewed, but in five cases the parent did not speak enough English to complete the measures. As the children from these families spoke English and parental consent had been obtained, data were collected from these children only for the sociometric rating described below.

Measures

**Teachers’ and Mothers’ Report on Externalizing Symptomatology**

Teachers completed the Teacher Report Form (Achenbach, 1991) and mothers completed the Child Behavior Checklist. These are widely used instruments for the assessment of internalizing and externalizing symptomatology in children, which have been shown to have good reliability and validity (Achenbach, 1991). Parents and teachers are asked to rate items describing behavior on a 3-point scale from not true to very often or very true. Items on the externalizing scale include delinquent behaviors such as lying, stealing, cheating, etc. as well as aggressive behaviors such as fighting, destroying property, being argumentative, and threatening. These instruments have been shown to differentiate between children attending psychiatric clinics and nonreferred children. The $T$ score from the externalizing subscales from the parents’ and teachers’ ratings were used in analyses.

**Teachers’ and Mothers’ Report on Internalizing Symptomatology**

The $T$ scores for the internalizing subscales from the Teacher Report Form (Achenbach, 1991) and the Child Behavior Checklist completed by mothers were used in analyses. Items on this subscale include: being withdrawn, sad, showing somatic complaints, feeling unloved, fearful, etc.

**Peer-rated Anger/Aggression**

During individual interviews with children, all participating children rated other participating children in their class on a 3-point scale of how often they fought with other children, as well as how often children became angry. The points on the physical aggression scale were explained as: a child who almost never fights, a child who gets into fights with other children sometimes, and a child who gets into fights with other children a lot. The points on the anger expression scale were as follows: never or hardly ever gets angry, gets angry sometimes, gets angry a lot. A mean score was calculated for each child. As these two measures were highly intercorrelated, $r(71) = .68$, $p < .001$, they were summed to yield a score of peer-rated anger/aggression. Ratings scales have been found to be reliable in a preschool sample (Asher, Singleton, Tinsley, & Hymel, 1979).

In the present study peer-rated anger/aggression was found to be related to teacher and parent ratings of externalizing symptomatology, as well as observational measures of anger frequency offering support to the validity of this sociometric rating of anger/aggression. See Results section for details of these analyses.

**Short-term Emotional Expressions**

Children were observed during recess for five 5-minute periods. Observations were carried out after home interviews had taken place, with observations generally extending over a period of a week or more. Piloting was carried out both at recess and during class time. The frequency of all short-term emotions was very low during structured classes. In order to maximise the
frequency of emotional expressions observations were carried out during free time, rather than structured class times. Event sampling was carried out in which any expression of happiness, sadness, anger, fear, or disgust was coded live. Observers also coded what elicited the emotion. Facial expressions were coded using a modified version of a measure developed by Stern et al. (1992). This is a coding scheme of basic emotions for use in naturalistic research. It is midway between a fine-grained, micro-analytic assessment and a macro-scoring system. Facial expressions were coded live for type (happiness, anger, sadness, fear, and disgust) and intensity, but only findings on type of emotion are reported in this paper. Descriptions of facial expressions were based on the work of Ekman and Friesen (1978). Happiness was coded on the basis of closed or open lips and smiles and laughter. Anger was coded on the basis of eyebrows drawn together and lowered with lips pressed together or, at higher levels of intensity, a grimace. Sadness was coded on the basis of the inside tips of eyebrows raised and pulled together with the mouth pulled down at the edges, and at more marked levels of intensity, accompanied by tears. Voice tone and gestures were also coded. The display of emotion ended when the person’s expression returned to neutral. A new emotion was coded subsequently. Most emotion expressions lasted less than 10 seconds. If a child laughed for 30 seconds, or cried for 1 minute continuously, this was coded as one expression of emotion. These lengthy episodes of emotion were rare. Occasionally (1% of emotions coded) an emotion was coded as present when no facial expression was evident but there were compelling reasons based on voice tone or gesture to suggest an emotion. For instance, happiness was coded in the absence of facial expression if the voice tone was happy and the child was jumping up and down. Happiness was most frequently rated (76% of emotion expressions), anger expressions represented 16% of expressions, sadness represented 6% of expressions, and disgust and fear represented under 2% of expressions.

Inter-rater reliability was assessed by two raters observing and rating live 55 five-minute periods. Inter-rater reliability as assessed by Cohen’s kappa was $k = .91$. Agreement was best on happiness (100%), next best on disgust (87%) and anger (84%), followed by sadness (69%). Expressions of fear did not occur during the reliability trials.

Observed anger, sadness, and happiness. A summed score of observed anger was derived for each child. Two outliers were recoded to the highest value for the rest of the distribution (recoded from 14 to 10). The mean for anger was $M = 3.5, SD = 2.7$. A summed score of observed sadness was derived for each child. One outlier was recoded to the highest value for the rest of the distribution (from 8 to 6). The mean for sadness was $M = 1.3, SD = 1.6$. A summed score of observed happiness was derived. The mean for happiness was $M = 16.8, SD = 8.1$.

Deviant elicitor-emotion pairings: total, favoring anger, and favoring sadness. Elicitors of emotions were also coded. Eighteen elicitor categories were generated on the basis of pilot observations and theoretical work on the elicitation of emotion (Oatley & Johnson-Laird, 1995). Coders followed the play and conversations of children and were asked to make a judgement about why the emotion coded had occurred. Thus coders were not simply coding the actions of other children towards the target of child, but making appraisals about the meaning of the events to which children were responding. The most frequent positive elicitors were getting attention or praise from someone, playing by oneself and achieving a goal, and making an overture to someone to play. The most frequent negative elicitors were intrusion or interference while trying to do something, being corrected, and being rejected. Inter-rater reliability was $k = .70$ for the elicitor categories.

A total of 1592 incidents of emotion were observed in the playground for participating children. We determined the most common emotion-elicitor pairings. For instance, the most common emotional reaction to “intrusion or interference while trying to do something” was anger (88%). The most frequent response to being given praise or attention was happiness (99%). When an emotional response was shown by the child that was a rare response to that elicitor, defined as occurring less than 30% of the time, a deviant emotion-elicitor relationship was coded. For instance, if a child reacted to someone giving them attention or praise with an angry expression ($N = 1$) this was coded as a deviant elicitor-emotion pairing favoring anger. Forty-seven children showed no such elicitor-emotion discrepancies favoring anger, 15 showed 1, and 9 children showed 2 or more (all coded as “2”). Deviant elicitor-emotion pairings favoring sadness were also coded. Fifty-seven children showed none, 10 showed 1, and 4 showed 2 or more.

Results

Preliminary Analyses

Eleven children were missing one of the following measures: parent behavior rating, teacher behavior rating, or peer rating of anger/aggression. In these cases mean values were substituted for the missing variables. Analyses were run with and without these substitutions and there were no substantive differences in results. Analysed with mean values substituted for missing data are presented. Neither age nor gender were significantly associated with any of the short-term emotion expressions. As child symptomatology scores are standardized within age and sex, no age or sex differences were expected for the symptomatology scores and none were obtained.

Cross-informant Correlations of Internalizing and Externalizing Symptomatology

The teachers’ report of externalizing behavior was significantly related both to the mothers’ report of externalizing behavior, $r(71) = .41, p < .001$, and to peer reports, $r(71) = .56, p < .001$. Peer reports’ of anger/aggression were significantly associated with maternal reports of externalizing behavior, $r(71) = .36, p < .002$. Maternal reports of internalizing behavior were not related to teachers’ reports of internalizing behavior, $r(71) = -.06, p < .61$. There was no report on internalizing symptomatology from peers. For further information on cross-informant associations, particularly for aggression subscales, see Jenkins (in press).

Predominant Affect within Individual

As can be seen from descriptive data reported under the Measures section entitled “Short-term emotion expressions”, the base rate of different emotions varies dramatically. Happiness is displayed most frequently, followed by anger and sadness. Disgust and fear were displayed too infrequently (approximately 1–2% of emotions shown) to include them in analyses. In order to examine whether one affect becomes predominant within the individual, we would expect children with externalizing symptomatology to show more anger than happiness or sadness. This is most unlikely given the different base rates of the emotions but it is still possible. We examined this by counting up the number of children who showed more angry expressions than happy expressions during the observation period. Only 3 out of 71 children (4%) showed more angry expressions than happy expressions. All scored high on externalizing problems as rated by teachers. Only one of the children in
the sample showed more sad affect than happy affect, and although this child's internalizing score as rated by mother was slightly elevated, this was not the case for the teacher-rated score. These results suggest that when we hypothesize that children become organized around angry or sad affect, this will only extremely rarely be their predominant affect. The predominant affect of most children in the circumstance that we sampled was happiness, and negative affect was less frequently expressed.

The next series of analyses are all geared to comparisons across individuals, i.e. "How does this person’s pattern of affective expression differ from affects expressed by other people?"

**Predominant affect when compared to other individuals.**

If the predominant affect hypothesis is correct, we would expect children with externalizing disorders to show higher levels of anger, but not to be differentiated from one another by other emotions such as happiness or sadness. This was examined by partial correlation, controlling for either internalizing or externalizing behavior as appropriate. When internalizing and externalizing symptomatology are assessed by behavioral questionnaire, the two scales are found to covary.

Table 1

Partial Correlations between Externalizing Psychopathology (Controlling for Internalizing) and Internalizing Psychopathology (Controlling for Externalizing) and the Observed Short-term Expressions of Sadness, Anger, and Happiness

<table>
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<tr>
<th></th>
<th>Happiness</th>
<th>Sadness</th>
<th>Anger</th>
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<tbody>
<tr>
<td>Internalizing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher responses</td>
<td>.04</td>
<td>.26*</td>
<td>-.23*</td>
</tr>
<tr>
<td>Parent responses</td>
<td>.09</td>
<td>.10</td>
<td>.01</td>
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<tr>
<td>Externalizing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher responses</td>
<td>-.19</td>
<td>-.14</td>
<td>.42***</td>
</tr>
<tr>
<td>Parent responses</td>
<td>.03</td>
<td>.05</td>
<td>.38***</td>
</tr>
<tr>
<td>Anger/Anger</td>
<td>-.29**</td>
<td>.12</td>
<td>.42***</td>
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* Bivariate as opposed to partial correlation shown as no covariate was available.

*p < .05; ** p < .01; *** p < .001.

Hierarchical regressions were carried out. The rating of internalizing or externalizing symptomatology was the outcome variable, and the other symptomatology score (internalizing or externalizing) was the covariate entered first into the equation. Next the predominant emotion was entered into the equation. Entering the predominant emotion before the nonpredominant emotions ensured that results attributable to the nonpredominant emotions could not be explained by high levels of the predominant emotion.

It is worth going into more detail about this method of analysis to illustrate how this tests the balance of emotions hypothesis. At each step of the analysis residual scores were created that represented how well the emotion variable entered into the equation on the previous step predicted the child’s scores on the symptomatology dimension. Thus if sadness is entered after anger, the externalizing score is externalizing adjusted for the contribution of anger. This is equivalent to calculating the difference score between anger and sadness and entering this into the equation after anger. The residual score for individual children is large when children show unexpected scores on externalizing on the basis of the relationship between externalizing and anger shown by most children. This occurs when (1) the child shows high levels of anger and their externalizing score is higher or lower than expected, or (2) the child shows low levels of anger and their externalizing score is lower or higher than expected. If sadness is found to be a significant predictor of externalizing on the next step this means that children with high externalizing scores, who show unusually high or low anger scores, are better understood by knowing...
that they show low levels of sadness. Children with low externalizing scores, who show unusually low or high anger scores, are better understood by knowing that their sadness is high.

No evidence was found for multicollinearity or singularity prior to the main analyses. Results for each of the analyses can be seen in Table 2. In the text we have summarized the salient findings within each analysis. **Teachers’ ratings of externalizing.** Children’s anger expressions accounted for 9% of the variance in teacher reports of externalizing symptomatology (after accounting for internalizing symptomatology). Low sadness accounted for a further 2% of the variance in externalizing symptomatology. Low happiness accounted for a further 3% of the variance in externalizing symptomatology.

**Mothers’ report of externalizing.** Children’s anger expressions accounted for 13% of the variance in mother reports of externalizing symptomatology. Neither sadness nor happiness increased the prediction of children’s externalizing symptomatology, after anger had been taken into account.

**Peers’ report of anger/aggression.** Children’s anger expressions accounted for 16% of the variance in peer reports of anger/aggression. Low happiness accounted for a further 8% of the variance in peer report of anger/aggression.

**Teachers’ report of internalizing.** Children’s sadness expressions accounted for 4% of the variance in teacher reports of internalizing symptomatology. Low anger accounted for a further 4% of the variance in internalizing symptomatology. Low happiness did not increase the prediction of internalizing symptomatology, after sadness and anger had been taken into account.

**Mothers’ report of internalizing.** None of the short-term emotion variables contributed to the prediction of mothers’ rating of internalizing symptomatology. As multiple analyses were carried out, and some associations are only of weak significance, it is important to view these findings as offering support, but not confirmation, to the balance of affect hypothesis. It is possible to see from these analyses that the predominant emotion predicted internalizing or externalizing symptomatology in all but one case (mothers’ report of internalizing symptomatology). It was also the case that for three out of five measures of symptomatology, once the variance attributable to the predominant emotion had been accounted for, nonpredominant emotions made a significant contribution to the prediction of symptomatology. This means that high levels of externalizing symptomatology are associated with children showing more anger, but also less happiness and sadness. Low levels of externalizing symptomatology are associated with children showing low levels of anger, and higher levels of happiness and sadness. Children showing higher levels of internalizing symptomatology are not just sad, but they also show less anger than children who show lower levels of internalizing symptomatology. The balance between the different emotions is important in understanding internalizing and externalizing symptomatology. The fact that a similar pattern is seen for peer and teacher outcomes strengthens the support for the balance of emotions hypothesis.

Although the analyses reported above demonstrate that significant amounts of variance in internalizing and externalizing symptomatology are explained by the balance between emotions in the hypothesized direction, this does not mean that all children high in externalizing symptomatology or internalizing symptomatology conform to the patterns described. A z score was calculated for each child within each emotion and we then plotted the scores for the top 10% of children (N = 8) on externalizing and internalizing symptomatology as reported by teachers. (This descriptive analysis was only carried out on teacher data as peer data did not include a measure of internalizing symptomatology, and it would have been irrelevant to examine mother report data in this way as there was no support found within these data for the balance of emotions hypothesis.) For externalizing symptomatology, six out of eight children conformed to the pattern described: five out of eight of these children showed more anger than sadness and more anger than...
happiness, and one further child showed more anger than sadness but not more anger than happiness. The remaining two children showed both more sadness than anger, and more happiness than anger, contrary to either the balance of affect hypothesis or the predominant emotion hypothesis. Five out of eight children rated highest on internalizing symptomatology did conform to the pattern of high sadness, low anger, but the other three children did not.

**Effects of gender and age.** It was also important to determine whether patterns of affect in the prediction of internalizing and externalizing symptoms were similar in boys and girls and for different ages of children. Regressions were run including gender as a main effect and the gender by predominant emotion interaction terms, and the same analyses were carried out with age. The gender by predominant emotion interaction term was only significant for peer-reported anger/aggression. The age by predominant emotion interaction term was also only significant for this one outcome. As multiple analyses were carried out and age and gender effects were only seen with respect to one outcome variable, this did not lend strong support to the hypothesis that the relationship between emotion and psychopathology varies as a function of gender and age.

**Elicitor-emotion Discrepancy Hypothesis**

In order to examine support for the elicitor-emotion discrepancy hypothesis, partial correlations were run for each outcome variable separately. For those analyses in which we were examining the relationship between elicitor-emotion discrepancy variables and externalizing symptomatology, we controlled for the respondents' report of internalizing symptoms, and for those analyses in which we were examining the relationship between elicitor-emotion discrepancy variables and internalizing symptomatology, we controlled for the respondents' report of externalizing symptoms. In none of these analyses were elicitor-emotion discrepancy variables significant predictors of externalizing or internalizing symptomatology.

**Discussion**

This is one of a few studies (Blumberg & Izard, 1986; Keltner et al., 1995) to investigate the relationship between short-term emotions and externalizing and internalizing symptomatology. There was support for the hypothesis that one emotion becomes predominant in the emotional experience of the individual. The predominant emotion is not experienced more than other emotions within the individual, but relative to other individuals they show higher levels of the predominant emotion. It is not only the presence of one predominant emotion that characterizes particular types of externalizing and internalizing symptomatology. It is also the absence of other emotions that is indicative of this relationship.

Children with high levels of externalizing symptomatology were found to display higher levels of anger and a greater discrepancy between anger and sadness and anger and happiness when compared with their peers. Children high on internalizing symptomatology, on the other hand, were characterized by higher levels of sadness and lower levels of anger.

Children showing more externalizing symptoms were clearly differentiated on the presence of anger, with anger explaining between 9% and 16% of the variance in the prediction of externalizing symptomatology, depending on the informant (as displayed in Table 2). A smaller amount of variance was explained by the difference between the predominant and nonpredominant emotions: between 0% and 8% of the variance of externalizing symptomatology. Children showing more internalizing symptomatology, on the other hand, were less differentiated on the presence of sadness, with sadness explaining between 0% and 4% of the variance in the prediction of internalizing symptomatology, depending on the informant. An equal amount of variance was explained by the difference between the predominant and nonpredominant emotions (0% and 4% of the variance). This suggests that anger is a clear predominant emotion in externalizing symptomatology but that internalizing symptomatology is as much about the absence of short-term anger as about the presence of short-term sadness.

Unfortunately we were not able to test the hypothesis that fear is one of the emotional components of internalizing symptomatology. The frequency of fear during peer interaction at school was found to be too low. Keltner et al. (1995) did find that facial expressions of fear were frequent during an IQ test and that these expressions were related to the presence of internalizing disorders in adolescent boys. This finding, taken together with the findings reported in the present study, make it likely that both sadness and fear are the predominant emotions in internalizing symptomatology, although it was not possible to test this in this particular study.

Although there was some support for the balance of emotions hypothesis when teacher and peer report were the outcomes, this was not the case for mother-reported outcomes. One reason for this may be that short-term emotions were assessed in the school context but not in the home context. In order to gain a fuller understanding of the relationship between short-term emotion and psychopathology it will be important in future research to assess both of these constructs using more varied measurement techniques. It will be valuable to have measures of emotional expression made both in the school and the home context, and if possible across different relationships within these contexts. In this study, dimensional ratings of psychopathology were used. In future work it will be useful to include structured diagnostic assessments. The measurement of short-term emotion was limited to observation of facial and vocal expression. Children’s conscious experience of emotion was not tested. In future studies it will be important to expand the measurement of short-term emotion to include children’s conscious experience of emotion, by asking them to rate emotional intensity and type, at randomly chosen moments during the day (Larson & Lampman-Petraitis, 1989).

In agreement with many other studies, we too found that informants in different contexts rate children’s symptomatology very differently and that there is better agreement on externalizing symptomatology than internalizing symptomatology across contexts (Achenbach, 1991). It is notable that anger expressions and the balance between anger and happiness predicted ratings of psychopathology across different informants in the school context, lending support to the suggestion that a particular affective balance exists within the child, which the child brings into different relationships. It is also clear, however, that although there is some cross-context and relationship stability there are also large
effects of context on ratings of externalizing symptomatology. It is also likely that this would be the case for emotional expression. It seems likely that a child could have a relationship with one person that encourages the expression of anger, and discourages the expression of happiness, whereas in another relationship the child experiences and expresses more happiness. In future research we should try to identify factors in relationships that make one pattern of emotional expression likely in that relationship with another pattern of emotional expression more likely in another relationship.

There was no agreement across informants on internalizing behavior in children. Furthermore the affective pattern of short-term emotion expression did not predict to internalizing symptomatology across contexts. Many investigators have reported low levels of agreement across informants on internalizing symptomatology. This suggests either that internalizing symptomatology is very hard to measure, such that there are considerable inaccuracies in measurement, or that children behave very differently in different contexts with regard to internalizing behaviors (Moretti, Fine, Haley, & Marriage, 1985).

There was no support for the discrepancy hypothesis. Children were not reacting to elicitors in an abnormal way. When a loss event was coded they react with sadness. When someone is blocking them in what they want to do they react with anger. How do we explain this given that these children are showing different rates of anger or sadness? The most likely explanation is that children are reacting to events with different thresholds. When one child blocks another from their goal, some children will ignore this, while others will react with anger. With event sampling, in which we targeted emotion expression, elicitors were only coded when children showed an emotion. In future studies it would be possible to confirm the threshold argument by targeting elicitors as the event, coding these on the intensity of the provocation and then coding emotional reactions. In this way it would be possible to determine whether children are reacting at different thresholds.

Understanding the Relationship between Emotion and Psychopathology

Many emotion theorists have argued that an individual’s goals are at the center of emotional experience. Lazarus (1991) has put forward a model of the emotion process in which we come to situations with a stable and underlying motivational state in which certain things are more important to us than other things. It is this underlying motivational state that explains individual differences in emotion frequency. A person reacts to an event with an emotion if it is sufficiently important to their goals. When Person A accidentally touches Person B, Person B will smile reassuringly if being friendly or close to Person A is important to them. On the other hand Person B may react with anger if he or she feels slighted by Person A and values retaliation.

Lazarus (1991) has described the different emotions as conveying different relational messages or “core relational themes”. Happiness signals a cooperative social intention: The goals of the self are being met and the person has affiliative social intentions. Anger signals a hostile social intent: Another is blamed for the goal block and the expressor aims to get the better of another person, to retaliate and make them do what is wanted (Averill, 1982). Sadness signals a sense of irrevocable loss or defeat. Implicit within sadness is a call for comfort and protection and a display of submissiveness (Biglan, Rothlind, Hops, & Sherman, 1989; Jenkins & Ball, in press).

Given this analysis of emotional experience in terms of underlying motivational states towards others, how can we understand psychopathology in which the individual experiences or shows some emotions frequently and others less frequently? A child who shows high levels of anger and low levels of happiness and sadness may come to situations with a motivational state such as “Others have hostile intentions towards me. I will be dominant and retaliate. I do not want to get too close to another. I do not need the protection of others.” A child showing high levels of sadness and low levels of anger may come to situations with a motivational state such as “I am defeated. I need protection. Submission is preferable to dominance.” In several recent studies support has been found for the suggestion that children with externalizing psychopathology have different underlying motivational or goal states than children without externalizing psychopathology. Lochman (Lochman, Wayland, & White, 1993) and Jenkins and Greenbaum (1999), examining different age groups and assessing children’s goals from multiple perspectives, both found that children with externalizing psychopathology show high dominance goals and low affiliation goals when interacting with peers. Thus it may be the case that the differences in the frequency with which anger, sadness, and happiness are expressed may reflect differences in underlying motivational states towards others.

Another reason why children with externalizing and internalizing symptomatology may show higher frequencies of negative emotion than children without psychopathology is because they experience more elicitors of negative emotion. It was not possible to test this hypothesis using the present data as the method of event sampling used in this study had targeted emotion rather than elicitors of emotion. Aversive environments are associated with increased rates of psychopathology in children (Costello, 1989; Rutter, 1979), making it plausible that there are more goal blocks, threats, and losses occurring in the contexts of children with increased symptomatology than those with low levels of symptomatology (see Oatley & Jenkins, 1996, for review).

It is also likely that a vicious cycle around the elicitation of negative emotion occurs. Negative emotion on the part of the child with psychopathology is likely to elicit more negative emotion from whomever the child interacts with. For instance, Cairns and Cairns (1994) have shown that hostility is frequently responded to by another person with more hostility. The aggressive child is fashioning an environment for themselves that is more aversive, and consequently likely to elicit more anger from others. Children with internalizing symptomatology are also more likely than their nondisordered counterparts to be rejected by peers (Rubin, 1993), thereby creating more frequent opportunities for the experience of rejection and loss.

The fact that children in interaction are always exposed to the patterns of emotional expression of other people is probably very important in explaining discontinuities in children’s emotional expressions across contexts. Emotions are communicative, and signal something
about the self’s goals in relationship as well as the self’s beliefs about the goals of the other in relationship. Individuals who are easily angered and infrequently smile or laugh are signaling low affiliation and high dominance to others. This may be a particularly potent elicitor of anger for children who show more distress to limitations temperamentally (a term used to describe the temperament of children who anger readily, Goldsmith, 1993). Other individuals who smile frequently and look sad rather than angry at other’s perceived transgressions may elicit quite different reactions from children who show distress to limitations. Knowing about patterns of elicitation and expression of emotion within dyads may help us to explain some of the discontinuities in children’s internalizing and externalizing symptomatology across contexts.

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References


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